

BLACKCRAIG & MARGREE WINDFARMS 132KV GRID CONNECTION

Environmental Statement [FEBRUARY 2011]



TECHNICAL APPENDICES







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Blackcraig and Margree Windfarms Grid Connection **Technical Appendices**

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Mitigation Schedule

Blackcraig and Margree Windfarms Grid Connection **Technical Appendices**



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A.0 Mitigation Schedule

A.1 Mitigation Schedule

No.	Specific Category	Category	Mitigation	Avoidance (A), Reduction (R) or Offset (O)	Reason	Discipline		
GENER	AL	· · ·						
1	General Line Design	General	The process of selection of the proposed route has been the most important and effective source of mitigation for the overhead line. By employing appropriate routeing strategies, it has been possible to avoid a number of potential effects from occurring at the outset. This has been achieved through arriving at a proposed route which responds to the specific landscape and visual characteristics of the area, and which seeks to avoid specific locations that are particularly sensitive to development of this type.	A/R	To avoid & reduce effects over the length of the route	General		
2	General Line Design	General	Another important factor in mitigating the proposed overhead line is the technical design of the Blackcraig - Kendoon section of then line itself. Historically, transmission lines of this type, having a capacity of 132kV (132,000 volts), have used steel lattice towers of approximately 26m in height. Advances in technology have meant that lines of this voltage can now be carried on wood pole structures, approximately 16m in height with steelwork supporting the insulators and lines. This new technical design of overhead line is expected to reduce visual impact compared to the traditionally used steel lattice towers.	R	To reduce visual effects	General		
3	General Line Design	General	The most effective mitigation against issues resulting from close proximity is effective separation, and the development of the proposed route has been undertaken to provide the maximum achievable separation between residential properties and the OHL and substations. There are only very limited locations where the line is within 200m of a residential property and limited locations where it is within 500m.	A/R	To reduce noise and other close proximity effects	Noise		
DOCUN	DOCUMENTATION							
4	EMP	Documentation	These mitigation measures and any consent conditions placed on the consent will be detailed and implemented through the site Environmental Management Plan (EMP). This EMP would form part of the contract documents with the principal contractor.	A/R/O	To avoid, reduce and offset effects on sensitive receptors	All Disciplines		
5	EMP	Documentation	SPT will create the EMP, however contractors will be required to adhere to this and deliver any responsibilities placed on them. e.g. Development of Pollution Prevention Plans, Waste Management plans, etc.	A/R/O	To avoid, reduce and offset effects on sensitive receptors	All Disciplines		
6	EMP	Documentation	A Construction Method Statement (as part of a construction Environmental Management Plan) will be compiled in accordance with best practice in advance of construction works.	А	To avoid effects on sensitive watercourses & other hydrological effects	All Disciplines		
7	ЕМР	Documentation	Prior to commencing any construction operations, the contractor will be required to develop and provide a Waste Management Plan (WMP) (as part of the EMP) to detail the requirements for managing any waste in accordance with any statutory and licencing requirements, accepted good practice, and to ensure that wherever possible materials are reused or recycled in preference to disposal.	A/R	To minimise waste and comply with requirements	All Disciplines		
8	WSI	Documentation	Suitable programmes of mitigation will be prepared and presented in Written Scheme of Investigations (WSI) for the approval of East Ayrshire Council and Dumfries and Galloway Council prior to the commencement of any construction works. Provision will be made within the WSIs for an appropriate programme of investigation and recording of any archaeological remains identified as a result of any mitigation works undertaken in advance of, or during construction works, that cannot not be preserved in situ. The mitigation works will include the consequent production of written reports on the findings of the archaeological work conducted, with post-excavation analyses, publication and archiving of the results of the work where appropriate. The WSI will be appended to the EMP and its requirements, e.g Strip sites and watching briefs will be recorded within the EMP.	A/R/O	To avoid, reduce and offset potential effects on archaeology	Archaeology		
9	Archaeology	Documentation	Construction method statements will be prepared by the contractors (c.f. Section 5.2.5.10) that will ensure that construction and dismantling operations minimise any disturbance to cultural heritage features (upstanding or buried) in Craigengillan GDL (30) and the ASAs at Water of Deugh (72) and Bardennoch (152).	A/R/O	To avoid and reduce potential effects on archaeology	Archaeology		
10	Archaeology	Documentation	An appropriate scheme of archaeological investigation of sites which will be unavoidably and directly affected by the proposed works (e.g. potentially 18, 27, 56, 58, 120, 122, 129, 130, 163, 192) will be included within the WSIs to be agreed with East Ayrshire Council and Dumfries and Galloway Council prior to construction works commencing.	А	To avoid, reduce and offset potential effects on archaeology	Archaeology		
11	Forestry Design	Documentation	An assessment would be made of the risk of windthrow from any proposed felling and management measures defined for each section of woodland.	A	To avoid effects on wider forest	Forestry		
12	Construction Planning	Documentation	Development of detailed method statements in accordance with best practice procedures to follow for all relevant construction and reinstatement works (e.g. relating to vegetation and peat/ soil stripping, storage of waste peat. Protection and storage of vegetated turves. Effective vegetation re-instatement. Storage of construction materials. Pollution control measures etc.).	A/R	To avoid and reduce effects of construction works	Ecology/Hydrology		



No.	Specific Category	Category	Mitigation	Avoidance (A), Reduction (R) or Offset (O)	Reason	Discipline
13	Construction Planning	Documentation	 A drainage plan showing layout and a schematic representation of the drainage arrangements will be prepared. This will include: All the watercourses, discharge points and suitable points for installing pollution control booms. Facilities used for the storage of fuel, oils and wastes (together with information relating to the areas that are bunded and the products stored). Any potentially sensitive areas, including private water supply source locations. Facilities such as inspection points for the detection of contamination and oil interceptors. A chemical and waste inventory recording procedure for all substances stored on-site as well as how and where they are stored. 	A/R	To avoid / reduce potential pollution incidents	Hydrology & Hydrogeology
14	Construction Planning/Working Practices	Documentation	It is proposed that a programme of surface water monitoring will be carried out pre-development and during the construction. The extent and frequency of the monitoring will be proportionate to the risk of contamination and the sensitivity of the waterbodies/ courses concerned.	A	To provide benchmark of pre construction water quality	Hydrology & Hydrogeology
15	Hydrology & Hydrogeology	Documentation	In addition to the generic mitigation set out above, specific measures will be employed to mitigate potential effects on public and private water supplies. Prior to commencing works on site, the contractor will undertake an Environmental Risk Assessment (ERA) on the quantity and quality of water supplies for all properties reliant on private water supplies within 1km of the proposed grid connection and that might be affected by it. This ERA will include mitigation measures for the protection of supplies where a risk is identified. These measures will include a contingency plan to provide an alternative supply of drinking water within 24 hours in the event of any effect which renders the existing source unusable as a result of the development of the grid connection. Where a risk is identified, and there are no existing data on tap water quality, the contractor will undertake at his own expense water testing to establish baseline analyses.	A/R/O	To avoid, reduce and if necessary offset effects on private water supplies	Hydrology & Hydrogeology
SURVE	ſ					
16	Access/Construction Planning	Survey	Pre-construction survey will be used to ensure that any new access or working areas are located within areas of least environmental sensitivity.	A/R	To avoid and reduce effects on local environment	Construction
17	Working Practices	Survey	 Potential effects arising from waste management will be avoided through the adoption of best working practices and compliance with all relevant requirements. The details of this will be included within the EMP and PPP as required, and will include: the careful location of stockpiles and other storage areas. the use of good practice in the design of waste storage areas and the use of suitable waste containers. the use of sheeting, screening, and damping where appropriate and practicable. the control and treatment of runoff from soil and waste soil stockpiles. minimising storage periods. minimising haulage distances. and the sheeting of vehicles. 	A/R	To avoid and reduce construction materials and operations resulting in avoidable effects	Waste management
18	Construction Planning	Survey	Pre-construction ecology surveys will be undertaken in order to minimise the risk of loss of or disturbance to habitats and species present in the vicinity of the construction works.	A/R	To avoid and reduce effects of construction works	Ecology
19	Construction Planning	Survey	A targeted ecology survey will be carried out immediately prior to the commencement of construction works within a 200m buffer zone around proposed tower and wood pole locations, temporary access tracks and any other infrastructure near watercourses.	A/R	To avoid and reduce effects of construction works	Ecology
20	Construction Planning	Survey	Prior to any tree felling, an appropriately detailed survey for potential bat roosts, red squirrel dreys and pine marten dens (although highly unlikely for this species) will be carried out. Should any resting-up sites be found in the vicinity of proposed construction works SNH will be consulted as to the required mitigation.	A/R	To avoid and reduce effects of construction works	Ecology
21	Construction Planning	Survey	Pre-construction re-survey will be undertaken where appropriate (e.g. close to the Duisk River) to identify any areas of Japanese Knotweed. Should any Knotweed be identified within 10m of any construction works, specific measures would be implemented in accordance with best practice to avoid or eradicate the affected stand.	A/R	To avoid the potential spread of Japanese Knotweed	Ecology
22	Working Practices	Survey	If felling is necessary within the breeding bird season, then it would only be carried out following a nest survey by a suitably experienced ecologist to ensure that potential effects on breeding birds are avoided.	А	To avoid effects on sensitive and protected receptors	Ornithology
23	Construction General	Survey	Post-felling archaeological survey will be carried out to identify and record any previously unknown features that survive in felled areas, and to identify and record known cultural heritage sites and features that were previously inaccessible due to the tree cover (e.g. 56, 100, 153, 167, 205, 208, 209, 210). Any identified features will be protected from further disturbance as necessary before subsequent construction works commence, e.g. by fencing off where they lie in proximity to proposed working areas, or will be recorded appropriately if disturbance cannot be avoided.	A/R	To avoid effects on unknown archaeology	Archaeology
FOREST	TRY					
24	Forestry Design	Forestry	An assessment would be made of the benefits of retaining trees affected by windthrow which are leaning against neighbouring trees but have not been thrown beyond about 15 – 20 degrees. The combination of two trees interlocked leads to an increase in stability by the reduction of freedom to swirl during high winds. Landscape issues and public safety considerations would be taken into account.	R	To reduce the need for felling	Forestry
25	Forestry Design	Forestry	There would be a presumption against pre-emptive felling of individual larger hardwoods, even if essential felling for the line potentially exposes such trees to the wind.	R	To reduce felling requirement	Forestry
26	Forestry Design	Forestry	Best practice forest landscape design principles, as defined by the Forestry Commission (shape, scale, diversity, visual force, unity and 'spirit of the place') would be followed in creating and managing new boundary edges.	A/R	To avoid and reduce effects on wider forest	Forestry

No.	Specific Category	Category	Mitigation	Avoidance (A), Reduction (R) or Offset (O)	Reason	Discipline
27	Forestry Design	Forestry	The edge of the corridor would be designed to create irregular spaces with irregular tree heights, avoiding severe vertical edges, particularly of conifers.	A/R	To comply with best practice	Forestry
28	Forestry Design	Forestry	Where there are no windthrow or landscape and visual issues, tree felling would be minimised to that necessary to allow the safe construction and operation of the line.	R	To comply with best practice	Forestry
29	Forestry Design	Forestry	Employing tree-topping, or profiling at routeing pinch-points to avoid the need for extensive felling to windfirm edges where landscape considerations dictate or permit.	A/R	To reduce felling requirement	Forestry
30	Forestry Design	Forestry	Reviewing opportunities to positively manage any natural regeneration of low-growing shrub species along the edge of the wayleave that may occur.	0	To comply with best practice	Forestry
31	Forestry Design	Forestry	Detailed route design, including micrositing of pole positions, to reduce the felling of mature broadleaved trees. Some crown- topping will occur as part of this process to reduce loss of mature trees. Undertaken at Polquhanity and Glenhoul.	A/R	To reduce felling requirement of broadleaved trees	Forestry
32	Forestry Design	Forestry	Removal of the existing N-Route will release the area of wayleave currently occupied by the OHL back to the landowner and lift the current restrictions on the management of the ground.	0	To increase forestry stock	Forestry
33	Forestry Design/Access	Forestry	Soil disturbance and compaction would be minimised during construction and maintenance by the use of sensitive access tree harvesting and extraction.	R	To reduce effects on wider forest	Forestry
34	Forestry Design/Maintenance	Forestry	In areas of native woodlands felling would be limited to the minimum necessary to construct and maintain the line, notwithstanding landscape and visual concerns.	R	To reduce effects on wider forest	Forestry
35	Working Practices	Forestry	Tree clearance operations would strictly adhere to the Forestry Commission publication 'Forest and Water Guidelines' version 4.	A/R	To comply with best practice	Forestry
36	Working Practices	Forestry	Guidelines on the protection of archaeological sites within forestry areas are set out in the Forestry Commission's Forests and Archaeology Guidelines (1995). These guidelines include measures to protect archaeological sites and monuments during felling operations, which will be observed during the proposed felling works.	A/R	To avoid and reduce potential effects on known and unknown archaeology	Forestry
PERSO	NNEL					
37	Working Practices	Personnel	All construction workers should be briefed upon the potential presence of reptiles such as adders and actions to be taken should these be found in the course of the works. Workers will be briefed on all environmental issues through SPT's Environmental Information Pack. See end of this Schedule for details of this.	A/R	To avoid and reduce effects on sensitive and protected receptors	Ecology
38	Construction Planning	Personnel	On-site welfare facilities will be adequately designed and maintained to ensure all sewage is disposed of appropriately. Given site conditions and private water supplies in the local area, this is likely to take the form of collection and off-site disposal.	A/R	To avoid and reduce potential pollution incidents	Hydrology & Hydrogeology
39	Construction Planning	Personnel	 All relevant site personnel will be trained in both normal operational and emergency procedures, and be made aware of sensitive areas of the site. The staff training and implementation of site procedures will be overseen by an Environmental Manager to ensure that these measures are carried out effectively to minimise the risk of a pollution incident. Emergency Procedures setting out the activities covered, staff responsibilities and procedures for dealing with events such as spillages. More specifically, these could include the following actions where appropriate: Appropriate procedures for alerting relevant properties and landowners. The potential consequences of an incident. Procedures for containing, preventing and recovery of leaks, spills or general contamination. This will include the location and use of sand and sand bags, spill kits containing proprietary absorbents, booms and other pollution control equipment. 	A/R	To avoid / reduce potential environmental effects	Hydrology & Hydrogeology
NEGOT	IATION					I
40	Access	Forestry	All proposed works both within and outwith the corridor would be subject to full discussion with the landowner and consents sought where appropriate. All mitigation would follow best practice as defined by current Forestry Commission guidelines.	R	To reduce effects on landowners and land uses	Forestry
41	Forestry Design	Forestry	Where management measures outwith the corridor would be beneficial to prevent windthrow this would be discussed with the landowner and, where agreed, implemented.	А	To avoid effects on wider forest	Forestry
42	Forestry Design	Forestry	In woodland areas where a high risk of early windthrow is identified, the new felling edge would (with the landowners agreement) be expanded beyond the overhead line corridor. Where this is the case, the felling boundary would make use of relatively windfirm edges such as natural openings in the woodland, or existing roads, rides and watercourses.	R	To reduce effects on wider forest	Forestry
43	Forestry Design	Forestry	Full advantage would be taken of slopes, hollows, gullies, internal access tracks and rides passing across the corridor of the overhead line to provide for the new edge of the corridor.	R	To reduce effects on wider forest	Forestry
44	Forestry Design	Forestry	All felling to create a windfirm edge would take account of the landscape and visual design opportunities, which would result from creating new sympathetic boundaries.	R	To reduce effects on wider forest	Forestry
45	Forestry Design	Forestry	Felling to create a windfirm edge outwith the clearance corridor would create an opportunity for the landowner to restock, consistent with best practice landscape design.	R	To reduce effects on wider forest	Forestry
46	Forestry Design	Forestry	The potential for windthrow to deliver ecological benefits by creating new habitats would be recognised, especially where felling outwith the corridor would not have appreciable landscape and visual benefits.	0	To allow felling to provide other benefits	Forestry
47	Forestry Design	Forestry	Where possible the corridor would be designed to appear as though it passes through a series of irregular spaces. The aim would be for the forest to appear to meet across the open space at least in some places. This would reduce the lineal nature of the corridor.	A/R	To avoid and reduce landscape and visual effects	Forestry



No.	Specific Category	Category	Mitigation	Avoidance (A), Reduction (R) or Offset (O)	Reason	Discipline			
CONSTRUCTION									
48	Construction General	Construction	Further mitigation will be provided through adherence to the Environmental Protection Act 1990 and the Waste Management Licensing Regulations 1994, specifically regarding the utilisation of a registered waste carrier and a licensed waste disposal site should either of these be required during construction of the grid connection.	A	To avoid avoidable effects of waste	Waste Management			
49	Construction General	Construction	Undergrounding/deviation of lower voltage lines where necessary for safety clearances.	А	To comply with safety clearances	Construction			
50	Construction Micro-Siting	Construction	Micro-siting provides scope for further mitigation of potential effects through further minor deviation and wood pole and tower micro-siting to allow for unconfirmed ground conditions and pre-construction confirmation of environmental conditions.	A/R	To avoid & reduce effects on sensitive receptors	Construction			
51	Construction Planning	Construction	It may be necessary to cross existing overhead lines to achieve the most favourable or environmentally acceptable route. The crossing of lines may cause temporary interruptions to supply while the works are being carried out. Crossing of lines will therefore be programmed at times when existing lines can be temporarily taken out of service.	A/R	To avoid and reduce effects on local residents	Construction/Hydrology & Hydrogeology			
52	Construction Planning	Construction	Programming of construction operations will be employed in order to avoid potential effects where seasonal constraints dictate.	A/R	To avoid and reduce effects on sensitive receptors	Construction			
53	Construction Planning/EMP	Construction	Temporary storage areas may be required for the dispersal of plant and equipment. Identification of these will be undertaken to minimise any potential environmental effects and will comply with the requirements of the EMP.	A/R	To avoid and reduce effects on sensitive receptors	Construction			
54	Construction Planning/Working Practices	Construction	Every effort will be taken to minimise land damage by using four wheel drive or tracked vehicles or installing temporary roadways.	R	To reduce the extent of any effects	Construction			
55	Construction Planning/Working Practices	Construction	SPT has consulted extensively with environmental agencies concerning the matters of construction in or near sensitive habitats and conservation areas in environmentally sensitive sites. This practice would continue for this project and the method statement would be rigorously applied. Contractors would be required to produce Method Statements for such activities.	A/R	To avoid and reduce the extent and scale of any effects	Construction			
56	Construction Noise	Construction	 Noise reduction mitigation will be achieved through the following approaches to limiting noise: Locating infrastructure (including temporary construction compounds) as far as practically possible from residential properties and any other noise sensitive receptors; Programming the construction processes to reduce the time period for which noise sensitive receptors will experience construction noise; Utilise a number of accesses to avoid concentration of vehicle movements in limited locations; Adoption of good practice methodologies to reduce felling and construction noise; A 48 week working year and construction over a five day working week has been assumed. Construction activities will be undertaken during daytime periods only, between approximately 07:00 to 19:00 during the summer months and 07:30 to 17:00 during the winter (or as daylight allows). All construction activities will be undertaken in accordance with good practice as set out in BS5228-1 and 2 : 2009; All equipment will be maintained in good working order and will be fitted with appropriate noise control at all times (for example, silencers, mufflers and acoustic hoods); All site employees will be advised of the noise sensitive nature of the receptors (human and others) and be informed of any requirements for quiet working practices where required; Site terrain, material stockpiles and suitable work locations will be used to screen work locations and increase the separation between noise sensitive receptors and sources of construction noise; and A site contact number will be provided for local residents to allow them to access further information or notify the contractor and/or EHO of any issues related to this. 	R	To reduce noise effects	Construction			
57	Access	Construction	 Forestry operation and maintenance mitigation as follows: creating new access tracks where the presence of the new OHL would result in difficulties in accessing forest areas isolated by the OHL. Isolation can be as a result topography, the presence of a watercourse, or the lack of brash for timber extraction following the removal of trees within the wayleave; Provision of forwarder access from new and upgraded roads into adjacent forest blocks; erection of 'goal-posts' to show maximum safe working height for forestry traffic; creating alternative timber transfer areas, where the route precludes the use of existing facilities; management of natural regeneration within the wayleave to assist managers in their objectives to increase woodland diversity; and wildlife corridor management; and monitoring and removal of windblown trees. 	A/R	To reduce forestry construction effects	Forestry			
58	Access	Construction	Access to build the line would use existing tracks wherever possible.	R	To reduce effects on land use and habitat	Forestry			
59	Access	Construction	Where a new track is required through woodland it would be sited to minimise future windthrow and in the position where it could be of long-term advantage to the management of the woodland to avoid unnecessary duplication of road construction.	R	To reduce effects on adjacent woodland and forestry	Forestry			
60	Ecology General	Construction	The opportunity will be taken to create standing and fallen deadwood habitat, where none currently exist.	0	To provide local ecological benefit	Forestry			
61	Construction	Construction	Careful micro-siting of wood poles, towers and access tracks should be used to avoid sensitive habitats and minimise the number of necessary watercourse crossings.	A/R	To avoid & reduce effects on sensitive receptors	Ecology			

No.	Specific Category	Category	Mitigation	Avoidance (A), Reduction (R) or Offset (O)	Reason	Discipline
62	Construction General	Construction	Ramps or an alternative exit route should be placed in any steep-sided excavations allowing otters (and other animals) to exit should they enter.	А	To avoid accidental entrapment	Ecology
63	Construction Planning	Construction	Reduction in effect magnitude will be possible in the refinements made to the detailed design and the careful construction of temporary access tracks and other structures to minimise perturbation of the natural peat hydrology following the relevant agreed method statements and under the guidance of the ecological adviser.	R	To reduce any potential effects	Ecology
64	Construction Planning	Construction	During detailed design, site infrastructure will be designed to further reduce effects on habitats of highest sensitivity as far as possible.	A/R	To avoid and reduce effects of construction works	Ecology
65	Construction Planning	Construction	Design the layout of the connection (e.g. the routeing of the temporary access tracks, location of wood poles / towers, temporary construction compounds, etc.), to be undertaken in consultation with an ecological advisor, in order to avoid, where possible, deep peat and areas of better quality blanket bog	A/R	To avoid and reduce effects of construction works	Ecology
66	Construction Planning	Construction	Mitigation measures concerning reptiles would centre around protection of individuals in order to comply with relevant legislation and best practice procedures.	A/R	To avoid and reduce effects on sensitive receptors	Ecology
67	Working Practices	Construction	In order to avoid damage to aquatic habitats tower/pole foundations would be located and excavated wherever possible in the driest locations with well consolidated superficial geology. Using flexibility with the infrastructure allowance, areas of wet and deep peat would be avoided where possible; towers/poles would not be located within 30m of waterbodies or within 10m of other watercourses.	A/R	To avoid and reduce effects on sensitive and protected aquatic receptors	Ecology
68	Working Practices	Construction	Work should be restricted to the defined working corridor.	A/R	To avoid and reduce effects on sensitive and protected receptors	Ecology
69	Working Practices	Construction	Demarcation of defined working areas during construction phase to prevent unnecessary entry to and disturbance of sensitive habitats.	A/R	To avoid and reduce effects on sensitive and protected receptors	Ecology
70	Working Practices	Construction	Further disturbance to protected mammal species will be minimised by avoiding artificial lighting and commencing work no earlier than (at least) one hour before dusk.	A/R	To avoid and reduce effects on sensitive and protected receptors	Ecology
71	Working Practices/EMP	Construction	A suitably experienced ecological adviser will be identified within the EMP and will be responsible for the implementation of ecological mitigation.	A/R	To identify potential effects and inform construction process	Ecology
72	Construction Planning	Construction	Construction works would be programmed to avoid areas of known sensitivity during sensitive periods. Buffer zones would be established that were appropriate to the specific circumstances. Disturbance-free zones around any active Schedule 1 species nest sites would be determined in consultation with a suitably experienced ecologist / ornithologist, following current best practice guidance	A	To avoid effects on sensitive receptors	Ornithology
73	Construction Planning	Construction	Any works that have the potential to damage active bird nests (see above in respect of Schedule 1 species) would be carried out under the supervision of a suitably experienced ecologist / ornithologist, to ensure compliance with the Wildlife and Countryside Act (1981), as amended	А	To avoid effects on sensitive receptors	Ornithology
74	Construction Planning	Construction	All site workers would be briefed on the procedure to follow, should they encounter breeding birds / active nests during their work.	A/R	To avoid & reduce effects on sensitive receptors	Ornithology
75	Construction Planning/Working Practices	Construction	For ground-nesting bird species, mitigation includes conducting construction works outside the bird breeding season. In addition, careful micro-siting of poles to avoid the wetter areas of wet modified blanket bog and marsh/marshy grassland.	А	To avoid effects on sensitive / protected receptors	Ornithology
76	Construction Planning	Construction	To prevent pollution of watercourses during construction, a Construction Methods Statement (as part of a wider construction Environmental management Plan) will be agreed with SEPA and the local authority, in advance of construction works (mitigation measures are detailed in Chapter 8, Section 8.6 [see also Hydrology & Hydrogeology] and for brevity will not be repeated here).	A	To avoid effects on sensitive receptors	Ornithology
77	Operation General	Post Construction	 Placing of bird flight diverters along sections of overhead line is proposed. This measure will primarily benefit target species in areas identified as being high risk (e.g. peregrine, red kite), but will also reduce the collision risk to secondary species that have a relatively high collision risk (e.g. mute swan, cormorant, grey heron). The key sections of the proposed route are as follows (north to south): From Glenmuck Craig to Clawfin Hill (towers 3-30); Crossing of the Water of Deugh at Carsphairn (towers 83-87); Carse of Dundeugh (tower 103 to wood pole 1 and wood pole 1 to 35); and Rigs of Glenshimmeroch (wood pole 95 to 115). 	R	To reduce risk of collision for sensitive and protected species	Ornithology
78	Working Practices	Construction	All tree felling would ideally be completed outside of the main bird breeding season (i.e. outside of April – August inclusive). If some felling or vegetation clearance was necessary within this period, then it would only be carried out following a breeding bird nest survey by a suitably experienced ecologist / ornithologist, to ensure that active nest sites were adequately protected from damage / disturbance	A/R	To avoid and reduce effects on sensitive and protected receptors	Ornithology
79	Access/Construction Micro- Siting/Working Practices/EMP	Construction	Construction and dismantling operations will seek to avoid known archaeological areas, which will not be used for storage of materials, timber stacking or parking vehicles or machinery. Procedures will incorporate the exclusion of cultural heritage features from working areas, and avoidance of features during upgrading of existing tracks to provide temporary access and construction of new tracks to provide temporary access. Cultural heritage features will be fenced off for the duration of construction works where appropriate (e.g. sites 6, 19, 27, 41, 56, 106, 120, 122, 124, 125, 129, 130, 142, 143, 146, 188, 189, 192, 196, 208, 209, 210, 225). Ground disturbance will be avoided to the routes of a former tramways (12, 221), a former railway (32), an old road (136), and at the site of a former building (26)	A/R	To avoid and reduce effects on archaeology	Archaeology



No.	Specific Category	Category	Mitigation	Avoidance (A), Reduction (R) or Offset (O)	Reason	Discipline
80	EMP/ Working Practices/Post Construction	Construction	Formal arrangements will be put in place for any unforeseen archaeological discoveries made by the felling and/or construction contractor to be reported to a retained professional archaeological organisation. This will require any unexpected discoveries in areas not subject to archaeological monitoring (e.g. building remains, human remains, artefacts etc) to be assessed and dealt with appropriately, and will make clear the legal responsibilities placed upon those who make unexpected discoveries of archaeological significance. These arrangements will be included in SPT's Environmental Management Plan for the Project which will form a legally binding contract document and will be explained in toolbox talks presented by the retained archaeological organisation.	0	To offset effects on unknown archaeology	Archaeology
81	Working Practices	Construction	Towers to be dismantled will be felled away from archaeological features, to prevent damage occurring to them (6, 19, 27, 106, 124, 125).	A/R	To avoid and reduce effects on archaeology	Archaeology
82	Working Practices/Supervision	Construction	At Lagwine cairn (124), careful consideration will be given to defining a tower dismantling procedure (cf Section 5.2.5.7.2) that presents least risk of disturbing the cairn and any adjacent buried archaeological remains. This tower next to the cairn should be dismantled under archaeological supervision.	A/R	To avoid and reduce effects on archaeology	Archaeology
83	Micro-siting	Construction	The underground cable route, access track and pulling station at Dalshangan clump plantation boundary (163) will be micro-sited to avoid or minimize any disturbance caused to this feature.	A/R	To avoid and reduce effects on archaeology	Archaeology
84	Working Practices	Construction	If archaeological areas have to be crossed, for example, if trees on an archaeological feature are being felled (e.g. 208), damage will be reduced by techniques such as brash matting and working in dry conditions. Stumps will be left in the ground to rot rather than causing further damage by uprooting them. Timber processing will not be carried out on archaeological sites.	A/R	To avoid and reduce effects on archaeology	Archaeology
85	Working Practices	Construction	A watching brief will be conducted during ground breaking construction works, at archaeologically sensitive locations to be agreed with East Ayrshire Council and Dumfries and Galloway Council. The purpose of this work will be to allow for the identification and appropriate recording of currently unidentified and buried features of archaeological importance exposed by topsoil removal. Watching briefs will be conducted on any ground-breaking works in the vicinity of Auchenroy (27), Mossdale (56), the Old Galloway Road (87), Lagwine Cairn (124) and in the ASAs at Water of Deugh (72) and Bardennoch to Garryhorn (152). Provision will be made for the further investigation of any remains of archaeological importance discovered during an archaeological watching brief, and will comply with the requirements of the Institute of Field Archaeologists' Standard and Guidance for an Archaeological Watching Brief (2008).	0	To offset effects on archaeology	Archaeology
86	Construction General	Construction	Where required temporary drainage measures will be implemented to prevent water ingress into any open excavations.	А	To avoid changes to local hydrology	Hydrology & Hydrogeology
87	Construction Micro-Siting	Construction	Wherever feasible avoid placing wood poles or towers within 35m of watercourses (20m buffer plus 15m construction activity radius).	А	To avoid effects on sensitive watercourses	Hydrology & Hydrogeology/ Ecology
88	Construction Planning	Construction	 Generic mitigation measures that will be employed to prevent effects on the hydrology and hydrogeology are listed below: Installation of pre-construction land drainage, where appropriate, to minimise capture of water by wood pole and steel lattice tower foundation excavations; Use of sediment control measures such as straw bales and/or silt fences to control silt content of run-off; Adopting stringent precautions if pumping-out of water is required; Construction of temporary bridges to prevent plant and vehicles driving through watercourses; Prevention of concrete entering watercourses by careful siting of steel tower locations and use of appropriate shuttering; Compliance with best practice guidelines for fuel storage and refuelling; Providing adequate facilities for the collection, treatment and disposal of sewage and waste. 	A/R	To avoid & reduce effects on sensitive receptors	Hydrology & Hydrogeology
89	Construction Planning	Construction	Temporary site compounds to be impermeable hardstanding and bunded with oil interceptors for runoff pollution control. Oil would be stored at least 30m from any waterbody and 10m from any watercourse. Oil storage tanks would be located on an impermeable base and be surrounded by an impervious bund with no surface water outlet.	A/R	To avoid and reduce potential pollution incidents	Hydrology & Hydrogeology/ Ecology
90	Construction Planning	Construction	Chemicals/fuel storage at temporary site compounds. Minimum volumes of fuel/chemicals to be retained at the compound site, i.e. sufficient quantities for current requirements.	A/R	To avoid and reduce potential pollution incidents	Hydrology & Hydrogeology
91	Construction Planning	Construction	Site compound drainage will not discharge directly to any natural watercourse, but will discharge to buffer strips / trenches, preferably on flat ground. The buffer strips will act as filters, minimising sediment transport, attenuating flows and maximising infiltration. Erosion protection will be installed at discharge points.	A/R	To avoid and reduce potential pollution incidents	Hydrology & Hydrogeology/ Forestry
92	Construction Planning/Working Practices	Construction	Standing machinery shall have drip trays placed underneath to prevent oil and fuel leaks causing pollution. Refuelling of vehicles and machinery will be carried out in one designated area, on an impermeable surface within a bunded area, well away from watercourses. This area will be fitted with oil interceptor equipment. If emergency repairs undertaken on site then spill kit to be on-hand as a preventative measure.	AR	To avoid and reduce effects on sensitive receptors	Hydrology & Hydrogeology
93	Construction Planning/Working Practices	Construction	Spill kits will be available at the site compound and in the locale of works close to watercourses.	R	To assist in the reduction of any effects of a pollution incident	Hydrology & Hydrogeology
94	Construction Planning/Working Practices	Construction	Soil removed will be replaced and compacted into pole excavations, retaining the soil profile removed. Excess soil will be landscaped in the immediate vicinity. Soils will be temporarily stockpiled.	R	To reduce the potential effects of stored soils	Hydrology & Hydrogeology
95	Construction Planning/Working Practices	Construction	Vehicles crossing streams during pole/tower location and stringing activity should use temporary culvert/boarding systems.	R	To reduce damage to banks	Hydrology & Hydrogeology
96	Construction Planning/Working Practices	Construction	For drilling operations, water based mineral mud shall be used.	R	To reduce the toxicity of any contamination	Hydrology & Hydrogeology

No.	Specific Category	Category	Mitigation	Avoidance (A), Reduction (R) or Offset (O)	Reason	Discipline
97	Construction Planning/Working Practices	Construction	Construction traffic access will be restricted wherever possible and the number of vehicle movements limited as much as possible.	R	To reduce the extent of any effects	Hydrology & Hydrogeology
98	Construction Planning/Working Practices	Construction	Land surrounding the immediate construction area where there are sensitive receptors will be fenced off or otherwise demarcated to prevent inadvertent intrusion from construction plant.	R	To reduce the extent of any effects	Hydrology & Hydrogeology
99	Working Practices	Construction	Watercourses should be locally demarcated to ensure no encroachment within 20m of channel bank except where strictly necessary.	A/R	To avoid and reduce effects on sensitive and protected receptors	Hydrology & Hydrogeology
100	Working Practices	Construction	Avoid working in intense rain events close to watercourses, due to increased potential for erosion and/or bank instability.	A/R	To avoid and reduce effects on sensitive and protected receptors	Hydrology & Hydrogeology
101	Working Practices	Construction	Silt fences to be deployed where construction activity takes place on slopes close to watercourses.	A/R	To prevent sediment movement into watercourses	Hydrology & Hydrogeology
102	Working Practices	Construction	Wheel and track washing units will be employed to ensure mud (and resultant dust) is not transmitted from the site vehicles onto nearby highways.	A/R	To avoid and reduce effects likely to cause nuisance	Hydrology & Hydrogeology
103	Working Practices	Construction	No grit, salt, pesticide or fertilisers to be applied at any stage of proposed development.	A/R	To avoid and reduce effects on sensitive and protected receptors	Hydrology & Hydrogeology
104	Working Practices	Construction	Silt mats and fences will also be used in and around all excavations.	A/R	To prevent sediment movement into watercourses	Hydrology & Hydrogeology
105	Construction Planning	Construction	Construction of the line would be programmed wherever practicable to avoid sensitive locations, tourist / visitor viewpoints, and the A713 from New Galloway to Patna corridor at peak visitor or tourist periods. Where possible, construction would be programmed to avoid appreciable construction traffic on this key route, and within proximity of notable local festivals or events.	A/R	To avoid and reduce effects on traffic flows	Tourism & Recreation
106	Construction Planning	Construction	In addition, should access to construction areas be required from the A713, or from laybys for 'lay down' areas, every effort would be made to programme these to avoid the peak tourist or visitor periods of June to August, particularly where the line would run parallel to the route.	A/R	To avoid and reduce effects on traffic flows	Tourism & Recreation
107	Construction Planning	Construction	The contractors would be required to ensure ongoing safe access to all key walking and cycling routes, etc, and provide an alternative if any route was closed temporarily due to construction activities. These routes are set out in detail within the Tourism & Recreation chapter.	A/R	To avoid and reduce effects on recreational activities	Tourism & Recreation
108	Construction Traffic	Construction	The provision of stone and concrete for the various elements of the developments has been assumed to be entirely sourced from off-site. Where it is practical, stone should be sourced locally to reduce the distance covered on the road network by the 20m ³ capacity trucks.	R	Reduce long distance journeys	Traffic & Transport
109	Construction Traffic	Construction	The delivery of the two abnormal loads, for the purpose of delivering the transformers to the substation sites will need to be aided by the local police authority. This is to prevent vehicle conflicts occurring at junctions such as where the A713 meets the A702 at St Johns Town of Dalry. The route will be the same for both loads as their access points from the network occur in close proximity to one another on the A702. Delivery of these loads will take place outside of core hours when the roads are at their quietest.	R	Reduce effects resulting from abnormal loads	Traffic & Transport
110	Construction Traffic	Construction	Felling of timber has been programmed and a check needs to be made to ensure that best practice is adhered to when the timber is extracted from the forest and enters the road network. The most suitable roads for these timber vehicles are highlighted by the 'Agreed Routes Map' on the Forestry Commission's website. The road network should be agreed with operators prior to felling commencing.	R	Reduce effects from timber extraction	Traffic & Transport
111	Construction Traffic	Construction	Vehicle sharing should be encouraged, perhaps through the use of mini-buses to reduce vehicle movements.	R	Reduce staff journeys	Traffic & Transport
112	Construction Traffic	Construction	The opportunity to avoid conflict between vehicles exists for construction traffic using the B7000 and C51S as in combination, these roads create a loop. This loop could be used as a one-way system which would appreciably reduce the instances when large vehicles would meet each other on these narrow carriageways.	R	Reduce local road congestion	Traffic & Transport
113	Construction Traffic	Construction	Access roads which are to be created and that link directly to the network will need to be designed to take account of the visibility requirements for vehicles accessing roads with 60mph national speed limits on them. Appropriate warning signs will be required to indicate to both construction traffic and the general public the presence of these newly created access points.	R	Reduce potential for road traffic accidents	Traffic & Transport
114	Construction Traffic	Construction	A Traffic Management Plan (TMP) should be implemented prior to construction activities commencing. Within this plan should be agreed routes for traffic approaching the development from the north, south, east or west. This TMP should be consulted prior to the development of any additional plan so that continuity can be maintained between the developments.	R	Reduce effects on local road network	Traffic & Transport
115	Construction Traffic	Construction	From the collisions records for the assessed roads, it appears that motorcycles may be at risk on some of the routes. The A713 and A712 in particular demonstrated an appreciable proportion of accidents involved powered two wheelers. It may be necessary to cater for this risk by specifically signing these routes with warnings that address this road user group.	R	Reduce effects upon motorbikes	Traffic & Transport
POST C	ONSTRUCTION					
116	Maintenance	Post Construction	Occasionally there will be a need to carry out general maintenance on the grid connection. As far as possible all access will be confined to areas previously used for construction activity.	R	To reduce effects on sensitive receptors	Ecology
117	Maintenance	Post Construction	Method statements for scheduled maintenance and emergency maintenance works will be developed in accordance with SPT normal procedures and best practice.	R	To reduce effects on sensitive receptors	Ecology

Mitigation



-		
	_	

No.	Specific Category	Category	Mitigation	Avoidance (A), Reduction (R) or Offset (O)	Reason	Discipline
118	Maintenance	Post Construction	Procedures identified for the minimisation of construction effects would also be applied to minimise the potential damage of habitats during maintenance operations.	R	To reduce effects on sensitive receptors	Ecology
119	Ongoing Monitoring	Post Construction	In order to ensure that in the long-term access to the wood poles and any local associated drainage continue to function effectively, in terms of minimising effects on blanket bog vegetation, there will be a need to ensure that drainage lines are kept clear, and monitored for potential erosion problems. Regular monitoring of vegetation cover along wayleaves will be undertaken.	R	To reduce effects on sensitive receptors	Ecology
120	Operation General	Post Construction	Any watercourse crossings (e.g. for the temporary access) would be designed to minimise disruption to free movement of all relevant species (including otter) and habitat fragmentation. Appropriately designed structures (i.e. that minimise the effect on the watercourse and potential disruption to wildlife movement) would be installed, in accordance with best practice.	R	To reduce effects on sensitive / protected receptors	Ecology
121	Ongoing Monitoring	Post Construction	In the unlikely event of any bird related power outages of the overhead line, these will be investigated. If necessary, in consultation with SNH, if it is identified that a section of the proposed grid connection poses a significant electrocution risk to birds then suitably designed perch guards would be fitted retrospectively on the identified pole(s) cross-arms that pose an electrocution risk.	R	To allow additional mitigation to be implemented if required	Ornithology
122	Maintenance	Post Construction	During the course of operation where maintenance is required, maintenance staff and vehicles would use only designated operational / maintenance routes and tracks to gain access to the line to minimise disturbance to users of recreational resources within the area.	R	To reduce effects on sensitive receptors	Tourism & Recreation
123	EMF	Post Construction	SP considers that even a remote possibility of a health risk must be taken seriously, because very large numbers of people are exposed to power-frequency fields from both overhead and underground power lines and from many other sources, including domestic appliances. Further studies are in progress in this country and elsewhere to establish whether or not there is any genuine health risk. SPT will continue to act upon the current advice of the Government and HPA in this matter.	A/R	Avoidance of any potential EMF effects	EMF

A.2 SPT Environmental Management Plan



Environmental Management Plan ENV-05-001 Blackcraig & Margree OHL Grid Connections Issue No. and N Route Removal DRAFT

1. SCOPE

This Environmental Management Plan (EMP) is a concise document, detailing the environmental precautions and actions to be implemented on the proposed 132kV OHL routes from the Blackcraig and Margree windfarm sites in Dumfries and Galloway to the Meiklehill Substation site near Dalmellington in East Ayrshire. The EMP is also designed to cover all ancillary works relating to these developments.

2. ISSUE RECORD

This is a controlled maintained document.

All copies printed via the Intranet or photocopied will be deemed uncontrolled.

Issue Date	Issue No	Author	Amendment Details
	Draft	Stephen Jack	

3. REVISIONS

Date	Revision	Reason for Change	Pages Revised

4. ISSUE AUTHORITY

Author	Owner	Issue Authority
Stephen Jack		Ross Baxter
Environmental Planning	Project Manager	Environmental Planning
_		Manager

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- 11.4. Environmental Mitigation Measures (ES appendix)
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6. STRUCTURE AND CONTENT

6.1. Aim of the EMP

This Environmental Management Plan (EMP) is a concise document, detailing the environmental issues and actions to be implemented during construction of the 132kV overhead lines (OHL) and associated substation works (it should be noted that this document is not designed to cover the proposed substation at Meiklehill, this will be covered under the EMP for the South West Scotland works). This document follows on directly from the collection and interpretation of the baseline information and key issues that were documented in the Blackcraig and Margree OHL connections Environmental Statement, the Section 37 consent conditions placed on SP Transmission (SPT) and the required pre-construction surveys, method statements and plans.

This EMP represents a commitment to environmental recommendations, mitigation measures and consent conditions formulated during the design and development process and must be adhered to during the construction and post-construction phases of the project. Any actions that are the responsibility of the Principal Contractor shall be translated into contract documents by the Project Engineer and referenced in Section 7 Site Specific Environmental Actions.

6.2. Background Information

There is a need to connect the Blackcraig and Margree windfarms to the transmission grid in the Ayrshire and Dumfries and Galloway areas. The line will run as a 132, 000 volt (132kV) single circuit heavy duty wood pole (HDWP) between the Blackcraig and Margree substations and then on to a point at Dalshangan approximately 2km to the north of the existing Kendoon substation. From this point, the OHL will head north on a new double circuit 132kV tower line to the proposed Meiklehill substation to the north east of Dalmellington. The proposed tower line will also carry the existing N route circuit thereby facilitating the removal of this OHL from north of Kendoon to Polnessan (2km north of Patna).

6.3. Environmental Issues

The key environmental issues for Energy Networks and their contractors are also the key issues that affect the correct planning and execution of all our projects:

- · Visual impact of electricity transmission and distribution system
- Land use impact and ground disturbance of installing OHLs and cables
- · Loss of oil contained in transformers, switchgear and fluid filled cables.
- Possible PCB contamination in oil (only existing sites).
- Emergency preparedness.
- Waste Management.
- Control of potentially hazardous materials and chemicals.
- · Impact of our 'works' on the local community.
- · Compliance with planning consent conditions.
- Protection of sensitive sites (wildlife & archaeological)

Energy Networks have implemented an Environmental Management System (EMS) certificated to ISO 14001 that enable them to undertake a consistent and methodical approach to their environmental issues. These issues are viewed as a baseline for Generic Environmental Actions during construction projects.

Energy Networks require that any contractor appointed as Principal Contractor on any major project must operate an EMS certificated to ISO 14001 or an equivalent documented system.

6.4. Generic Environmental Actions

Generic Environmental Actions are those common to the majority of projects. The documentation containing advice and guidelines (statutory and non-statutory) are contained in publicly available documents. Whilst such documentation must always be considered during the development of a project, there is a risk that some generic actions could be overlooked when focussing on the Site Specific Environmental Actions. So, rather than detailing each Generic Environmental Action, the standard documents referenced below, although not exhaustive, are those that Energy Networks expect any Principal Contractor to comply with.

22

- Sites

Site Specific Environmental Actions are those that are determined following either detailed Environmental Impact Assessment (EIA) and through set consent/planning conditions or some other form of environmental appraisal, e.g. a landscape and visual report. The Tables in Section 8 provide a summary of the actions that must be taken concerning the project before, during and after the construction phase (including monitoring). They are grouped chronologically so that it is relatively straightforward to identify actions required at each stage of the project. In addition, the actions are grouped according to the relevant environmental receptor (e.g. nature conservation, noise, etc)

Each of the actions described are numbered for future reference. The objective of undertaking the action is briefly stated and the action described. The responsibility for undertaking the action is indicated. Where an organisation is indicated, responsibility lies with that organisation's Project Manager. The criteria by which successful achievement of the action will be measured is stated (e.g. no valid noise complaints)

The Environmental Planning Engineer will incorporate any Consent Conditions and a list of all applicable mitigation measures following any environmental appraisal requiring implementation during construction. A column is provided to allow for a cross-reference of EMP actions with Consent Conditions or proposed mitigation actions. This column must be completed prior to the preparation of Contract Documents for all those actions which the Contractor or Energy Networks will be responsible. The Project Manager must then check the EMP against the project specification/contract document for completeness and accuracy.

A column is included for the individual actions to be 'signed off' upon successful completion (i.e. when the achievement criterion has been met). Signing-off completed environmental actions should be undertaken by the Resident Engineer and confirmed with the Project Engineer during construction, and by Energy Networks Project Manager during pre-construction and post-construction phases.

A column is provided to allow for a cross reference of EMP actions with Contract Document clauses. It should be completed during the preparation of Contract Documents for all those actions for which the Contractor will be responsible. The engineer preparing the contract documents should write the specification reference into this column. The Project Manager or his delegated person should then check against the Contract Document for completeness and accuracy.

Mitigation



- Environmental Protection Act 1990
- Environmental Protection (Duty of Care) Regulations 1991
- Water Environment (Controlled Activities) (Scotland) Regulations 2005
- Water Environment (Oil Storage) (Scotland) Regulations 2006
- Sewerage (Scotland) Act 1968
- Public Health (Scotland) Act 1897
- Health and Safety at Work, etc Act 1974
- BSI Code of Practice BS 6031:1987, Earthworks
- BSI Code of Practice BS 5228:1984, Noise Control on Construction and Open

• SEPA/EA Pollution Prevention Guidelines, including PPGs 1 to 6 and 8 • The Construction (Design and Management) Regulations 1994 ScottishPower Safety Rules (Electrical & Mechanical) 4th Edition, Issue 2, 1998

6.5. Site Specific Environmental Actions

6.6. Environmentally Significant Changes

The EMP may require amendment during detailed design due to more detailed investigation and subsequent changes to the scheme. Changes to the EMP should only be undertaken by a competent engineer, and should be approved by the Environmental Planning Group. The amended EMP should then be reissued with the final Contract Documents

If a change to a scheme is proposed during construction, the Resident Engineer must complete the Environmental Variation Register (Section 8) to record details of changes and environmental implications. This must include the following actions:

- Communicate as early as possible, to all that need to know, that a change is proposed.
- Identify who requested the change and why it was requested.
- Establish the environmental implications of the change (this should always be undertaken in conjunction with the Project Engineer and Environmental Planning Engineer to ensure both direct and indirect implications are identified).
- Establish the planning or consent implications of the change (again, this should always be undertaken in conjunction with the Project Engineer and Environmental Planning Engineer to ensure both direct and indirect implications are identified).
- Seek amended Method Statements and then seek approval from authorities where environmental consents are required
- If adverse implications are identified, consider and record alternative options to the proposed change
- Notify key consultees of change
- Issue the approved, up-to-date Environmental Variation Register to all personnel in possession of the EMP.

Responsibility for ensuring the EMP and Environmental Variation Register are updated rests with the Project Manager. However, responsibility can be delegated to the Project Engineer or Resident Engineer.

7. LIAISON AND PERMISSION REQUIREMENTS

7.1. The Project Team

7.1.1. Energy Networks

Project Manager (PM)		
Clerk of Works (CW)		
Resident Engineer (RE)		
Environmental Planning (EP)	Stephen Jack	
Wayleaves (W)		

7.1.2. Principal Contractor

D : (D' (
Project Director		
Project Manager		
D		
Project Engineer		
Project Engineer		

7.2. Management of the Works

7.2.1. Roles, Responsibilities and Communications

Role and Responsibility of Energy Networks

SPT are responsible for ensuring, through the incorporation of the provisions outlined in this document and through any Section 37 and planning consent conditions, that that all relevant consent conditions under the control of SPT are satisfactorily discharged thereby ensuring the environmental impact of the 'works' are kept to a practicable minimum. It has been confirmed that overall day to day responsibility for ensuring that all General and Site Specific Environmental Actions are adhered to will fall to SPT's appointed project manager.

Role and Responsibility of the Principal Contractor

The successful tenderer for the 'works' will be appointed Principal Contractor. They will in turn appoint a Project Manager to be responsible for ensuring that all works are undertaken strictly in accordance with the contract terms and conditions. The Project Manager will also be responsible for ensuring that all relevant Planning Consent Conditions under the control of the Principal Contractor are satisfactorily discharged.

The Principal Contractor will:

- · be considered by SEPA to have sole responsibility for pollution prevention measures being effected unless SEPA is notified formally that pollution prevention measures are vested with a 3rd party.
- · ensure that the 'works' are supervised, on a day to day basis, by the Principal Contractor's site representative, who will be permanently based on site for the duration of the works.
- Ensure that all site foreman/chargehands and their work gangs have access to the site specific tables of this EMP relevant to the section of OHL or substation they are working on
- Ensure that all personnel are familiar with SPEN toolbox talks and that these are readily available for inspection both in the site office and for work gangs onsite
- undertake regular site inspections to ensure that all 'works' personnel are aware of the mitigation measures and the relevant consent conditions detailed in this document
- take all reasonable precautions and undertake all measures within his control to ensure that all legal requirements are complied with and that no unnecessary damage, disturbance or pollution results from undertaking the works.

7.3. On-Going Liaison Requirements

During the pre-engineering phase, the following land-use, geotechnical, hydrological and ecological issues were identified and must be managed and monitored during the construction phase as per the requirements of the Site Specific Environmental Action Plan, detailed in Section 7.

- Protection of the General Public
- Protection of Watercourses
- Protection to Environmentally Sensitive Sites
- Measures to Control Traffic Disruption, Dust and Noise

	Breeding	SAM	Public	Transport	Soil	Helicopter	Road &	Tower	Protection of	Additiona
	Birds	Sites of	Water	Disruption	Storage	Flights	Rail	Movement	Watercourses	Identified
		Archael	Supplies				Crossings	(ILA)		Sensitive
		Interest								Sites
Scottish										
Government								*		*
Public										
Local										
Authorities			*	*		*	*	*		*
SNH										
	*								*	*
SEPA										
								*	*	
Historic										
Scotland		*						*		
HSE										
RSPB										
Rord	*									
Landowners										
			*	*	*			*	*	*
Tenents										
			*	*	*				*	

The on-going environmental liaison requirements identified during the pre-engineering phase (or environmental appraisal report) are highlighted in the table below. Contact details for these organisations are provided in Section 9.

Interested Party	
Scottish Executive	
East Ayrshire Council	
Dumfries and Galloway Council	
Landowners	
Scottish Natural Heritage (SNH)	
Scottish Environment Protection Agency (SEPA)	

7.4. Environmental Queries/Reporting Process

ioure	A	_	Environme

Ecology

Table 1: Typical Liaison Requirements

Principal Concern	Communication Method
All Parts of Works	Statutory Section37 consent
	application and request for
'Section 37 Consent'	deemed planning consent lodged
under the Electricity	Section 37 granted subject to
Act 1980 along with	conditions, (APPLIED TO BE
'Deemed Planning	CONFIRMED PRIOR TO
Consent' for the	CONTRACT PLACEMENT)
overhead line and	
associated works	
Statutory Consultee	As appropriate by the Principle
	Contractor. (FUTURE
Discharge of Consent	APPLICATION AS
Conditions.	APPROPRIATE)
Building Warrant and	
Traffic Management.	
Statutory Consultee	As appropriate by the Principle
	Contractor. (FUTURE
Discharge of Consent	APPLICATION AS
Conditions.	APPROPRIATE)
Building Warrant and	
Traffic Management.	
Land Purchase	As appropriate by Estates &
Agreement	Wayleaves (TO BE
	CONFIRMED PRIOR TO
	CONTRACT PLACEMENT)
Environmantal	As appropriate by SPT or
Controls.	Principle Contractor. Compliance
Licences	with required Licences.
Pollution prevention	As appropriate by the Principal
and Drainage	Contractor Compliance with
Discharge Consents	required Licences.

During the course of the works if any environmental issues arise with regards to archaeology, ecology or contaminated land the principal contractor should contact the SPT clerk of works who in turn should immediately report the issue/incident to SPT Environmental Planning in order that advice can be sought from the relevant specialist.



7.5. Consents & Conditions

Application to the Scottish Ministers for consent under Section 37 of the Electricity Act 1989 to install and keep installed the overhead line deviation required by this project has been lodged in November 2010. In addition, a request for deemed planning consent for the line under the Town & Country Planning Act 1997 was made to the Ministers at this time.

The following elements of the job are considered ancillary development under the Electricity Act and will also form part of the Section 37 applications:

- SPT's Blackcraig substation and 33kV cables to the Blackcraig windfarm
- Margree Substation
- 132kV cable between HDWP and new terminal tower at Dalshangan
- Cable sealing end compound at Dalshangan
- 132kV cables from new sealing end tower into Meiklehill substation

There will be a requirement for further consent applications to regulatory bodies such as:

- Building Warrants
- Planning consents for borrow pits (if required)
- Discharge Consents
- Planning consents for road works
- Protected species licences
- Licenses under the Controlled Activities Regulations (CAR)

The responsibility for these applications and the gaining of consent, whether required by the Principal Contractor or his sub-contractors will be the responsibility of the Principal Contractor. The Environmental Management Plan will seek to identify where further consent applications are required but responsibility ultimately rests with the Principal Contractor to ensure compliance with regulatory requirements.



Fig B - Environmental Process and Interaction of those Responsible for Delivery

Environmental Statement (ES)	Supplied by Client
Section 37 Consent (Conditions)	Supplied by Client
Environmental Management Plan (EMP)	Draft Supplied by Client (To be finalised following discussions between Client and Principal Contractor)
Environmental Control Document (ECD)	Supplied by Client (Information supplied in the form of 'Tool Box Talks' to be implemented into Contractors Environmental
Pollution Prevention Plans (PPP)	To Be Supplied by Principal Contractor
Construction Method Statements (CMS)	To Be Supplied by Principal Contractor
Working Procedures (WP)	To Be Supplied by Principal Contractor
Forrest Felling Plans	To Be Supplied by Principal Contractor
Construction Compound Plans	To Be Supplied by Principal Contractor
Helicopter Landing Compound Plans	To Be Supplied by Principal Contractor
Waste Plans	To Be Supplied by Principal Contractor
Traffic Management Plans	To Be Supplied by Principal Contractor
Construction Water Crossing Plans	To Be Supplied by Principal Contractor
Private Water Supplies Protection Plans	To Be Supplied by Principal Contractor
Stone Borrow Pit Plans	To Be Supplied by Principal Contractor (including reinstatement as required)
Environmental Management System	Required to be implemented by Principal Contractor and his sub-contractors as appropriate.

7.6. Environmental Control Documents for this Project : (List to be finalised)

8. SITE SPECIFIC ENVIRONMENTAL ACTIONS

(Example only, these to be developed following inclusion of consent conditions and agreement of relevant method statements, plans and pre construction surveys with relevant authorities)

8.1. Actions Prior to Construction

No	Objective	Action	Responsibility	Achievement Criteria	Consent/Mit Reference	Contract Ref
NAT	URE CONSERVATION			1		
8.1.1	All site staff to be fully briefed on ecological and protected species issues along route	SPT Toolbox talks to be included in site inductions	Principal Contractor& SPT Environmental Planning	Submission of toolbox talks to Principal contractor for inclusion in site briefing notes	37 and 39 (see EMP Appendix 11.5)	
ARC	HAEOLOGY & BUILT HERITAGE	ł	1	1		-
8.1.2	An appropriate scheme of archaeological investigation of sites which will be unavoidably and directly affected by the works will be included within the Written Scheme of Investigation (WSI) to be agreed with East Ayrshire and D&G Councils	Develop WSI in conjunction with SPT's specialist archaeological advisors	SPT Environmental Planning		8, 9 and 10 (see EMP Appendix 11.5)	
POLI	LUTION PREVENTION	1	1	1	1	
8.1.3	Substation site drainage and details of oil containment measures must be agreed with SEPA prior to site start	Detailed drainage layouts to be submitted to SEPA and D&G Council Planning for approval prior to site start	Project Manager / Principal Contractor	Copies of approved layout drawings and discharge consents to be submitted to SPT		
CON	STRUCTION SITE MANAGEMENT (Including Waste Management	, Noise/Dust Mana	agement and Traffic and Transport	Measures)	-
8.1. 4	Minimise traffic disruption during construction and dismantling works.	Traffic Management Plans to be agreed with local authorities	Principal Contractor	Written agreement from Local Authority	97, 105, 109, 110, 111, 113, 114 and 115 (see EMP Appendix 11.5)	







8.2. Actions During Construction

No	Objective	Action	Responsibility	Achievement Criteria	Consent/Mit Reference	Contract/ Ref	Completed (initial and date)
NAT	URE CONSERVATION						
8.2.1	Further disturbance to protected mammal species will be minimised by avoiding artificial lighting and commencing work no earlier than (at least) one hour after sunrise and finishing no later than (at least) one hour before dusk	Commitment built into construction method statement	Principal Contractor& Environmental Planning	Agreement of relevant CMS with SNH and evidence of implementation onsite	70 (see EMP Appendix 11.5)		
ARC	HAEOLOGY & BUILT HERITAGE						
8.2.2	N route towers to be dismantled and removed will be felled away from archaeological features, to prevent damage occurring to them	Commitment built into construction method statement and archaeological guidelines	Principal Contractor& Environmenta l Planning	Agreement of relevant CMS and evidence of implementation onsite	81 (see EMP Appendix 11.5)		
POL	LUTION PREVENTION			·		•	
8.2.3	Where required, temporary drainage measures will be implemented to prevent water ingress into any open excavations	Commitment built into construction method statement and pollution prevention plans	Project Manager / Principal Contractor	Agreement of relevant CMS with SEPA and local authorities and evidence of implementation onsite	86 (see EMP Appendix 11.5)		
CON	STRUCTION SITE MANAGEMENT (Including Noise/Dust Manage	ment and Traffic	and Transport Measures)			
8.2. 4	With regards to construction noise, all construction activities will be undertaken in accordance with good practice as set out in BS5228-1 and 2:2009	Commitment built into construction method statement	Principal Contractor	Agreement of relevant CMS and evidence of implementation onsite	56 (see EMP Appendix 11.5)		

9. ENVIRONMENTAL VARIATION REGISTER

	PROPOSED	ACTION REQUEST ENVIRONMENTAL REQUIRED APPROV					ROVAL FOR CH	VAL FOR CHANGE	
DATE	CHANGE/EVENT	REF NO.	BY	IMPLICATION	PROJECT MANAGER	ENVI. PLAN ENGINEER	CONSENTING BODY	CONSULTEES (Specify Who)	PF

10. KEY CONTACTS DETAILS

10.1. SP EnergyNetworks Ltd

Contact Address New Alderston House Dove Wynd Strathclyde Business Par BELLSHILL ML4 3FF

10.2. Local Authority

Contact Address Dumfries and Galloway Council

10.3.

Contact Address
Scottish Executive
Energy Consents Unit
Meridian Court
5 Cadogan Street
Glasgow G2 6AT
SNH
19 Wellington Square
Ayr
SNH
Newton Stewart

HSE

11. APPENDICES

11.1.	Planning Co
11.2.	The Water E 2005 – A Pra
11.3.	Archaeologi
11.4.	Environmen
11.5.	SPT Toolbox
11.6.	Grantor's C

whole suite of toolbox talks

	Name	Designation	Tel No.		
ark					
7					
	Stephen Jack	Environmental			
		Planning			

	Tel No.	Contact Address	Tel No.
y		East Ayrshire	
		Council -	
		Planning Department	
		6 Croft Street	
		Kilmarnock	
		KA1 1JB	

Consultees and Interested Parties

Tel No.	Contact Address	Tel No.
	SEPA East Kilbride	
	5 Redwood Crescent	
	Peel Park	
	EAST KILBRIDE	
	G74 5PP	
	SEPA Ayr Office	
	Historic Scotland	
	W (CC (1 1	
	West of Scotland	
	Archaeology Service	

onsent Conditions & Section 37 Conditions

- Environment (Controlled Activities) (Scotland) Regulations actical Guide
- ical Guidelines
- ntal Mitigation Measures (ES appendix)
- x Talks
- harter

NOTE: These are only selected examples and do not represent the

6. Soil and Aggregates

WHAT? Soil is made up of minerals that come from rocks below or nearby. (or further afield if carried by glaciers to an area in the last ice age) and decomposed organic matter. The proportion of each of these is important in determining the type of soil that is present. Other factors such as climate, vegetation, time, the surrounding terrain, and human activities are important in influencing how soil is formed and the types and quality of soils. Aggregates are mineral materials, such as sand or stone, used in civil engineering WHY?

Soil supports diverse ecological systems and habitats and provides the growing medium for crops. It also absorbs rainfall, delaying its movement into watercourses, and filters or transforms chemicals that pass through it, preventing pollution of water or air Any damage to soil quality affects the long-term functioning and has an impact not only on ecological diversity and the performance and visual quality of the vegetated areas but can have impacts off-site such as on flooding, aquifer recharge and water quality It is therefore essential that impacts to the resource are reduced to the minimum necessary for the works and that all work is undertaken in accordance with best practice

Do Not Mix topsoil with subsoil lavers

Store soil in wet areas. If the storage

area is wet it will need to de drained

compact and destroy soil structure

Store topsoils in bunds over 1.5m

Store soils carelessly - plan

restoration in advance

Track over stored soils-this can

- Plan soil stripping carefully in advance Follow all identified mitigation requirements for the location to be stripped
- Check whether the project archaeologist should be on site during the soil stripping
- Strip, segregate and store within the identified site working areas for re-use Consult the team leader/site manager
- and discuss with landowner/occupier in advance if space does not allow this Keep records of where all removed
- soils are stored including the different layers
- Create separate bunds for the different layers which are removed
- Locate soil storage bunds away from watercourses (30m)
- Protect long-term mounds from runoff/ponding by a cut-off ditch linked to discharge facilities
- Locate storage bunds away from other site operations and traffic to prevent damage
- **Dispose** of any stored soil that are contaminated in accordance with the contaminated land plan
- Form bunds of no more than 1.5m and design to shed water
- **Check** the need for measures to reduce dust and potential nuisance
- Return soils to their original location



2. Protected/Designated Sites

Sites¹ with important habitats, plant and animal species or natural landforms can be given special protection under legislation at the regional, national or international level according to their importance, rarity or typicalness

International/European

- Special Area of Conservation (SAC) strictly protected sites designated under the Habitats and Species Directive (92/43/EEC). Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds)
- Special Protection Area (SPA) strictly protected sites classified in accordance with Article 4 of the EC Directive on the conservation of wild birds 79/409/EEC, the Birds Directive. They are classified for rare and vulnerable birds, listed in Annex I to the Birds Directive, and for regularly occurring migratory species
- RAMSAR (Wetlands of International Importance) Wetlands of International Importance designated under criteria agreed at the Ramsar Convention. Iran 1971
- World Heritage Sites sites of outstanding universal value which meet at least one out of ten selection criteria set out in the Convention Concerning the Protection of the World Cultural and Natural Heritage 1972

National

- Area of Outstanding Natural Beauty (AONB) (England, Wales and Northern Ireland) precious landscapes with distinctive characters and natural beauty that are so outstanding that it is in the nation's interest to safeguard them
- National Parks (NP) legislation to create National parks in Scotland was passed by the Scottish Parliament in August 2000, and National parks were established in Loch Lomond and The Trossachs in 2002 and in the Cairngorms in 2003. There are no current proposals for further National Parks in Scotland at present, though some work has been progressed on the development of proposals for coastal and marine National Parks.
- National Nature Reserve (NNR) designated under the National Parks and Access to the Countryside Act, 1949 to protect the most important areas of wildlife habitat and geological formations in Britain and as places for scientific research
- National Scenic Area (NSA) (Scotland) areas of land considered of national significance on the basis of their outstanding scenic interest which must be conserved as part of the country's natural heritage
- Sites of Special Scientific Interest (SSSI) an area that has been notified as being of special interest due to its flora, fauna or geological or physiographical features under the Wildlife and Countryside Act 1981 and the Nature Conservation (Scotland) Act, 2004
- Schedules Ancient Monuments (SAM) (scheduled monument) is a cultural heritage site of national importance which is protected under the Ancient Monuments and Archaeological Areas Act 1979
- Listed Buildings statutorily protected buildings of special architectural or historic interest, designated under the Planning legislation

Regional/Local

- Regionally Important Geological Sites (RIGs) Geological sites of regional importance,
- considered worthy of protection for their educational, research, historical or aesthetic importance Regional Park (RP) - are large areas of attractive countryside designated and managed by local authorities, with support from SNH which lie close to Scotland's larger towns and cities, and which
- are therefore popular for outdoor recreation Local Nature Reserve (LNR) - place with special local natural interest, set up to protect nature,
- and for people to enjoy and appreciate Sites of Importance for Nature Conservation (SINCs) - A non-statutory designation made by a
- local authority to protect local sites of interest to nature conservation Specific protection measures are given to these protected sites and must be complied with

during construction activities

WHAT?

restoration phase.

WHY?

Construction can leave unsightly areas, which are difficult to use for their previous land use, or r be difficult for plants to recolonise because of compaction. Some works may have been carried in designated areas where particular conditions apply or agreements may be in place with landowners/occupiers to for example ensure all field drains are left in good condition etc. It is important to leave as little trace as possible on site as this is good for the environment and gooc the reputation of the company. **Do Not** Plan works to avoid intrusive works where Leave sites which are not fully restored possible - there will be less restoration required Ignore the requirements of the Undertake restoration works in consultation landowner/occupier and/or any conditic and specific measures which are require with landowner(s) Avoid cut and fill when implementing access for restoration tracks Ignore detail-check edges of paths and Plan works to use machines which will cause the least environmental damage and tracks etc reduce the need for restoration Retain natural features to aid in successful Replace soils in the wrong order or mi: restoration them **Re-integrate** the site with the surroundings **Replace** soils and peat in the same order as Replace stonewalls with stones in the wrong orientation removed Keep turfs where possible and replace after the works Track over land unnecessarily to avoid Store the seedbank carefully for re-use in compaction restoration works Take care to restore the natural landform of the site and avoid leaving unnatural engineered features Pay attention to detail! Careful works (by hand where necessary) will hep restore the site successfully and leave least visual damage Use cut timber, boulders etc to help naturalise the restored areas placing them in natural orientation Re-instate any stone walls, hedges and/or fences affected by the works Take opportunities to enhance biodiversity when planning restoration works Ensure all works are covered if possible and

- avoid leaving unnecessary exposed concrete, pipes etc
- Check the landowner/occupier is content with the restored site



4. Site Restoration

Reinstating sites where works have been undertaken to as close as possible to their original condition before the works. Taking photographs in advance of works may help to guide the

WHAT?		WH/	AT?			
Archaeological sites are the physical remains of our past. Man	y such remains relating to ea	Bade	gers are widespread throughout the UK a	and c	can be found living in woodland, road	
human communities are either on, or close to, the surface, alth	ough they may be buried in p	and railway embankments, refuse tips, under buildings and in hollow trees				
Once an archaeological site has been destroyed it is gone fore	ver. Once uncovered, it is	Curr	ent threats to the UK badger population	inclu	de:	
important that, archaeological remains are expertly examined a	ind, where appropriate,	• r	oad traffic accidents			
protected. The perception that archaeological finds on construction sites will cause major delays to a programme is widespread but incorrect. If addressed at the right time and in the			legal persecution			
			oss of habitat through development			
right way, finds may not necessarily affect the progress of work	s. It is not just buildings and	WHY	?			
their foundations, but also artefacts such as jewellery, pottery a	ind coins, as well as bones an	Avo	d Prosecution: It is illegal to carry out a	any c	construction work close to a badger sett	
skeletons, that need expert examination before removal		with	out taking steps to positively avoid dama	ge ar	nd without an appropriate licence.	
WHY?		Bade	gers and their setts are protected. It is a	n offe	ence to:	
Avoid Prosecution: It is illegal to damage some protected mo	numents, archaeological	•	ill, injure or take a badger			
structures and human remains. Contractors are not expected to	be archaeological experts, t	• (listurb a badger when it is occupying a s	ett		
we all have legal obligations relating to archaeology and cultura	al heritage.	• i	nterfere with a badger sett by damaging	or de	estroying it obstruct the access to, or	
Avoid Environmental Harm: Archaeology is an important part	of our heritage and valuable	⁶	iny entrance of, a badger sett			
irreplaceable remains can easily be damaged on construction s	sites through:	Alic	ence must be obtained for the following	activ	vities around active badger setts:	
excavation of foundations		+ L	Jse of heavy machinery within 30m			
 driving heavy vehicles over buried sites, which can cause erc 	sion	- I+ I	ight machinery within 20m			
 allowing vehicles to bog down and make deep ruts which car 	destroy the buried parts of sit	• l	Jse of hand tools within 10m			
undertaking works which may affect the setting of monument	s or listed buildings	It is i	to excuse in law to be unaware of badge	ers or	r their protected status. If work is likely	
Do	Do Not	to in	pact on badger then a licence(s) must b	een	obtained from the appropriate	
 Ensure all of the required consents are in Assume 	that any artefacts or features	envii	onmental regulator to enable construction	on of	works that would otherwise contravene	
place before working in or near designated discovered	ed are unimportant	the la	aw. This licence must remain valid at	all th	mes during the construction period	
monuments × Remove	any finds' such as coins,		Do		Do Not	
Protect any known archaeological pottery, c	or bones from the site. This is	✓ I	Ensure that if applicable, a pre-	×	Use machines within 20m without an	
features in accordance with contract and illegal		0	construction survey is undertaken		appropriate licence	
planning conditions	ke any work adjacent to area:		within 6 months of works beginning on	×	Hand dig or clear scrub within 10m of	
Be prepared for unexpected finds whether archaeol	ogical importance without		ite prior to works beginning		a badger sett before checking with your	
or not known archaeological or historical consider	ng the risk that damage may	× 1	stop work immediately and inform your		team leader/site manager whether a	
teatures have been identified on your site caused.	For example:	t	eam leader/site manager if you		licence has been obtained for this	
LOOK OUL IOF DUITIED OF DIACKETED VIDIAT VIDIAT	ion may cause cracking	0	liscover a badger sett or see a badger		purpose	
material, brick of tile fragments, coins, dewa	tering may cause a preserve		on your site	×	Direct security lighting at setts	
timber isiste er post hele, brisk er stope	re to settle and crack		Employ best-practice working methods	× .	Store chemicals close to setts or	
timber joists of post hole, blick of stone Control	nicles through protected sites		b reduce disturbance at all locations		badger paths	
Step work and inform your team leader/	sites without necessary conse		vnere badger are identified (e.g. use of	×	iry to touch or disturb any badger	
• Stop work and inform your team leader/ in place		F	biant which is holsy because it requires			
site manager if you think you have Plant in a	designated areas without	r i	naintenance will not be allowed)			
discovered archaeological realures consultin	g with the environmental	V I	rian works to works to avoid			
Protect the site by lencing it on regulator	S		innecessary disturbance, which could			
Take the advice provided by any appointed areheoologist						
appointed archaeologist	and the second s	V I	Ensure any licence for badger		A MARTIN AND	
	and the second	0	listurbance remains valid at all times			
			iuring the construction period		1991	
	a fair and the				A A A A A A A A A A A A A A A A A A A	
	and an and a second					
	and the second					
I						

5. Archaeology

8. Badger

10. Birds WHAT? All birds, their nests and eggs are protected by law with some rare species e.g. barn owl, birds of prey and kingfishers carrying further protection against disturbance. Birds can be found nesting in unusual places on site, including on scaffolding or machinery, if this occurs the equipment cannot be used until the birds have finished nesting and the area may need to be sealed off to prevent disturbance Bird breeding season each year may be any time between March to August but is not necessarily within these dates. A mild winter or autumn may mean that some birds or particular species may nest earlier or slightly later in the year WHY? Avoid potential prosecution: It is an offence to: Intentionally kill, injure or take any wild bird • Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built Intentionally take or destroy the egg of any wild bird Have in one's possession or control, any wild bird (dead or alive) • Have in one's possession or control, an egg or part of an egg which has been taken in contravention of wildlife legislation Intentionally disturb any wild bird listed in wildlife legislation while it is nest building or is at (or near) a nest with eggs or young; or disturb a dependant young of such a bird Do Not Ensure that if applicable, a pre-**Handle** a nest if a bird is present construction survey is undertaken regularly in or around e.g. a tower or within 6 months of works beginning substation on site prior to works beginning **Handle** a nest if eggs are present ~ Stop work and inform your team leader/site manager if you think you **Disturb** or cut down trees or shrubs, have discovered a "live" nest if nesting birds are found - to avoid accidental disturbance do not fell or clear any trees or shrubs in the bird breeding season



15. Freshwate	r Pearl Mussel	32. Working	in Blanket Bog
The freshwater pearl mussel live buried or gravel in clean, fast-flowing and unpolluted Originally widely distributed throughout Sco lowlands and scarce everywhere except for the world's known remaining populations no The decline in populations may be due to a siltation and eutrophication of rivers. River engineering and fishery improvement threat. Forestry operations, acidification, ef dip are further threats to the declining popul WH? Avoid potential prosecution: The freshwa European law It is an offence to deliberately or recklessly	partly buried in coarse sand and fine rivers and burns otland, it is now extinct in most of the r a handful of Highland rivers. Up to half ow occur in Scotland number of factors, including increasing es continue to pose a serious localised fluent from fish farms and chemical sheep lations ater pearl mussel is protected under to harass/ disturb, capture, injure or kill	 WHAT? Blanket bog is rain-fed peatland habitat formi rainfall and a low level of evapotranspiration. the UK but much less so in other parts of Eur average of 0.5-3m being fairly typical but dep Blanket bogs are important habitats for a range archaeological and palaeoecological material and sporting activities. Blanket bogs have an important as a carbon store although this is s WHY? Avoid environmental harm: Studies in Scott blanket bog between the 1940s and the 1980 afforestation. Further losses of extent and co grazing, peat cutting and atmospheric pollutio is important to protect the areas of blanket bog level (there is a blanket bog priority action planet) 	ng in areas where there is a climate of high It is important semi-natural habitat extensive in ope. Peat depth is very variable, with an this in excess of 5m are not unusual ge of animals and also act as stores for . The peatlands may be used for rough grazin important hydrological role and may be till open to some debate and suggest a 21% reduction in the extent of s. The greatest single cause of this reduction is ndition can be attributed to drainage and heav n, resulting in significant habitat change. Thus g that remain and this is recognised at Europe n)
recklessly a European protected species w	ithout an appropriate licence	Contact the landowner/occupier in	Create drainage ditches at the edge of
obtained from the Scottish Government or en of works that would otherwise contravene the times during the construction period	vironmental regulator to enable construction e law. This licence must remain valid at all	 advance of any works Contact statutory agency if advised to do so by the project ecologist. A detailed method statement may be required in 	access tracks unless essential for the stability of the track – calculate requirements for stone on floating roa carefully and plan to reduce traffic on
Do	DO NOL	advance of works beginning	the road to minimum necessary for the
 Ensure that if applicable, a pre- construction survey is undertaken within 6 months of works beginning on site prior to works beginning Stop work and inform your site manager if you think you have discovered a freshwater pearl mussels on your site Employ all agreed mitigation measures/best-practice working methods to reduce disturbance at all locations where freshwater pearl mussels are identified Ensure any licence for freshwater pearl mussels disturbance remains valid at all times during the construction period Undertake all works in compliance with SEPA/EA Pollution Prevention Guidelines Disperse drainage from dewatering operations and silt contaminated water over vegetated land 	 Ford waterbodies with vehicles or plant Store oil within least 30m of any waterbody and 10m from any watercourse Dewater waterbodies unless absolutely necessary and then only with agreement from SEPA/EA and SNH/Natural England Risk killing or disturbing freshwater mussels without a licence 	 Check if any sporting activities could be disrupted by the planned works (eg stalking) Avoid working in blanket bog wherever possible Consider depth of peat and best working methods if working in blanket bog cannot be avoided Use temporary floating roads in areas of peat over 1m in depth Plan to use low ground pressure vehicles Check other interest in advance eg breeding birds, archaeology etc Avoid cut and fill operations wherever possible as these will affect the hydrology of the bog Design works to ensure water passage is not impeded and that the hydrology of the bog will be maintained (draw on specialis advice from project team as required) Take advice from the project ecologist to define specific mitigation to restore peat surface Use removed turfs in restoration Monitor restored areas and take remedial action with appropriate advice as required Mark work sites to avoid unnecessary 	 Works Break the surface vegetation; if this cannot be avoided store all removed materials for re-use in restoration Track across blanket bog more than essential for the safe delivery of the works to avoid unnecessary compression even on floating roads Ignore problems with floating roads Leave stone at the end of the works-remove carefully

WHAT? Areas with trees and shrubs which may be deciduous or coniferous; native and/ or introduced species; native, semi-natural or planted. Woodlands are important features of the British landscape and may be associated with a rich ground flora and many birds and other animal species.

WHY?

bats etc).

- Plan works to avoid ✓ woodlands where possible
- Ensure agreements in place with the landowner/occupier before starting work Plan works to avoid unnecessary loss of
- trees Seek to avoid loss of mature trees and take regenerating scrub in preference
- Ensure tree-cutting works are
- undertaken by trained and competent site staff using the correct safety equipment Seek to retain trees and lop, top or reduce the tree crown in preference to felling where possible
- Identify species where coppicing may be an alternative to felling Take advice from the team leader/site manager when lopping or topping Ensure all necessary ecological surveys
- have been undertaken before starting work and implement all identified mitigation (this may include timing constraints)
- Plan works taking account of safety and the need to not obstruct paths and
- bridleways unnecessarily Remove felled material unless advised by the team leader/site manager to leave timber on-site
- **Remove** tree stumps to below ground level unless advised to leave in place Plan access to avoid disturbance
- wherever possible



43. Working in Woodland Areas

Trees mature slowly and cannot be 'replaced' guickly. Unnecessary loss may affect biodiversity, landscape and visual amenity. Trees are important features and may be landmarks in an area. Some woodland may be protected by designations and some trees may be protected by tree preservation orders (TPOs). Birds on the nest are protected and woodlands may provide habitat for other protected species (badger, squirrel, pine marten,

Do Not

	d working in	I
--	--------------	---

x

- Fell trees unnecessarily × Fell trees without checking all x permissions in place and surveys complete
- Ignore any identified mitigation measures
- Construct access tracks close to trees where this could undermine them
- Dig holes close to trees where this could undermine the roots (rule of thumb is that roots may spread to the circumference of the tree crown)
- Fell or undertake tree works unless you are qualified to do this and have all necessary safety equipment
- **Obstruct** paths and bridleways
- Disturb wildlife more than necessary
- Disturb breeding birds on the nest ×
- Disturb protected species without all necessary permissions
- Uproot any wildflowers





1. Pollution Incident Prevention

WHAT? Energy Networks activities in depots, storage facilities and construction projects have the potential for spillage of polluting materials to land, controlled waters or drainage systems. This has the potential to cause damage to land or water, drinking water sources, or wildlife species and habitats. Our incident profile includes failure of and damage to transformers and fluid filled cables, failure of hydraulic lines, fuel systems and materials handling spillages

WHY?

Preventing and preparing for incident response is best practice and will ensure regulatory requirements are met and risks minimised. Providing a prompt, effective response will reduce pollution, minimise clean up efforts and costs and reduce regulatory risks. For larger projects and activities operating under planning consent, EA / SEPA licence, permit or consent prevention response arrangements are a legal requirement. In Scotland construction works in or close to watercourses may require consent from SEPA under the Controlled Activities Regulations 2005

Do Not

- Risk assess pre start the possible types of pollution incident involved in the job or project.
- Consider the substances involved. their quantity, associated hazards, condition of containment, proximity to water courses and other receptors, local drainage systems, weather conditions, gradients and likely migration times
- **Provide** appropriate storage and containment systems meeting legal requirements for oils or other substances. Consider legal and other standards for storage systems
- **Provide** spillage response materials appropriate to the nature and volume of substances, pathways and receptors
- Provide effective communications to summon help or report the incident and make staff aware of the on site provisions
- Provide training in incident first response for staff involved in handling materials
- **Consult** with the environmental regulators regarding sensitivity and proximity of receptors and any specific legal requirements
- Compile and communicate a plan for what to do should the worst happen

Fail to plan for the possibility of incidents

Fail to replace spill response materials used from kits



2. Pollution Incident Response

WHAT? Energy Networks activities in depots, storage facilities and construction projects have the potential for spillage of polluting materials to land, controlled waters or drainage systems. This has the potential to cause damage to land or water, harming water resources required for drinking, or wildlife species and habitats. Our key pollutants include insulating, cable and hydraulic oils, battery acid and gritty trench de-watering residues WHY?

Damage to species, habitats and controlled waters can be long lasting and difficult to remediate. Environmental regulators will normally apply a "polluter pays" principal to those responsible requiring the offending material to be removed and environmental guality restored. Incidents may be an offence under water protection and or wildlife law, with stiff penalties available for companies or individuals

Stop and risk assess the situation.

remember there may be associated

safety risks. Identify the substance,

Undertake electrical or mechanical

isolation required and wear adequate

PPE to ensure your personal safety

any contaminated ground. Network

reporting centres have contacts with

should be contacted for follow up

leader/site manager and network

management centre stating what has

been spilled, how much has been lost,

where it is, what action you have taken,

if it has escaped into the ground, drains

Ensure that any locally affected third

parties such as landowners and

Report spillages to your team

support

or surface waters

regulators are notified

emergency response contractors, who

how much, is it contained, can it

escape and if so where to

Do Not

Ignore or delay response to spillages. The longer they are left the more damage they can do, pollutants can migrate increasing cost of clean up

- Fail to collect and responsibly dispose of spill response residues such as absorbents
- Fail to report the use of spill kits and organise replacement items



disposal sites are appr licensed Complete all necessar

WHAT?

recycling

WHY?

the materials available

transfer consignment r Ensure that, if you are hazardous wastes, suc

- chemicals, oils or conta you comply with the ex responsibilities such as waste transfer consign Produce and archive
- records for the appropriate period

Stem the flow of the spill at source if possible by turning off valves, or blocking holes in drums or equipment Contain the spill close to the source by using emergency spill kits. Alternatively you may be able to use other materials available nearby, dig a slip trench in front of the spill, or use earth or sand mounds to block the path Get help if needed, you may have

5. Waste Management

Waste includes materials that are unwanted and we are required to discard. Where possible we should find a beneficial use for waste and prioritise recovering and

Waste can range from office and food waste to construction materials, waste oils, asbestos and clinical waste that will all require careful management

All those who produce or handle wastes from demolition, earthworks and construction activities have legal responsibilities - Duty of Care - for its safe keeping, transport and subsequent recovery or disposal and the keeping of records Waste can be hazardous/special, non-hazardous, inert, active or even clinical waste and requires segregation by waste type

Avoid prosecution: Duty of Care is a legal requirement under waste law. Failure to comply can result in an unlimited fine. It is also illegal to mix hazardous/special waste with non-hazardous waste

Avoid environmental harm: Proper waste management minimises the environmental impact of disposal of waste to landfill. Segregation at source enhances opportunities for reuse, recovery and recycling by improving the quality of

Reduce costs: Effective segregation can reduce costs by turning wastes into useful materials that can be reused on site or sold to specialist contractors rather than paying for disposal at landfill

Do		Do Not
Follow the waste hierarchy: reduce,	×	Let materials become damaged so
reuse, recycle		that they have to be replaced
Adhere to the site waste		
management plan (if available)	×	Mix waste types at the site
compiled for the site/project		
Put wastes in the correct containers –	×	Mix hazardous wastes with other
look out for standardised signage		types of wastes
denoting skip contents		
Use covered skips where possible to	×	Put wastes into the wrong
prevent dust creation and damage to		containers
waste materials that could be		
reused/recovered	×	Burn or bury waste – it's illegal
Ensure that all waste carriers and		
disposal sites are appropriately	×	Leave waste containers uncovered
licensed		or allow waste to blow around and
Complete all necessary waste		cause litter
transfer consignment notes fully		
Ensure that, if you are dealing with		
nazardous wastes, such as aspestos,		Charles in succession of the local division of the local divisiono
chemicals, oils or contaminated soils,		A DESCRIPTION OF THE PARTY OF T
you comply with the extra legal		State of the second sec
responsibilities such as detailed		the second s
waste transfer consignment notes		Contraction of the second
Produce and archive waste transfer		A state of the sta

6. Waste Segregation and Classification

WHAT?

There are many different types of waste produced by our business, each is classified in law by a general description and a six digit code taken from the European Waste Catalogue (EWC). We produce a wide range of wastes from paper and cardboard to scrap metals and equipment, to more hazardous, oils resins and chemicals. The Environment Agency publishes a guide to the use of EWC codes. The main code groups for Energy Networks use are Categories 13 Oil Wastes, 15 Packaging and Absorbents, 16 Discarded Equipment, 16 Batteries, 17 Construction Wastes, and 20 Municipal Wastes. Special and hazardous waste codes will be suffixed by an asterisk * e.g. 13 06 07*

WHY?

This is to ensure that waste can be disposed of safely and legally, whilst maximising the potential for recycling. The law requires segregation of special and hazardous wastes from each other and from non hazardous wastes. Segregation of waste makes it easier to recycle, avoiding costly landfill and taxes. There are mandatory legal requirements for some waste types such as packaging, electrical equipment and batteries which must be met. The use of EWC codes is mandatory for transfers of wastes and must appear on waste transfer notes. Some wastes such as scrap have residual value if segregated so segregation will provide best value

	— — — — — — — — — — — — — — — — — — —		
~	Segregate your wastes at the workplace avoid mixing different types of wastes together	×	Mix hazardous wastes with other wastes
~	Look for segregated waste storage arrangements at waste transfer facilities	×	Ignore signage adjacent to skips and containers
✓	Use separate facilities provided for	×	Use public street bins for disposal



- **Use** separate facilities where provided for non hazardous, cardboard, plastics, metals, wood etc
- Look for signs by skips giving guidance on acceptable contents and comply with the guidance
- Provide correct EWC codes when completing waste transfer documentation



nert

1. Nuisance and Statutory Nuisance

WHAT? Our activities may have the potential to cause negative impact on surrounding communities. This may generate complaints from individuals, groups of individuals, special interest groups or environmental regulators. Complaints usually stem from proximity to our activities or asset operations. Activities such as noise from transformers or construction activity, weeds, litter or fly tipped wastes on our land. light pollution, vibration, tree cutting or odours may all cause offence. General nuisance should be considered in the light of what is reasonable in the circumstances and timescales involved

Statutory nuisance is set out in law and may involve regulatory action for unreasonable and persistent nuisance such as noise, dust, odours, smoke, vibration etc. Local authorities are the regulatory bodies and may declare a nuisance as a statutory nuisance and may issue an enforcement notice

WHY?

The communities surrounding our assets and workplaces are also our customers it is just good business to not to cause offence if we can help it.

Local authorities, the Environment Agency, SEPA or other regulators may become involved in complaints regarding nuisance and have statutory powers in some instances to require abatement of the nuisance within certain time frames. Failure to meet these requirements may lead to prosecution

- Try not to cause unnecessary noise, **x** Be rude to any customers vibration, odours, or littering of
- worksites, substations or depots Take note of any local complaints
- received from surrounding customers Take direct action where possible to remove or reduce the problem
- Apologise in advance on planned works where likely nuisance cannot
- be avoided and seek options for compromise with customers Take note of any pre agreed restrictions imposed by planning
- conditions etc or agreed mitigation Be courteous to customers even though they may be irate or even
- offensive Pass any communications especially any statutory notices issued by regulators to you team leader/site
- manager Learn by what worked well at previous jobs

Ignore any complaints or regulatory notices

Do Not

Ignore lessons learnt elsewhere



- Use temporary so fencing etc) if noi issue Plan access whe agree proposals local authority

WHAT?

WHY?

•

significant impacts

- Plan works to ma hydrological patt off is successfully treated prior to di
- Locate all oil and storage tanks on with an imperviou retaining at least volume
- Hold adequate oi containment mate that staff are brief this effectively
- Undertake regula ensure good hou



2. Setting up and Managing a Site

Any works site can have serious implications for the environment and could lead to

Factors such as locating storage areas for hazardous materials and wastes, locating drains and run-off, traffic access, noise and foul drainage can all bring their environmental consequences

Environmental impacts could arise from:

- Loss of or disturbance to features of ecological importance
- Loss of or disturbance to features of archaeological significance
- Nuisance caused by: Visual intrusion, noise or dust at nearby properties
- Traffic congestion on access roads Water quality affected by the effects of run-off from hard standing on local
- hydrology and habitats and foul drainage

Do		Do Not
Avoid features of ecological	×	Disturb wildlife unnecessarily
importance e.g. identified important	×	Allow dust to become an issue and
habitat, bird and other animal areas		ensure any dry soils are dampened
Identify and avoid features of		as necessary
archaeological importance	×	Allow access roads to become dirty,
Consider visual effects of		always clean as necessary
infrastructure at residential properties	×	Allow surface water and drainage to
and take advantage of natural		discharge into nearby streams.
screening wherever possible		Consider need for and design where
Use temporary screening (bunds;		necessary cut-off ditches
tencing etc) if noise is likely to be an		surrounding establishment areas
Issue		and seek advice from environmental
Plan access when choosing sites and		regulators on design, and where
agree proposals with the relevant		water from the drains should
IOCAI AULIIOIILY	6	discharge to
hydrological patterns and onsure run	^	water in locations where there is no
off is successfully attenuated and		mains always use self contained
treated prior to discharge		chemical toilets and seek advice on
Locate all oil and hazardous material		disposal
storage tanks on impermeable bases	x	Allow litter and waste storage to
with an impervious bund capable of		become a nuisance. Keep the site
retaining at least 110% of tank/drum		tidv
volume	x	Allow any clutter to build up keep
Hold adequate oil absorbent and		site tidy and well organised
containment materials and make sure		CONTRACTOR OF THE OWNER.
that staff are briefed on how to use		and the state of the
this effectively		
Undertake regular site inspections to		
ensure good housekeeping		and the second s
		and the second se
		and the second







Blackcraig and Margree Windfarms Grid Connection **Technical Appendices**

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Forestry B.O

B.1 Forestry site notes

- 1 As described previously, the proposals for the forestry comprise two distinct elements, the felling required to achieve the required clearances for the statutory wayleave corridor (committed mitigation) and those that will be sought by agreement with the landowner outwith the corridor to minimise the potential effects of windthrow and accommodate woodland/forest design principles.
- 2 Only those areas within the wayleave corridor comprise the committed mitigation associated with the overhead line and other areas referred to below indicate the proposed intent of SPT's negotiations with the relevant landowners to further assimilate the overhead line within the woodland/forest/landscape.

B.2 Site No 001 - Corriedoo

Site Name	Corriedoo Forest
Location	A702 Blackcraig
Grid Reference	268982 583560 to 268849 583677 (215m)
Designations	None

Description

1 Mid rotation Sitka spruce, planted 1989 and 1993, age 16-20yrs, Open spacing towards road with amenity broadleaves scattered along roadside. FDP Felling date: 2036-2042. Commercial conifer plantation, established on relatively fertile soils, plantation on relatively flat/undulating topography.

Effect

- 2 This short section of route runs from Blackcraig windfarm to the A702 crossing.
- 3 Felling will be required along width of wayleave along section of remaining forest.
- 4 Felling required to achieve minimum 80m wayleave clearance: 1.94ha.
- 5 Minor Not significant

Mitigative Measures

6 The location and tree heights of the existing plantations are such that it is considered that the imposition of an overhead line corridor would not unduly predispose the remaining trees to extensive windthrow in the p93 crop, although some windblow is likely in the p89 areas Felling proposals are designed to effect relatively small felling coupes to local windfirm and landscape and visual boundaries. Additional felling outwith the 80m wayleave is proposed only in p89 crop, extending the felling to windfirm edges to pre-empt the onset of windthrow.

- 7 The Study Area within the larger Corriedoo forest is managed under a Forestry Commission Forest Design Plan, which is recognised as requiring revision.
- 8 However the FDP will require little change as a result of the routeing of the OHL, and the areas affected being located at the very edge of the FDP area.
- 9 The plan has not required changing as a result of the presence of the windfarm.

In summary:

- Route corridor to best fit underlying topography.
- Retain scattered broadleaves along roadside.
- Utilise open aspect of conifers adjacent to the road
- Route utilises existing rides and open space to create new woodland boundaries for felling limits, and where unavailable, identify local gaps in crops for felling limits.

10 Additional landscape felling required and felling to achieve windfirm edges: 1.45ha.

11 Total felling: 3.38ha

Length of Wayleave	Designation	Potential area of woodland affected (all within wayleave)	Category of wayleave treatment
215m	None	3.38ha	Clearfell conifers

Site No 002 - Margree **B.3**

Site Name	Margree Forest
Location	A702 Margree
Grid Reference	268707 583717 to 266434 586528 (3815m)
Designations	None

Description

- 1 The route passes from the A702 northwards for some 1546m to the proposed Margree windfarm substation and there, north-eastwards a further 2148m before exiting the forest.
- 2 Leaving the A702 the crop is Sitka spruce p86 for some 1050m of Whitecairn hill following the route of the access road and the Regland burn before entering the Margree Windfarm site and the proposed sub station site. Within the windfarm site boundary, much of the forest that is scheduled to be felled for the windfarm has been cleared. Retained areas are located largely on the western edges of the forest.
- 3 The route follows the eastern side of much of this retention area, through open ground and clearfelled ground together with areas of p74 Sitka spruce, and some p74 larch. Overall the forest is typical 1970s upland forest commercial conifer plantation, in the process of redesign to accommodate more open space and strips of mixed broadleaved local restocking to accommodate the windfarm and new forest design

upland plateau

Effect

- the conifer element will be required.
- 6 Minor Not significant

Mitigative Measures

In summary:

- Route minimises water crossings.
- 35.00ha.

10 Total felling: 54.59ha

Length of Wayleave	Designation	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment
3815m	None	54.59ha	Clearfell conifers
		2.21ha	Clear young trees
		5.83ha	No treatment





Open space comprised of riparian zones, and plantation on relatively flat/undulating

4 This section of route runs north-easterly over some 3850 metres, before leaving the forest en route to Glenshimmeroch forest. Of this, some felling will be required along width of wayleave along some 2481m of this section. A further 270m of the wayleave passes through recently planted conifer and mixed broadleaves, where removal of

5 Felling required to achieve minimum 80m wayleave clearance: 19.59ha.

7 Throughout this section, in areas other than open ground and recently restocked, the trees are at a height that the imposition of a fresh felling boundary will predispose the remaining crop to windthrow. Additional felling outwith the wayleave is proposed to pre-empt this occurrence. The felling proposals are designed with the emphasis on windthrow mitigation rather than to landscape and visual boundaries, compared to those boundaries that would be appropriate were the forest to have been located in a more visually prominent or more publicly used location.

8 The Study Area within the Margree Windfarm is managed under a Forest Design Plan, which will require to be revised to accommodate the grid connection.

Route corridor to best fit underlying topography.

• Route to minimise additional felling of areas that had been planned for retention at the windfarm forest design stage.

 Route utilises existing rides and open space to create new woodland boundaries for felling limits, consistent with the scale of open space within the forest.

9 Additional landscape felling required and felling to achieve windfirm edges:

Site No 003 - Glenshimmeroch **B.4**

Site Name	Glenshimmeroch Forest,
Location	Duisk Valley
Grid Reference	265730 587000 to 264700 587450 (1318m)
Designations	None

Description

1 The route passes in a north easterly direction on the lower slopes of Glenshimmeroch Hill and between Glenshimmeroch Hill and Craigencorr Hill, through Sitka spruce p1987.The route passes through some 865m of stocked commercial conifers.

Effect

- 2 This section of route passes through some 865m of stocked commercial conifers., before leaving the forest en route to Glenhoul and Kendoon.
- 3 The crop is susceptible to windthrow
- 4 Felling will be required along width of wayleave along some 865m of this section.
- 5 Felling required to achieve minimum 80m wayleave clearance: 6.80ha.
- 6 Minor Not significant

Mitigative Measures

- 7 Throughout this section, in areas other than open ground and recently restocked, the trees are at a height that the imposition of a fresh felling boundary will predispose the remaining crop to windthrow. Additional felling outwith the wayleave is proposed to pre-empt this occurrence. The felling proposals are designed with the emphasis on windthrow mitigation rather than to landscape and visual boundaries, compared to those boundaries that would be appropriate were the forest to have been located in a more visually prominent or more publicly used location.
- 8 The Study Area within the Glenshimmeroch Forest is managed under a Forest Design Plan, which will require to be revised to accommodate the wayleave.

In summary:

- Route corridor to best fit underlying topography.
- · Route to minimise additional felling of areas susceptible to windthrow.
- Route minimises water crossings.
- Route utilises existing rides and open space to create new woodland boundaries for felling limits, consistent with the scale of open space within the forest.
- 9 Additional landscape felling required and felling to achieve windfirm edges: 14.82ha.

Length of Wayleave Designation Potential area of woodland Category of wayleave affected incl. affected areas treatment outwith wayleave 1318m None 21.62ha **Clearfell conifers**

Site No 004 - Glenhoul **B.5**

Site Name	Glenhoul Glen,
Location	Kendoon
Grid Reference	261030 588120 to 260670 588050 (499m)
Designations	None

Description

1 The route passes west through the parkland of Glenhoul Farm before entering the oak/birch woodland to the west of Glenhoul Glen water. The parkland is dominated by a small number of large parkland predominantly oak together with small groups of smaller birch

Effect

- 2 The wayleave is routed through the parkland. Within the 80m wayleave are a number of open grown mature parkland trees that are potentially required to be felled.
- 3 Potential Felling required to achieve minimum 80m wayleave clearance: 0.28ha.
- 4 Minor Not significant

Mitigative Measures

- 5 A detailed survey of individual trees, to determine height, crown spread, and vigour together with a detailed topographical survey in conjunction with study of pole and mid-span overhead line wire safety clearance heights. Following this a study was carried out to determine, by micro-siting each section, the best route to avoid removal of the parkland trees. The route was fitted into the landscape, and there is no requirement to fell any parkland trees.
- 6 Actual Felling required to achieve safe operation of overhead lines within minimum 80m wayleave clearance: 0.00ha.
- 7 Additional landscape felling required and felling to achieve windfirm edges: 0.00ha.
- 8 Total felling: 0.00ha

Length of Wayleave	Designation	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment
499m	None	0.28ha	No treatment

Site No 005 - Kendoon

Site Name

B.6

Location

Grid Reference

Designations

Description

- as Dundeuch Wood.

Effect

- woodlands:

 - conifer crop (Area affected 0.84ha)
 - 1.72ha)

4 Potential oak felling required to achieve minimum 80m wayleave clearance: 0.47ha.

10 Total felling: 21.62ha

Dundeugh Hill,

Kendoon

260670 588060 to 259760 589240 (1525m)

ASNW 1a and ASNW 3

1 The route passes west from the parkland of Glenhoul Farm into Glenhoul Wood, which is predominantly oak riparian woodland to the west of the Water of Ken. After crossing the water, it goes through a smaller strip of similar woodland before passing through mature Douglas fir and Norway spruce (p30). This section is known

2 Thereafter the route follows the lower slopes of the south and west side of Glenhoul Hill, through thicket stage spruce (p91) and larch (p99) before going in a north westerly direction through mainly young, establishing commercial conifer (p02-08), together with a few small groups of LTR larch and pine (p46) and then exiting Dundeugh Hill by crossing the Water of Deuch.

3 The wayleave is unavoidably routed through a number of ASNW designated

• After leaving Glenhoul parkland the wayleave passes through 58m of designated ASNW 1a woodland. The 80m wayleave affects some 0.57ha of woodland known as Glenhoul Wood to the west of the Water of Ken, and of this, 0.47ha carries ASNW 1a designation. This woodland comprises mature and moribund oak and scrub riparian oak, together with some birch.

• The wayleave then passes through some 48m of Dundeuch Wood, which is ASNW 1a designated, followed by 20m of ASNW 3 woodland (other) located on the west side of the Water of Ken. The effect on broadleaved trees within this area is reduced to some 6 or 7 oaks; the remaining designated area comprising mature Norway Spruce and Douglas Fir p30, and thicket stage spruce and larch (54m) Affected area within the wayleave: 0.39ha ASNW 1a and 0.45ha ASNW 3

 After passing through thicket stage spruce and larch, the wayleave then passes through 105m of ASNW 3 designated woodland (Glenhoul Wood), which now comprises Sitka spruce replanted in 2002 following the clearfell of the preceding

· Finally, before exiting the Dundeugh Hill by crossing the Water of Deuch, the wayleave passes through an 210m of ASNW 3 un-named woodland, recently restocked (2008) following clearfell of the previous conifer crop.(Area Affected

- 5 Potential conifer felling required: 3.94ha.
- 6 Major Significant

Mitigative Measures

- 7 As for Glenhoul Park, at Glenhoul Wood, a detailed survey of individual trees within the oak woodland was carried out, to determine height, crown spread, and vigour together with a detailed topographical survey in conjunction with study of pole and mid-span overhead line wire safety clearance heights. Following this a study was carried out to determine, by micro-siting each section, the best route to minimise tree removal. It was determined that a number of trees will require to be crownreduced and the remainder retained in situ.
- 8 Within areas designated as ASNW but presently comprising exotic conifer, positive mitigation is achieved by removal of conifer crop, and natural regeneration of native trees can be permitted
- 9 A further detailed study of the ASNW woodland within the wayleave to the west of the crossing of the Water of Ken will be carried out before construction to confirm that no trees within this section will require to be felled, and that the procedure of crown reduction will be carried out should there be, after survey, individual trees that breach the long term safety clearance zones within the wayleave.
- 10 Additional landscape felling and felling required to achieve windfirm edges: 3.68ha
- 11 Actual oak Felling required to achieve safe operation of overhead lines within minimum 80m wayleave clearance: 0.00ha.
- 12 Additional ASNW designated exotic conifer felling required and felling to achieve windfirm edges: 4.81ha.
- 13 Total ASNW designated felling (all exotic conifer): 4.81ha
- 14 Total felling 7.62ha

Length of Wayleave passing through woodland	Designation	Woodland type	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment	Potential ASNW affected woodland area
58	1a	oak	0.57	Retain trees - crown reduction within 80m wayleave	0.47
48	1a	exotic conifer	0.39	Clear conifers within 80m wayleave	0.39
369	3	exotic conifer	11.02	Clear conifers within 80m wayleave	3.01
	1a	exotic conifer	3.18	Clear conifers outwith 80m wayleave	1.06

	3	exotic conifer	0.33	Clear conifers outwith 80m wayleave	0.33
1050	None	conifer	0.41	Clear conifers within 80m wayleave	0
	None	conifer	0.22	Clear conifers outwith 80m wayleave	0
1525	1a & 3		16.12	-	5.26

15 Residual Effect: Minor – Not Significant

Site No 006 - Polquhanity **B.7**

Site Name	Dalshangan,
Location	North of Kendoon
Grid Reference	259760 589240 to 259260 589239 (560m – inc open ground)
Designations	ASNW 1a

Description

- 1 The route passes over Water of Ken and through a strip of broadleaves known as Dalshangan Wood located on the eastern boundary of Polguhanity. This comprises mature mixed hardwoods to the west of the Water of Deuch ...
- 2 Thereafter the route passes over rough grazing fields before changing from single circuit wood pole to underground cable for the passage under the A714. After some 150 metres the underground cabling converts to double circuit overhead (tower) between here and Meikle Hill. Effect
- 3 The wayleave is unavoidably routed through ASNW designated Dalshangan Wood for some 68m, potentially affecting 0.5ha of woodland
- 4 At the road crossing, the route passes close to the edge of standing commercial spruce plantation of Polquhanity comprising Sitka spruce p75.
- 5 To the east of the first 70m of the double circuit line, within the 80m wayleave, there are roadside scrub willow circa 2-6m in height
- 6 Potential ASNW felling required to achieve min 80m wayleave clearance: 0.83ha.
- 7 Potential conifer felling required: 0.08ha.
- 8 Major Significant

Mitigative Measures

9 At Dalshangan Wood a detailed survey of individual trees within the oak woodland will be carried out, as carried out at Glenhoul Wood, to determine height, crown

- susceptible to windthrow.

14 Total designated felling: 0.00ha

Length of Wayleave passing through woodland	Designation	Woodland type	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment	Potential ASNW affected woodland area
68	1a	Oak and mixed broadleaves	0.83	Retain trees - crown	0.00
		Spruce/ scrub hardwoods	0.17	No treatment	

¹⁵ Residual Effect: Minor – Not Significant



spread, and vigour together with a detailed topographical survey in conjunction with study of pole and mid-span overhead line wire safety clearance heights. Following this it is considered that, by micro-siting each section, it can be determined that no tree felling will be required, although it is envisaged that a number of trees may require to be crown-reduced and the remainder retained in situ.

10 Similarly, routeing the road crossing will ensure that no conifers will require to be felled within the spruce plantation (p75) at Polquhanity, where the trees would be

11 The roadside willow scrub will not require to be cleared

12 Actual ASNW Felling required to achieve safe operation of overhead lines and underground cables within minimum 80m wayleave clearance: 0.00ha.

13 Additional felling required and felling to achieve windfirm edges: 0.00ha.

B.8 Site No 007 - Barlae Hill

Site Name	Barlae Hill (FC(S)),
Location	Between Polquhanity and Bardennoch
Grid Reference	258720 590080 to 258590 590310 (272m)
Designations	None

Description

1 The route passes parallel to the wayleave of the existing 132Kv line, between this and the A714 road, through some 270m of spruce and larch plantation and through which there has recently been constructed a new forest road to access the wider Barlae Hill plantation. In the construction of the forest road, a corridor has been cleared, together with more extensive felling on the west of the existing wayleave, has resulted in the onset of windthrow.

Effect

- 2 The wayleave will require the clearance of 1.12ha of conifer plantation within the wayleave
- 3 Felling required to achieve a minimum 80m wayleave clearance: 1.12 ha.
- 4 Minor Not significant

Mitigative Measures

- 5 No additional felling required outwith the 80m wayleave.
- 6 Release of the land within the existing wayleave that will be vacated will allow the landowner to incorporate this area back into the restocking design for the recently felled adjacent felling coupes
- 7 Additional landscape felling required and felling to achieve windfirm edges: 0.00 ha.
- 8 Total felling: 1.12 ha

Length of Wayleave	Designation	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment
272m	None	1.12ha	Clearfell conifers

Site No 008 - Lairds Hill/Bardennoch **B.9**

Site Name Bardennoch South of Carsphairn Location

None

Grid Reference 258519 590544 to 258030 591500 (1054m)

Designations

Description

1 Route returns to the east of theA713, passing through mid rotation commercial conifer strip between the existing 132Kv wayleave and the A713. Crop predominantly spruce, with Lodgepole pine and larch. Originally planted 1974, and replanted 1980. New access road recently built to facilitate harvesting and extraction from the main forest block located to the west of the existing wayleave.

Effect

- 2 Routeing of the wayleave between the existing wayleave and the road restricts tree clearance to only those trees between the existing wayleave and the road, and capitalises on the existing windfirm edge to the east of the existing wayleave.
- 3 Felling required to achieve a minimum 80m wayleave clearance: 5.98 ha.
- 4 None Not significant

Mitigative Measures

- Avoidance of routeing through the main forest block
- Use existing windfirm edge as felling boundary
- 5 Additional landscape felling required and felling to achieve windfirm edges: 2.77 ha.
- 6 Total felling: 8.75 ha

Length of Wayleave	Designation	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment
1054m	None	8.75ha	Clearfell conifers

Site No 009 - Cumnock Knowes **B.10**

Site Name	Cumnock Knowes
Location	South of Carsphairn
Grid Reference	257870 591890 to 257800 591960 (65m)
Designations	None

Description

1 Before crossing back to the east of the A713, there is the corner of Cumnock Knowes plantation within the cartilage of the wayleave, although not directly under the proposed overhead line wires. The plantation comprises 16ha even aged mid rotation spruce surrounding Cumnock Knowes house.

Effect

- 2 Felling within the 80m wayleave would normally extend to 0.09ha
- 3 Whilst located at the edge of the wayleave corridor, and on the windward side, nevertheless, the trees could attain a height that, should they blow down towards

- 5 Minor Not significant

Mitigative Measures

- 7 Retain trees outwith the wayleave

Length of Wayleave	Desi
65m	Non

B.11 Site No 010 - Bardennoch West Site Name North of Bardennoch Farm Location

Grid Reference

Designations

Description

Effect

- strips will require to be cleared
- 4 None Not significant

Mitigative Measures

the overhead wires, there is a risk that the trees could reach the overhead line, and this risk requires to be mitigated. The normal solution to this is felling back to the edge of the 80m wayleave edge, which would require 0.09ha of conifer to be felled, but could result in the windthrow and subsequent clearance of over 10ha of the Cumnock Knowes plantation; rather, crown reduction or edge profiling is proposed to obviate the need to fell and create an unstable edge

4 Felling required to achieve a minimum 80m wayleave clearance: 0.00 ha.

6 Crown reduction, or profiling the edge trees to maintain the windfirm edge whilst not compromising operational safety of the overhead line

8 Additional landscape felling required and felling to achieve windfirm edges: 0.00 ha.

gnation	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment
e	0.09ha	Crown reduction

South of Carsphairn – west of A713

257770 592000 to 257510 592340 (500m inc open ground)

None

1 Route returns to the west of theA713, and first passes over a strip 8m wide of scrub willow before passing over and by two small mainly Sitka spruce shelterbelt plantations before re-crossing the A713 to the south of Carsphairn. Planted in approximately 1994, the first narrow strip of trees lies predominantly to the east of the centre-line, and the second lies at the edge of the wayleave on lower ground to the east of the centre-line, and above the sheep fank.

2 There will be no requirement to clear the scrub willow. The first and second spruce

3 Felling required to achieve a minimum 80m wayleave clearance: 0.06ha.

- 5 Retain scrub.
- 6 Fell minimum conifer
- 7 Additional landscape felling required and felling to achieve windfirm edges: 0.02 ha.
- 8 Total felling: 0.08 ha

Length of Wayleave	Designation	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment
43m	None	0.08ha	Clearfell conifers
		0.02ha	Retain broadleaves

Site No 011 - Greenwell of Scotland **B.12**

Site Name	Greenwell of Scotland
Location	North of Carsphairn
Grid Reference	255850 594490 to 255690 594660 (129m)
Designations	ASNW 2a (part)

Description

1 North of Carsphairn, the route remains on the eastern side of the A713 until Meikle Hill sub station. Approximately 1km north of Carsphairn, the route passes over four discernible areas of remnant birch woodland, comprising over-mature scattered birch trees together with alder in the vicinity of the water body from which the area derives it's name. The first area over which the wayleave passes is designates ASNW 2a - Ancient (of semi-natural origin) (ASNO 1860)

Effect

- 2 After detailed survey of the remaining trees no trees will require to be cleared for construction, operational or safety reasons.
- 3 Potential Felling required to achieve a minimum 80m wayleave clearance: 0.49ha.
- 4 Major Significant (ASNW designated)

Mitigative Measures

- 5 Detailed survey to determine no felling required.
- 6 Additional landscape felling required and felling to achieve windfirm edges: 0.00 ha.
- 7 Total felling: 0.00 ha

Length of Wayleave	Designation	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment
129m	ASNW (part)	0.49ha	No treatment

Site No 012 - Knockcunnoch Knowe **B.13**

Site Name	Knockcunnoch Knowe
Location	South of Brochloch Forest
Grid Reference	254630 595750 to 254590 595790 (52m)
Designations	None

Description

1 Before passing in to Brochloch Forest the wayleave passes through the postage stamp type block of maturing conifer at Knockcunnoch Knowe. Comprising 0.4ha, and planted circa 1980 mainly Sitka spruce with some larch, the route unavoidably passes through the centre of the plantation.

Effect

- 2 In order to minimise the effects on the forest block to the north, the route passes almost through the centre of this small outlying block of forest, requiring its almost complete removal.
- 3 Felling required to achieve a minimum 80m wayleave clearance: 0.35 ha.
- 4 None Not significant

Mitigative Measures

- 5 None, in consideration of routeing restrictions within the larger Brochloch forest adjacent and to the north.
- 6 Additional landscape felling required and felling to achieve windfirm edges: 0.05 ha.
- 7 Total felling: 0.40 ha

Length of Wayleave	Designation	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment
52m	None	0.40ha	Clearfell conifers

Site No 013 - Brochloch **B.14**

Site Name	Brochloch	
Location	Part Carsphairn Forest, 11km south of Dalmellington	
Grid Reference	254530 595850 to 253350 597080 (1700m)	

Designations

Description

Effect

- 5 Minor Not significant

Mitigative Measures

- 80m wayleave)

10 Total felling: 15.89 ha

Length of Wayleave	Designation	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment
1700m	None	15.89ha	Clearfell conifers
	None	0.92ha	Retain broadleaves

12 Residual Significance: Minor





1 Route passes through the western edge of Brochloch, between the existing wayleave and, for the most part, the internal forest road system that serves the wider forest. Crop predominantly spruce, p89, with open space (rides and minor watercourses) breaking up what would otherwise be a large contiguous block. Amenity hardwoods planted at the northern end. Forest road used for timber cross transfer from more remote harvesting operations within the forest.

2 Felling spruce within the wayleave, exposing areas outwith the 80m wayleave between the wayleave and the internal forest road to windthrow.

3 Prevention of use of limited areas adjacent to the forest road currently used for cross transfer of timber, where these areas fall within the wayleave

4 Felling required to achieve a minimum 80m wayleave clearance: 8.95 ha.

6 Careful routeing of the wayleave between the existing wayleave and the forest road restricts tree clearance to only those trees between the existing wayleave and the forest road and capitalises on the existing windfirm edge to the west of the existing wayleave. (But to the detriment of 013 Knockcunnoch Knowe, which, were it to have been avoided, would have meant substantially greater areas susceptible to windthrow, and correspondingly larger aspirational mitigative felling outwith the

7 Retention of amenity broadleaved planting

8 Creation of alternative cross transfer points next to the forest road, but outwith the safety zone within the 80m wayleave.

9 Additional landscape felling required and felling to achieve windfirm edges: 6.94 ha.

B.15 Site No 014 - Brownhills

Site Name	Brownhills Forest
Location	From Polnaskie to Glenmuck Craig – 6km south of Dalmellington
Grid Reference	251800 600570 to 250710 603660 (3489m)
Designations	None

Description

- 13 Route passes through the lower western slopes of Brownhills forest remaining within the Brownhills forest and to the west of Glenmuck House before heading northeastwards, behind the back of Glenmuck Craig, exiting Brownhills and entering Kyle (South)
- 14 The route passes through mature (p74), and recently replanted commercial conifer plantation (p2005), together with small areas of faster growing 'improved' Sitka spruce (p99).
- 15 Amenity planting of hardwoods has been carried out over selected restock areas.
- 16 The wayleave passes through limited areas designated as natural forest, i.e. scheduled under the current Forest Management Plan to be retained in perpetuity with minimum management intervention.
- 17 The Brownhills Forest access road in the vicinity of the proposed wayleave is extensively used for timber cross transfer from more remote harvesting operations within the forest.

Effect

- 18 Where the route passes through older/taller conifer, mainly p74, clearfell of all trees within the wayleave will be required, exposing susceptible adjacent crops to windthrow., and felling to windfirm edges will be required.
- 19 Clearance of young, recently established plantation, mostly p2005-8, will require to be cleared to prevent future operational safety issues, but little additional clearance for landscape reasons will be required.
- 20 Similarly clearance of faster growing 'thicket stage spruce will also be required within the wayleave. There will also be limited additional clearance to windfirm, or landscaping boundaries.
- 21 The cross transfer points currently located within the proposed wayleave will not be useable.
- 22 The passage of the wayleave will effectively isolate limited areas of production forest from normal forest operations by restricting normal harvesting activities. This is where timber has no choice but to be extracted across the wayleave, but the will be no timber crop, and therefore, no 'brash' to support harvesting machinery, or that the topography dictates that extraction would pass continually under the overhead

lines.

- 23 Felling required to achieve a minimum 80m wayleave clearance: 7.12 ha.
- 24 Minor Not significant

Mitigative Measures

- Routeing to minimise felling of mature tree consistent with best-fit topographical route.
- Retention of amenity hardwoods.
- Creation of Cross Transfer points outwith the proposed wayleave
- Creation of permanent forwarder access tracks to access areas isolated by the presence of the wayleave.(due to lack of brash or side slopes)
- 25 Additional landscape felling required and felling to achieve windfirm edges: 12.03 ha.

26 Total felling: 19.14 ha

Length of Wayleave	Designation	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment
3489m	None	19.14ha	Clearfell conifers
		18.05ha	Clear young trees
		1.42ha	No treatment - retain

28 Residual Significance: None – Not significant

Site No 015 - Kyle (South) Forest **B.16**

Site Name	Kyle South to Margree Sub station
Location	East of Dalmellington
Grid Reference	250710 603660 to 252120 607880 (7200m)
Designations	None

Description

- 1 The route enters Kyle (South) from Brownhills Forest, and passes through fairly inaccessible mixed open ground, young restocking (p07) and p93 spruce plantation for 1050m before passing into Mossdale farmland, and then back along the western edge of the forest.
- 2 Routed above but largely out of sight of the A713, the wayleave crosses the Parrie burn at the nearest point to Dalmellington, and heads north-eastwards for the remainder of the passage to Meikle Hill, firstly through failed/burnt/open ground interspersed with p91 Sitka and larch. As the route moves north-eastwards, the crop becomes more uniform, passing through larger blocks of uniform p91 Sitka with good

stocking, before joining the wayleave and additional clearance area associated with the SWS route. From here to the sub station only those areas that will not require to be felled as a result of the construction of the SWS overhead line are considered. This comprises areas of p74 and p2008 Sitka spruce.

Effect

- for landscape reasons will be required.
- 5 No areas of isolation have been identified.
- 7 Minor Not significant

Mitigative Measures

- route.
- Felling to identified windfirm edges.
- lower environmental impact
- ha.
- 9 Total felling: 48.50 ha

Length of Wayleave	Designation	Potential area of woodland affected incl. affected areas outwith wayleave	Category of wayleave treatment
7200m	None	48.50ha	Clearfell conifers
		2.72ha	Clear young trees
		0.52ha	Retain broadleaves
		3.88ha	No treatment

11 Residual Significance: None – Not Significant

3 Where the route passes through older/taller conifer, mainly p74 and p91, clearfell of all trees within the wayleave will be required, exposing susceptible adjacent crops to windthrow. and clearance to windfirm edges will be required. Where trees are largely inaccessible, the trees will require to be mulched

4 Clearance of young, recently established plantation, mostly p2005-8, will require to be cleared to prevent future operational safety issues, but little additional clearance

6 Felling required to achieve a minimum 80m wayleave clearance: 19.43 ha.

· Routeing to minimise felling of mature tree consistent with best-fit topographical

· Use mulchers to clear trees where accessibility suggests that mulching offers

8 Additional landscape felling required and felling to achieve windfirm edges: 29.07


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Blackcraig and Margree Windfarms Grid Connection **Technical Appendices**

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C.1 Relevant National and Local Policies and Biodiversity Action Plans

C.1.1 Introduction

- 1 This Appendix provides further information on the local and national nature conservation policy framework which has been taken into consideration in the assessment of the effects of the Blackcraig and Margree overhead line.
- 2 The Study Area for the proposed Blackcraig and Margree overhead line spans two administrative areas: the southern part of the route falls within the Dumfries & Galloway and the northern area within East Ayrshire. The biodiversity policies and local plan objectives of each of these local authority areas will be summarised.

C.1.2 **National Planning Background**

- 1 Planning is a devolved matter and the overall management is the responsibility of the Scottish Government. Recently Scottish Government planning policy has been restructured with much of the previous framework of policy documents (SPP1 and a number of National Planning Policy Guidance and Planning Advice Note documents) being replaced by a single Scottish Planning Policy (SPP). The SPP sets out:
 - the Scottish Government's view of the purpose of planning;
 - the core principles for the operation of the system and the objectives for key parts of the system;
 - statutory guidance on sustainable development and planning under Section 3E of the Planning etc. (Scotland) Act 2006;
 - · concise subject planning policies, including the implications for development planning and development management; and
 - the Scottish Government's expectations of the intended outcomes of the planning system.
- 2 Alongside policy on development plans, development management, community engagement, sustainable development, climate change and sustainable economic growth, the SPP sets out policy on economic development, town centres and retailing, housing, rural development, fish farming, coastal planning, historic environment, landscape and natural heritage, open space and recreation, green belts, transport, renewable energy, flooding and drainage, waste management, minerals, onshore oil and gas operations, surface coal mining and communications infrastructure.
- 3 The SPP policy has specific advice on landscape and natural heritage. Sustainable use and enjoyment of landscape and natural heritage is considered a 'Scottish National Outcome'. The aim of the policy is to encourage a broader approach to natural heritage planning moving from a narrow interpretation centred on protected areas and designations to a broader approach considering ecosystems and natural

processes. Planning authorities should promote positive change while protecting and enhancing the character of natural environment. Areas of greater sensitivity should be safe guarded through local development plans. The policy encourages an emphasis on 'greenspace' and the connectivity of habitats. Detailed guidance covers specific actions such as the disturbance of peat and the release of carbon into the atmosphere. Appropriate assessment of cumulative and incremental change should be considered and the 'precautionary principle' should be judiciously applied.

C.1.2.1 **International Designations**

1 Development associated with international designations such as SPAs (Special Protection Areas), SACs (Special Areas of Conservation) or Ramsar sites must be subject to appropriate assessment. This includes development not directly associated with the site but which can affect it indirectly. Development will only be permitted where activities do not affect the integrity of the site, where there are no alternative solutions or where there are overriding economic or social imperatives. If there are no possible alternatives to the development, Scottish Ministers are required to seek compensation measures from the developer to ensure overall coherence within the Natura 2000 network.

C.1.2.2 National Designations

1 National designations such as NSA (National Scenic Areas), SSSI (Sites of Special Scientific) and NNR (National Nature Reserves) require the same planning approach. Development can only be approved when there is no direct adverse affect or there are overriding socio-economic argument. The only exceptions to this are National Parks. The SPP guidelines states that conservation of the natural and cultural heritage should take precedence over any other consideration.

C.1.2.3 Local Designations

1 The SPP has specific guidance on local designations. Local designations can be statutory such as Local Nature Reserves (LNR) or non-statutory such as Local Nature Conservation Site (LNCS). The aim of local designations is to protect and enhance locally important habitats or landscape, provide access for recreation and tourism and promote local ecological awareness. All designations should be identified and protected within the local authority development plan. The level of protection for these areas is not as high as for international or national sites but the details of each designation should be identified in any proposed management plan.

C.1.2.4 **Protected Species**

1 Various species are protected under UK and Scottish legislation (both transposing European legislation and directives etc.). Development is only permitted when there is no adverse effect on a species or where adverse effects are outweighed by economic or social considerations however the SPP guidelines states that the presence of protected species should not be seen as an obstacle to development. If protected species are identified on a proposed development then their exact presence should be identified, the impact assessed and appropriate mitigation measures adopted.

C.1.2.5 Trees & Woodland

removal and compensation planting.

C.1.3 2006)

C.1.3.1 **General Policies**

- or species protected ;or

- can be demonstrated that:
- or

1 The SPP refers to the Scottish Woodland Strategy which identifies trees and woodland of high biodiversity value as an important 'consideration' in the planning process. The SPP guidelines state that woodland should be identified within development plans with additional guidance on protection and management. Single and veteran trees and single feature hedgerows should be identified within the planning areas and where appropriate connectivity between single features should be enhanced. Reference should be made to the woodland Removal Policy which identifies woodland

Dumfries & Galloway Structure Plan (adopted

1 The Dumfries & Galloway Structure Plan (adopted 2006) provides guidelines and constraints for all development proposals in the Stewartry area. Where these are relevant to the development, in an ecological context, they are highlighted below.

1 E4 - International Sites: Developments which are likely to have a significant effect on an existing or potential Special Protection Area (SPA) or candidate Special Area of Conservation (SAC) or proposed RAMSAR site, including developments out with the site, will require an appropriate assessment and will only be permitted where:

The development does not adversely affect the integrity of the particular habitats

• There are no alternative solutions and there are imperative reasons of overriding of public interest, including those of a socio-economic nature.

• In cases involving priority habitat (listed in the Habitats Directive), the only overriding considerations are those relating to Health & Safety.

2 E5 - Sites of Special Scientific Interest: Development effecting Sites of Special Scientific Interest (SSSIs) not designated as international sites, will only be permitted where it

It will not compromise the under lying objectives and overall integrity of the site;

· There is a proven national interest in allowing the development to take place which cannot be met at another more suitable location.

• Where it is proposed to grant planning permission for a development which could affect a SSSI, the [Dumfries & Galloway] Council will consider the use of planning conditions or a Section 75 agreement to conserve, as far as possible, the sites scientific interest or to create new or replacement habitats, where possible.

3 E6 - Conservation of Habitats or Species: When assessing development proposals, the Council will seek to ensure that the impact on any habitat which is valued for its nature conservation interests is fully considered. Particular attention will be given to those habitats and species which are identified in Circular 6/1995, but do not fall within the boundaries of national or international nature conservation designations.

- Where important nature conservation would be adversely affected, the Council will consider the use of Section 75 agreements to maintain the existing interests or, in exceptional circumstances, encourage the creation of new or replacement habitats, where possible.
- Where resources are valuable the Council will continue to give consideration to the establishment of appropriate management measures, including assisting with the voluntary management of sites, and where appropriate the designation of Local Nature Reserves, in conjunction with other agencies, organisations and local communities, to ensure that nature conservation interests are safeguarded.
- 4 PEPI [Proposed] Biodiversity Action Plan: The Council will support the preparation and implementation of a Local Biodiversity Action Plan, in partnership with Scottish Natural Heritage, RSPB and other agencies and organisations.

C.1.4 **Dumfries & Galloway - Stewartry Local Plan** (Extracts)

1 The Stewartry Local Plan (adopted 2006), provides guidelines and constraints for all development proposals. Where these are relevant to the development, in an ecological context, they are highlighted below. The Nithsdale Local Plan describes a range of General Policies; those which relate to the natural environment are described below.

C.1.4.1 **Relevant Policies**

- 1 GP 40 Countryside Management Plans: The council will keep under review management plans for areas and will view or prepare new Management Plans, were appropriate, in order to address new issues and set out guidance for the management and control of activities to safeguard countryside resources.
- 2 GP 44 Nature Conservation Sites of International Importance: The Planning Authority will assess development proposals which may affect the nature conservation sites defined on the [Stewartry Local Plan] Proposals Map against the criteria set out in Structure Plan Policy E4.
- 3 GP 45 Nature Conservation Sites of National Importance: The Planning Authority will assess development proposals which may affect the nature conservation sites defined on the [Stewartry Local Plan] Proposals Map against the criteria set out in Structure Plan Policy E5.
- 4 GP 46 Nature Conservation Sites of Local Importance: The Planning Authority will assess development proposals which may affect the nature conservation sites defined on the [Stewartry Local Plan] Proposals Map against the criteria set out in Structure Plan Policy E6.
- 5 GP 52 Tree Preservation Orders: The Planning Authority will normally promote Tree Preservation Orders where trees or groups of trees are determined to be of value to the amenity of the area and where their protection is considered important.

Avrshire Joint Structure Plan (adopted 2006) C.1.5

1 The East Ayrshire Structure Plan (adopted 2006) provides guidelines and constraints for all development proposals in the East Ayrshire area. Where these are relevant to the development, in an ecological context, they are highlighted below.

C.1.5.1 **Relevant Policies**

- 1 ENV 5 Woodland Strategy: Proposals for woodland and forestry will be supported where they are consistent with objectives and key actions of the Ayrshire and Arran Woodland Strategy and consistent with the policies in both the structure plan and local plans.
- 2 ENV 7 Natural Heritage Designations: The three Ayrshire Councils will:
 - Recognise international and national natural heritage designations and the statutory protection afforded to them; and
 - Support the identification of additional Local Nature Reserves and continue to work with other stakeholders to implement the Ayrshire Biodiversity Action Plan.
 - Local plans shall include policies based on the Scottish Government Model Policy policies for the protection of all sites of recognised international and national natural heritage importance.

C.1.6 East Ayrshire Local Plan (Extracts)

1 The East Ayrshire Local Plan (adopted 2006) provides guidelines and constraints for all development proposals in the East Ayrshire area. Where these are relevant to the development, in an ecological context, they are highlighted below.

C.1.6.1 **Relevant Policies**

- 1 IQ14 Sites of International Importance: Sites of International Importance for Nature Conservation in East Ayrshire, also known as Natura 2000 sites under the EU Birds and Habitats Directive, consist of:
 - A candidate are of Special Area of Conservation (SAC) located in the southernmost part of the area to the south of Loch Doon, identified for the importance for its blanket bog and montane habitat; and
 - A potential Special Protection Area (SPA) located in the eastern part of the area and based on the Muirkirk Uplands identified for the importance of its specially protected birds of prey, including Hen Harrier and Short Eared Owl.
- 2 IQ15 Sites of National Importance: Sites of National Importance for Nature Conservation in East Ayrshire consist of Sites of Special Scientific Interest (SSSIs) which, together with internationally important sites detailed above, are statutorily protected from intrusive or damaging developments.
- 3 IQ16 Sites of Local Interest: Sites of Local Conservation Interest in East Ayrshire consist of:

- nature reserve designation;

C.1.7 **Relevant Extracts from Dumfries and Galloway** Local Biodiversity Action Plan (adopted 2006)

C.1.7.1 **Priority Action Plans for River Habitats and Key Objectives:**

- of semi-natural habitats.

- invertebrate interest.



· Local Nature Reserves at Sillyhole Moss, Dalmellington and Lochshinnoch Lagoons, New Cumnock. Other sites, including an area of Catrine Voes are considered worthy of protection, interpretation and promotion through local

• Numerous Provisional Wildlife Sites containing a variety of flora and fauna which contribute significantly to local biodiversity;

· Designated areas of ancient or semi-natural woodland; and

• Other non-designated sites and linear features, such as rivers and hedgerows, which are of local wildlife value and function as stepping stones or wildlife corridors, essential for migration, dispersal or generic exchange of species.

4 IQ18 - Local Biodiversity Action Plan: As part of the UK's Biodiversity Action Plan 1994, the Council, in partnership with the Ayrshire Joint Structure Plan Team, the other Ayrshire Authorities, other public bodies, organisations and local communities, is preparing a Biodiversity Action Plan for Ayrshire which details how the diversity and richness of local natural habitats, together with the local flora and fauna found within them, can be best safeguarded and enhanced at the local level. The Local Plan has been prepared to fully inter-relate with the Local Biodiversity Action Plan and has adopted policies which promote and afford protection to the species and habitats identified as priorities for action within the Action Plan itself.

• River Headwaters (RHI) - Encourage semi-natural habitat on the banks of river head waters by fencing (or planting, where necessary) to encourage regeneration

• Lowland Rivers and Backwaters (LR 1) - Assess the feasibility of restoring a river backwater system and encourage this, where appropriate.

• Lowland Burns and Ditches (LBD1) - Raise awareness of the importance of small ditches and burns through publications, demonstration days and farm visits.

 Waterfalls (WFI) - Raise awareness of the biodiversity importance of waterfalls, by producing a guide to waterfalls in Dumfries & Galloway.

• Exposed River Shingle (ERS 1) - Identify areas of exposed river shingle with

• Eutrophic Lochs (ELI) - Maintain good ecological status of eutrophic lochs by implementing measures included in River Basin Management Plans as part of the EU Water Framework Directive.

 Mesotrophoic Lochs (MLI) - Maintain good ecological status of mesotrophic lochs by implementing measures included in River Basin Management Plans as part of the EU Water Framework Directive.

- Oligorthic Lochs (EL1) Maintain good ecological status of mesotrophic lochs by implementing measures included in River Basin Management Plans as part of the EU Water Framework Directive.
- Swamps (S1) Continue with current management.
- Reedbeds (RB1) Create new reedbeds in Dumfries & Galloway.
- Marshes (MA1) Identify where areas of new floodplain grazing marsh could be created that will contribute to biodiversity enhancement and flood attenuation, taking into account the current land uses, landscapes and cultural heritage.
- Upland springs and flushes (USFI) Monitor the quality of springs and flushes in the uplands of Dumfries & Galloway.

C.1.7.2 **Priority Action Plans for Grasslands and Key Objectives:**

- Purple Moorgrass and Rush Pastures (PMG1) Determine the extent, distribution, composition and status of Purple Moorgrass and Rush Pastures in Dumfries & Galloway.
- · Purple Moorgrass and Rush Pastures (PMG2) Restore Purple Moorgrass and Pastures.
- Calcareous Grasslands (CGI) Designate areas of calcareous grassland as Local Wildlife Sites and provide management advice.
- Neutral Grasslands (NGI) Restore lowland neutral grasslands.
- Acid Grasslands (AGI) Restore lowland dry acid grasslands.
- Inland Rock Outcrops (IRO1) Expand population of rare and scarce species on inland rock outcrops.
- Montane Moss-Heaths (MMHII) Reduce grazing pressure on montane moss heaths, where this is considered necessary.
- Upland Heaths (UHI) Restore an extensive are of upland heath for biodiversity.

C.1.7.3 **Priority action Plans for Forestry Habitats and Key Objectives:**

- Conifer Plantations (CP1) Identify conifer plantations that could be converted to broadleaves as part of a forestry habitat management network.
- Conifer Plantations (CP2) Extend area of long-term retention within conifer plantations.
- Broadleaved and mixed Plantations (BMP1) Identify suitable locations for new broadleaved plantations as part of a forest habitat network.
- · Forest Roads & Rides (FRR1) Raise forest managers' awareness of the importance of forest roads and rides for biodiversity and how best to manage them.
- Forest Ponds (FP1) Assess the distribution and importance of forest ponds in Dumfries & Galloway, by mapping their locations and carrying out sample surveys.

C.1.7.4 Priority Action Plans for Peatland Habitats and Key **Objectives:**

- Fens (FE1) Examine the potential for the enhancement and restoration of fens on a catchment scale, as part of a mosaic wetland habitat.
- Raised Bogs (RB1) Investigate funding for restoration of the Racks and Ironhirst Mosses complex.
- · Blanket Bogs (BB1) Restore degraded blanket bogs through the blocking of moorland grips and drains, especially on designated sites, or those close to designated sites.

C.1.7.5 Priority Action Plans for Native Woodlands and Key **Objectives:**

- Native Wet Woodlands (NWW1) Restore native wet woods on forested sites, giving priority to woodland sites that connect wetland or woodland of high biodiversity value.
- Native Wet Woodlands (NWW2) - Expand native wet woods.
- Native Ash Woods (NAW1) Restore plantations of native ash woodland.
- Native Ash Woods (NAW2) Expand native ash woods in areas of currently low biodiversity and archaeological importance, but that have the potential to link existing woods.
- Native Oak Woods (NOW1) Restore plantations of ancient oak woodland sites.
- · Native Oak Woods (NOW2) Expand upland native oak woods in areas of biodiversity and archaeological importance and that have the potential to link existing woods.
- Native Birch Woods (NB1) Restore plantations on ancient birch woodland sites.
- · Native Birch Woods (NB2) Expand upland native birch woods in areas of low biodiversity and archaeological importance.
- Scrub Woods (SW1) Promote the value of scrub woodland for biodiversity.
- Montane Scrub (MS1) Establish areas of montane scrub in Dumfries & Galloway.

C.1.7.6 Priority Action Plans for Farmland Habitats and Key **Objectives:**

- Short Rotation Coppice (SRC 1) Ensure that all grant-maintained short-rotation coppicing in Dumfries & Galloway is not located on or adjacent to important Local Priority Habitats or Species where there is likely to be a detrimental impact on habitats.
- · Agricultural Improved Grasslands (AGGI) Increase biodiversity around the perimeter of improved grassland fields by providing and publicising a range of sites to promote best practice.
- · Arable Fields (AF1) Provide advice to farmers and their advisors on improving arable fields for biodiversity through training courses and establishment of demonstration sites.

- stone dykes and their management.

C.1.7.7 **Relevant / Potentially Relevant Species Statements** and Key Objectives:

- in Dumfries & Galloway.

- in Dumfries & Galloway.
- Dumfries & Galloway.
- fritillary in Dumfries & Galloway.
- Galloway
- barn owls.
- in conjunction with biodiversity.

• Traditional Field Boundaries (TFB1) - Increase the quality of hedgerows, including hedgerow trees in Dumfries & Galloway.

• Traditional Field Boundaries (TFB2) - Carry out research into the biodiversity of dry

• Farm Woods and Shelter Belts (FSB1) - Create new farm woods and shelterbelts on land currently of low biodiversity and archaeological interest.

· Farm Woods and Shelter Belts (FSB1) - Improve biodiversity of exiting farms woods and shelterbelts through provision of site-specific advice.

• Farm Ponds (FP1) - Create new pond landscape (several ponds linked by wildliferich habitats) in farmland areas known to support important pond species.

• Farm Ponds (FP2) - Provide training in the management of farm ponds.

• Water Vole: Restore water voles to their former (pre-1970) widespread distribution

• Red Squirrel: Maintain Dumfries & Galloway as Core Area for red squirrel.

Otter: Maintain the Dumfries & Galloway otter population at its current level.

• Northern Brown Argus: Maintain all colonies in Dumfries & Galloway.

Forester Moth: Maintain the current distribution and status of the Forester moth

· Azure Hawker Dragonfly: Maintain stable populations, with no loss of sites in

· Pearl Bordered Fritillary: Maintain the current distribution of the pearl-bordered

• Slender Green Feather-Moss: Clarify current status of slender green feather-moss within Dumfries & Galloway and maintain all identified populations.

· Pillwort Fern: Maintain and enhance the current status of pillwort in Dumfries &

• Slow worm: Maintain or enhance the current status of slow worms in Dumfries and Galloway, locate new sites within different habitats and monitor known sites.

· Barn owl: maintain current breeding population and ensure no net loss of breeding sites. Ensure Dumfries and Galloway continues to provide high quality habitat for

Black grouse: Maintain the current black grouse breeding population and distribution, increase numbers of black grouse and raise awareness of the species

• Hen harrier: increase the breeding population over the next ten years, maintain key habitats, raise awareness of the species with landowners and reduce the

number of failed breeding attempts. Monitor the population and raise awareness of the species in conjunction with biodiversity.

- Lapwing: maintain lapwing numbers at or above current levels, identify, protect and expand the breeding population.
- Nightiar: maintain the numbers and distribution of nightjars, increase the breeding population by 60% over 10 years, with no net loss of nightjar habitat.
- Peregrine falcon: Maintain current breeding population and reduce the number of breeding sites failing due to human impacts. Raise awareness of peregrine falcons with landowners, developers and the general public.
- Red kite: Maintain or expand the red kite population, carry out release programmes where there is appropriate cooperation. Raise public awareness of the risks to the red kite population.

Relevant Extracts of the Joint Ayrshire C.1.8 **Biodiversity Action Plan - East Ayrshire Biodiversity Action Plan (Adopted 2006)**

C.1.8.1 **Raised Peat Bog and Key Objectives:**

- HPLR1 To understand the lowland raised bog resource in Ayrshire and its condition by producing a full list of raised bogs with their size, location, ownership and vegetation cover, current condition, associated wildlife, the conservation measures already being taken; and by using this data to rank the sites in order of their conservation importance.
- NPLR2 To identify the relative value of the raised bogs, based on their invertebrate importance and using water beetle communities as indicators.
- HPLR3 To safeguard the specialist wildlife of lowland raised bogs by encouraging their management through providing owners and mangers with advice and guidance on best practice.
- HPLR4 To rehabilitate example raised lowland bogs through, initially, remedial work on two raised bogs not currently under conservation management, including a monitoring programme and proposals for the assessment of further sites.

C.1.8.2 Water Vole and Key Objectives:

- SPW1 To establish the extent of populations in the upper reaches of the Stinchar catchment, based on data from the 2006 survey.
- SPW2 To establish the condition and potential of riparian, marshland and bog habitats within the areas identified as occupied by water voles and to identify the threats to them.
- SPW3 To improve the riparian and / or wetland habitats within the areas currently occupied by the water voles
- SPW4 To monitor and report on the current population of water voles in the Stinchar catchment, both within and without such areas.

• SPW5 - To establish the extent of other water vole populations in Ayrshire, based on surveying any sites where voles have been reported recently.

C.1.8.3 Farmland Birds and Key Objectives:

- SPFB1 To assess the distribution and significant range contractions of target farmland bird species in Ayrshire.
- SPFB2 To establish the potential of significantly improving the value of hedgerows and field margins for farmland birds through management
- SPFB3 To demonstrate how changes in management can benefit farmland birds and be compatible with a successful commercial farm.
- SPFB4 To demonstrate how changes in management can benefit farmland birds and be compatible with safe, well managed roads.
- C.1.9 **Relevant UK Species Action Plans and Key** Objectives
- C.1.9.1 **Terrestrial Mammals**
- C.1.9.1.1 Brown hare (Lepus europaeus)
 - T1 Maintain current range of brown hare in the UK.
 - T2 Increase the population size of brown hare to double the 1995 level (population index = 100) by 2010.
- C.1.9.1.2 Otter (Lutra lutra)
 - T1 Maintain the current distribution of the otter throughout the UK.
 - T2 Expand the distribution of otters to achieve 85% occupancy of 10km squares by 2015.
- C.1.9.1.3 Pipistrelle Bat (Pipistrellus pipistrellus) & Soprano pipistrelles (Pipistrellus pygmaeus)
 - T1 Maintain P. pipistrellus population above 2005 baseline level (baseline available only at UK level at this time).
 - T2 (Pipistrellus pygmaeus) Maintain P. pygmaeus population above 2005 baseline level (baseline available only at UK level at this time).
 - T3 (Pipistrellus pipistrellus) Release P. pipistrellus population index by 35% of the 2005 baseline level by 2020.
 - T4 (Pipistrellus pygmaeus) Increase P. pygmaeus population index by 35% of the 2005 baseline level by 2020.

C.1.9.1.4 **Red Squirrel** (Sciurus vulgaris)

- T1 Maintain populations of red squirrels across their current range in the UK.
- C.1.9.1.5 Water Vole (Arvicola terrestris)

- UK.
- 2010.

Plans:

- Daubenton bat (Myotis daubentonii)
- Badger (Meles meles)
- Pine Marten (Martes martes)

C.1.9.2 Birds C.1.9.2.1

C.1.9.2.2 Bullfinch (Pyrrhula pyrrhula)

- current level by 2015 in Wales.

C.1.9.2.3 Linnet (Carduelis cannabina)

C.1.9.2.4 Nightjar (Caprimulgus europaeus)

- increase in 12 years).

C.1.9.2.5 **Reed Bunting (Emberiza schoeniclus)**



• T2 - Achieve an increase in range by 50 new occupied 10km squares in the UK by

Potentially Relevant Species listed on BARS website currently without Action

- Noctule bat (Nyctalus noctula)

Black Grouse (Tetrao tetrix)

• T1 - Increase the population of black grouse to 4500 lekking males by 2010.

• T2 - Restore the range of black grouse to 300 occupied 10km squares by 2010.

• T1 -In England, ensure the BBS index is no longer showing a negative trend by 2010 and is at least at 100% of the 2003 level by 2015. In Wales, increase the population to 140% of the 2003 level by 2015.

• T2 - Maintain the percentage of occupied BBS squares at the 2003 level in the UK, England, Northern Ireland and Scotland, aiming for an increase to 120% of

• T1 - Increase the BBS index to 115% of the 2003 level by 2010 for UK, England and Scotland, and maintain the index at the 2003 level in Wales. In Northern Ireland, ensure the population is at 115% of 2010 baseline level by 2015

• T2 - Maintain the percentage of occupied BBS squares at the 2004 level.

• T1 - Achieve an increase in the number of churring males in the UK, from 4,079 to 4800 by 2016. (an 18% population increase in 12 years)

• T2 - Maintain the current range (272 occupied 10km squares) of nightjar in UK.

• T3 - Increase the range to 311 occupied ten km squares by 2016 (a 13% range

• T1 - For UK, England and Scotland, increase the BBS index to 115% of the 2003 level by 2010. For Northern Ireland, increase the population to 115% of the 2010 baseline by 2015. For Wales, maintain the population at the 2010 baseline level.

• T2 - For UK, England, Northern Ireland and Scotland, increase the percentage of occupied BBS squares to 110% of the 2003 level by 2010. In Wales, maintain the percentage of occupied BBS squares at the 2010 level.

C.1.9.2.6 Skylark (Aluada arvensis)

- T1 Ensure the BBS index is at 100% of the 2003 level by 2010 for the UK, England, Northern Ireland and Scotland (increasing to 115% by 2015), and is maintained at this level in Wales.
- T2 Maintain the percentage of occupied BBS squares at the 2003 levels.

C.1.9.2.7 Spotted flycatcher (Muscicapa striata)

- T1 In England, ensure the BBS index is no longer showing a negative trend by 2010 and is at least at 100% of the 2003 level by 2015. In Northern Ireland, Scotland and Wales ensure the population is at 100% of the 2010 baseline by 2015.
- T2 In England and Wales, maintain the percentage of occupied BBS squares at the 2003 level. In Northern Ireland and Scotland, maintain the percentage of occupied BBS (i.e. 1km) squares at 2010 levels by 2015.

C.1.9.2.8 Song Thrush (Turdus philomelos)

- T1 In England, Northern Ireland and Scotland, increase the BBS index to 115% of the 2003 level by 2010. In Wales, maintain populations at the current (2003) level.
- T2 Maintain the percentage of occupied BBS squares at the 2003 levels in the UK and all four countries.

Potentially Relevant Species listed on BARS website currently without Action Plans:

Coal tit

Coot

Cuckoo

Curlew

Dunnock

Gadwall

Goldcrest

Goldeneye

Golden eagle

Garden warbler

Common sandpiper

Common Swift

- Barn owl
- Barnacle goose
- Bearded tit
- Black bird
- Black cap
- Black headed gull
- Blue tit
- Buzzard
- Canada Goose
- Chiffchaff
- Crested tit
- Crossbill

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- Goldfinch
- Golden plover
- Goosander
- Grasshopper Warbler
- Great tit

Goshawk

- Great black-backed gull
- · Greenland white-fronted goose
- Grey Wagtail

Grey Heron

- Greylag goose
- Hen harrier
- Herring gull
- House sparrow
- Jackdaw
- Kingfisher
- Lapwing
- Lesser black backed gull
- Lesser redpoll
- Long-tailed tit
- Magpie
- Mallard
- Meadow pipit
- Merlin
- Mistle thrush
- Moorhen

Osprey

- Mute swan
- Oystercatcher
- Peregrine falcon
- Pink-footed goose
- Pintail

- Pochard
- Raven
- Red breasted merganser
- Red kite
- Red grouse
- Redpoll
- Reed bunting
- Robin
- Rook
- Rough legged buzzard
- Scaup
- Shoveler
- Short-eared owl
- Siskin
- Song thrush
- Stonechat
- Sparrowhawk
- Tawny owl
- Teal
 - Tree pipit
- Tufted duck
 - Whitethroat
 - Wigeon
- Whinchat
- Willow tit
- Willow warbler
- Woodcock
- Wood warbler
- Whooper swan
- Wren
- Yellow wagtail

C.1.9.3 Herptiles

- C.1.9.3.1
 - by 2010.
 - 2010.
 - 120,000 by 2010.
 - of >0.7 from 60,000 to 72,000 by 2010.

Plans:

- Adder (Vipera berus)
- Common frog (Rana temporaria)
- Common toad (Bufo bufo)
- Common lizard (Zootoca vivipara)
- Palmate newt (Triturus helveticus)
- Smooth newt (Lissotriton vulgaris)
- Slow worm (Anguis fragilis)
- C.1.9.4 Fish

C.1.9.4.1

C.1.9.5

C.1.9.5.1

the UK.

to 74 by 2015.

Great crested newt (Triturus cristatus)

• T1 - Achieve an increase in the range of occupied 10km squares from 904 to 926

• T2 - Achieve an increase in the range from 88 to 89 occupied vice counties by

• T3 - Achieve an increase in the number of occupied ponds from 100,000 to

• T4 - Achieve an increase in the number of ponds with a Habitat Suitability Index

Potentially Relevant Species listed on BARS website currently without Action

Potentially Relevant Fish Species listed on BARS website currently without Action Plans:

• Artic Char (Salvelinus alpinus)

• Atlantic salmon (Salmo salar)

Brown trout (Salmo trutta)

Invertebrates

Fresh Water Pearl Mussel (Margaritifera margaritifera)

• T1 - Maintain the number of all viable populations of freshwater pearl-mussel in

• T2 - Increase the number of viable freshwater pearl mussel populations from 66

• T3 - Increase the size of 5 viable populations of freshwater pearl mussel by 2015.

• T4 - Re-establish populations of freshwater pearl mussel at 12 sites within its natural range by 2015.

C.1.10 **Relevant UK Habitat Action Plans and Key Objectives**

C.1.10.1 Broadleaved, Mixed and Yew Woodland

• No priority habitat targets set

C.1.10.2 Blanket Bog

- T1 Maintain at least 2,209,000 ha of blanket mire in the UK by 2010.
- T2 A total of 430,991 ha of blanket bog, within A/SSSIs, in the UK, to be in favourable or unfavourable recovering condition by 2015.
- T3 Achieve a measurable increase in the extent of blanket bog outwith A/SSSIs in favourable or unfavourable recovering condition by 2015.

C.1.10.3 Lowland Calcareous Grassland

- T1 Maintain the current extent of Lowland Calcareous Grassland in the UK. (Target represents no loss of BAP habitat).
- T2 Maintain at least the current condition of Lowland Calcareous Grassland.
- T3 Achieve favourable or recovering condition for 30,421ha of Lowland Calcareous Grassland by 2010.
- T4 Restore 399ha of Lowland Calcareous Grassland from semi-improved or neglected grassland, which no longer meets the priority habitat definition by 2010.
- T5 Re-establish 8,424ha of grassland of wildlife value from arable or improved grassland by 2010.
- T6 6,320 ha (75%) of re-established area to be adjacent to existing Lowland Calcareous Grassland or other semi-natural habitat by 2010. (Refer to T5)
- T7 4.200 ha (50%) of re-established area to contribute to resultant habitat patches of 2 ha or more of Lowland Calcareous Grassland by 2010. Where ever practicable bigger patches should be created. (Refer to T5)

C.1.10.4 Lowland Dry Acid Grassland

- T1 Maintain the current extent of Lowland Dry Acid Grassland in the UK. (Target represents no loss of BAP habitat).
- T2 Maintain at least the current condition of Lowland Dry Acid Grassland.
- T3 Achieve favourable or recovering condition for 29,220 ha of Lowland Dry Acid Grassland by 2010.
- T4 Restore 313ha of Lowland Dry Acid Grassland from semi-improved or neglected grassland, which no longer meets the priority habitat definition by 2010.
- T5 Re-establish 363ha of grassland of wildlife value from arable or improved grassland by 2010.

- T6 270 ha (75%) of re-established area to be adjacent to existing Lowland Dry Acid Grassland or other semi-natural habitat by 2010. (Refer to T5)
- T7 180 ha (50%) of re-established area to contribute to resultant habitat patches of 6 ha or more of Lowland Dry Acid Grassland by 2010. Where ever practicable bigger patches should be created. (Refer to T5)

C.1.10.5 Lowland Heathland

- T1 Maintain the current extent of all existing lowland heathland. This targets represents no net loss of habitat.
- T2 Maintain the area of lowland heathland currently in favourable condition.
- T3 Improve the condition of lowland heathland on sites currently in unfavourable condition.
- T4 Increase the extent of lowland heathland by 7,600 ha by 2015.
- T5 Increase the number of heathland patches over 30 ha from 10% of the total resource to 50% by 2030.

Lowland Mixed Deciduous Woodland C.1.10.6

- T1 Maintain the net extent of native woodland in the UK, (no net loss of 1,000 kha). [shared target for all priority woodlands]
- T2 Maintain the current extent and distribution of ancient semi-natural woodland, which qualifies as native woodland in the UK, (no change in the existing area of 403 kha). [shared target for all priority woodlands]
- T3 Achieve favourable or recovering condition of 565.7 kha (53%) of native woodland resource in the UK, by 2015. [shared target for all priority woodlands]
- T4 Restore 50.3 kha of non-native plantations on ancient woodland sites (PAWS) to native woodland in the UK by 2015. [shared target for all priority woodlands]
- T5 Expand the current native woodland resource in the UK by 134.5 kha, by 2015. [shared target for all priority woodlands]
- T6 Maintain the total extent and distribution of lowland mixed broadleaved woodlands (no net loss of 28kha). (Applicable to Scotland)
- T7 Maintain the current area of ancient semi-natural lowland mixed broadleaved woodlands (no loss of 5.5kha). (Applicable to Scotland)
- T8 Achieve favourable or recovering condition of 11.5 kha of the total lowland mixed broadleaved woodlands resource by 2015. (Applicable to Scotland)
- T9 Initiate measures to restore 525 ha of lowland mixed broadleaved woodland on non-native PAWS by 2015. (Applicable to Scotland)
- T10 Expand the area of lowland mixed broadleaved woodlands by 4.5 kha by 2015. (Applicable to Scotland)

C.1.10.7 Lowland Raised Bog

- part of a national series.
- in the UK by 2010.

Purple Moorgrass and Rush Pastures C.1.10.8

- Pastures.
- 2010.
- grassland by 2010.

C.1.10.9 Rivers

No priority habitat targets set

C.1.10.10 Upland heathland



• T1 - Maintain the extent of the existing UK resource of BAP habitat (i.e. primary and secondary raised bog resource) with no loss.

• T2 - Rehabilitate degraded bog habitat still capable of natural regeneration (in targeted areas) to bring most of the primary and secondary resource into or approaching favourable condition by 2020 through appropriate management.

• T3 - Restore Lowland Raised Bog immediately or via succession from fen on chosen areas of archaic peat to ensure a sustainable hydrological regime for adjacent extant habitat and to restore LRB to its former geographical range as

• T4 - 90% of the total market for soil improver and growing media to be peat free

• T1 - Maintain the current extent of Purple Moor-grass and Rush Pastures in the UK. (Target represents no loss of BAP habitat).

• T2 - Maintain at least the current condition of Purple Moor-grass and Rush

• T3 - Achieve favourable or recovering condition for 45,059ha of Purple Moorgrass and Rush Pasture by 2010.

• T4 - Restore 642ha of Purple Moor-grass and Rush Pasture from semi-improved or neglected grassland, which no longer meets the priority habitat definition by

• T5 - Re-establish 270ha of grassland of wildlife value from arable or improved

• T6 - 200 ha (75%) of re-established area to be adjacent to existing Purple Moorgrass and Rush Pastures or other semi-natural habitat by 2010. (Refer to T5)

• T7 - 135 ha (50%) of re-established area to contribute to resultant habitat patches of 2 ha or more of Purple Moor-grass and Rush Pasture by 2010. Where ever practicable bigger patches should be created. (Refer to T5)

• T1 - Maintain at least 981,500 ha of upland heathland in the UK by 2010.

• T2 - A total of 366,760 ha of upland heathland, within A/SSSIs, in the UK to be in favourable or unfavourable recovering condition by 2015.

• T3 - Achieve a measurable increase in the extent of upland heathland outwith A/ SSSIs in favourable or unfavourable recovering condition by 2015.

C.1.10.11 Wet woodland

- T1 Maintain the net extent of native woodland in the UK, (no net loss of 1,000 kha). [shared target for all priority woodlands]
- T2 Maintain the current extent and distribution of ancient semi-natural woodland, which qualifies as native woodland in the UK, (no change in the existing area of 403 kha). [shared target for all priority woodlands]
- T3 Achieve favourable or recovering condition of 565.7 kha (53%) of native woodland resource in the UK, by 2015. [shared target for all priority woodlands]
- T4 Restore 50.3 kha of non-native plantations on ancient woodland sites (PAWS) to native woodland in the UK by 2015. [shared target for all priority woodlands]
- T5 Expand the current native woodland resource in the UK by 134.5 kha, by 2015. [shared target for all priority woodlands]
- T6 Maintain the total extent and distribution of wet woodlands (no net loss of 21kha). (Applicable to Scotland)
- T7 Maintain the current area of ancient semi-natural wet woodlands (no loss of 12kha). (Applicable to Scotland)
- T8 Achieve favourable condition of 8.9 kha of the total wet woodland resource by 2015. (Applicable to Scotland)
- T9 Initiate measures to restore 1 kha of wet woodland on non-native PAWS by 2015. (Applicable to Scotland)
- T10 Expand the area of wet woodland by 5kha by 2015. (Applicable to Scotland)
- T11 Maintain the area of all wet woodlands in Northern Ireland at least 2,600 ha.
- T12 Maintain the current area of all ancient or long-established semi-natural wet woodlands. (Applicable to Northern Ireland)
- T13 Maintain condition, where favourable, of the existing resource. (Applicable to Northern Ireland)
- T14 Achieve favourable condition of 1650 ha. of wet woodland by 2015. (Applicable to Northern Ireland)
- T15 Restore 60 ha of former wet woodland on ancient and long-established woodland sites by 2010 and a further 130 ha by 2015. (Applicable to Northern Ireland)
- T16 Establish 120 ha of wet woodland by 2010 and a further 140 ha by 2015. (Applicable to Northern Ireland)

Further Detail on Ecological Survey Methodologies

C.2.1 Introduction

C.2

1 This appendix provides further information on the ecological survey methods adopted for baseline field surveys (i.e. habitats and protected non-avian fauna) for the Blackcraig and Margree OHL grid connection EIA project.

C.2.2 **Key Potential Impacts**

- 1 The approach to the survey was devised to enable the collection of appropriate data to inform the assessment of the following potentially significant effects on sensitive ecological receptors arising from the OHL proposal:
 - Potential direct / indirect bird habitat loss due to the OHL and associated infrastructure;
 - Potential disturbance to protected mammals, reptiles and amphibian species arising from construction of the overhead grid connection;
 - Potential loss of habitats of importance to protected species;
 - · Potential adverse impacts on other fauna or plant species of conservation importance (in a local, regional and national context);
 - · Potential loss / degradation (direct and indirect) of habitats of conservation importance (e.g. UK BAP, EU priority habitats) during construction / operation; and
 - · Potential cumulative impacts with other existing developments and / or proposed developments.

Available Guidance C.2.3

- 1 The approach taken to baseline data gathering and the assessment of effects draws on a range of guidance from a number of sources, including available published scientific literature and guidance produced by government / statutory nature conservation organisations and the energy industry. Currently, there are no widely adopted sources of guidance specifically for ecological baseline survey assessment for overhead powerlines in Scotland. However, methodological approaches used to inform EIAs, in relation to other linear developments, are also well established (e.g. trunk roads, buried pipelines). Guidance is also available on survey methods for the assessment of other types of development that may have broadly similar impacts (e.g. wind farms). The following are key references that have been considered, along with professional experience / judgment, in determining survey and assessment methodologies:
 - Guidelines for Ecological Impact Assessment in the United Kingdom (version 7; Institute of Ecology and Environmental Management 2006);
 - Environmental Assessment Handbook: Guidance on the Environmental Impact Assessment Process (SNH 2005);

- 2001, updated 2006); and

C.2.4 Survey Areas

- area was 1km wide.

C.2.5 **Summary of Field Surveys**

- (January 2008);
- bog, calcareous grassland); and
- conducted in May July 2008.

C.2.6 Habitat Surveys

C.2.6.1 Extended Phase 1 Habitat / Targeted NVC Survey

 European Protected Species, Development Sites and the Planning System: Interim guidance for local authorities on licensing arrangements (Scottish Government

• Relevant species specific survey guidance.

1 During the initial stages of the project, prior to the preferred route being identified, a preliminary site assessment to define ecological constraints on routeing was completed within the routeing Study Area (see Figure 3.02 within Chapter 3).

2 The core ecological survey area (habitat and protected species surveys) was based on a corridor centred on the 'proposed route' (initially defined by the 'preferred route' and updated, as necessary, when the 'proposed route' was fixed). This survey

1 The following is a summary of the habitat and protected species surveys that have been completed; further detail on methods is provided below:

· Preliminary ecological constraints survey, from areas of public access only

• Extended Phase 1 Habitat survey of the 1km wide survey corridor (June - July 2008), including targeted NVC survey of sensitive habitats (for example blanket

 Walkover protected species surveys along the 1km wide survey corridor to assess the presence, status and suitability of the habitats within the route corridor for red squirrel, badger, water vole, otter, bats and protected reptiles / amphibians,

1 The habitat survey, carried out between June and July 2008, consisted of an extended Phase 1 survey of the proposed preferred route corridor (1km wide) following standard guidance (JNCC, 1993). This was carried out to identify vegetation communities and habitats present. Habitats were plotted on a 1:10 000 scale map of the survey area. Aerial photography will were used to assist with mapping habitat boundaries / polygons. An assessment of dominant National Vegetation Classification (NVC) plant communities (following Averis et al. 2004; Rodwell, 1998) was carried out where suitable semi-natural habitats were present (e.g. NVC communities are not applicable to areas of commercial conifer plantation or improved pasture). Target notes, linked to the Phase 1 habitat map, providing greater detail on specific habitats or features that had particular importance for both animal and plant communities were recorded. A list of plant and animal species recorded during the survey was also produced. Plant species nomenclature followed Stace (1997) for higher plants and Watson (1981) and Hill (1992) for mosses and liverworts.

2 A handheld Global Positioning System (GPS) was used to locate (±10m accuracy) notable species (e.g. nationally scarce, UK and LBAP higher and lower plants) target notes and to assist with mapping boundaries between vegetation communities and other features of interest within the site. Where available, geo-referenced aerial photography was used to help improve the accuracy of the habitat mapping process.

C.2.7 Protected Mammals

- Protected species surveys were undertaken to ensure that sufficient information was collated to inform the scheme design, mitigation strategy and assessment of effects in relation to relevant UK and European Protected Species. The objectives of the surveys were to assess habitat suitability, (likely) presence or absence of species and to estimate the extent of activity by protected mammal species within the survey area. As such, the survey methods used do not provide details of the extent of territories, abundance, population structure or productivity of particular species.
- 2 A walkover survey of the 1km wide preferred route corridor was undertaken to assess habitat suitability and use (i.e. likely presence/absence) by red squirrel, badger, water vole, otter, bat species and great crested newt. Signs of all protected / notable species were recorded (e.g. notable invertebrates, amphibians, reptiles). If surveys indicated that more detailed individual data was required for specific species, further studies were completed separately.
- 3 The following provides further details of the survey approach for individual species:

C.2.7.1 Badger

A badger survey was undertaken according to standard survey methodology (Harris et al., 1989). The survey area was carefully searched for evidence indicating the presence of badgers. Signs included setts / holes, bedding, fresh spoil, paths / tracks, prints, hairs, latrines, dung, and foraging signs. These were all carefully mapped and described. On the basis of the evidence an assessment of the current use of the site by badgers was made (i.e. intensity, foraging only, breeding, etc.). Woodland and enclosed farmland habitat were identified as supporting badger populations. Areas of heath / blanket bog were assessed as having limited value as foraging habitat, however some areas were assessed as having some potential. Particular focus was given to areas where the habitat appeared to be more suitable (e.g. hedgerows, tree lines, semi-natural mixed and broad-leaved woodland, scrub, bracken and enclosed grassland). On the basis of the evidence, a description and assessment of the current use of the site by badgers was made (i.e. intensity, foraging only, breeding, etc.) and the need for more detailed surveys advised, where necessary.

C.2.7.2 Bat Species

Bat tree or building roost surveys (daytime inspection and dawn / dusk surveys) were undertaken following current best practice guidance (BCT 2007, Natural England 2008). Where tree felling may be required, surveys focused on establishing the potential for roosting bats to be present.

- 2 Foraging habitat quality for bats within the survey area was assessed with visual appraisal during the day and also with evening bat activity surveys along walked transects and using static bat detector recording units.
- 3 Habitats within the survey area were assessed for their potential value for foraging, commuting and roosting bats. Habitat areas were indicated accurately on a map and given a reference number (based on site survey and existing habitat mapping). Each habitat area was assigned to a category / sub category as shown in Table 1, below.

Table C2.1 - Categories and Sub-categories Used During Bat Habitat Assessmen
Surveys

1	y Sub-Category	
	Broad-leaved	A
Manada a	Coniferous	В
woodland	Mixed	С
	Scrub	D
	River	
	Canal	F
Matar	Pond	G
water	Burn/ditch	н
	Lake/reservoir	I
	Wet Heath/Bog/Marsh	J
	Farmland – Grazed or cropped/tilled	К
	Amenity Grassland/parkland	L
Arable / Grassland	Moorland & Heath	М
	Meadow	N
Linkan	Semi-urban – Gardens	0
Urban	Urban – Built up/industrial	Р
	Woodland edge	Q
	Ride/clearing	R
Linear Habitat	Hedge	S
	Tree line	т
	Field boundary (wall/fence)	U
	Cave (natural)	V
Underground Sites	Mine/Tunnel	w
	Quarry/Cliff	x
Manual Character	Cellar/Grotto/Ice cave	Y
Manmade Structures	Bridge	Z
Other (specify)		

4 Each habitat area was then assessed for its potential for foraging, commuting and roosting, according to the criteria described in Table 2, below.

Table C2.2 - Criteria for Assessing Bat Habitat Potential

Habitat Value	Roosting	Foraging	Commuting
High	Woodlands: High proportion of trees with roost potential (suitable roost sites and access points in cracks, crevices and other gaps) - >1 tree in 50 with potential. Diverse choice of different roosts. Caves/tunnels/mines/ ice houses with humid atmosphere and sheltered, stable temperature conditions Low disturbance levels	High insect abundance. Native woodland/trees/ hedgerows offering shelter and diverse edge habitat. Slow flowing/still freshwater features with sheltered vegetated edges Low disturbance levels from lighting, pollutants, human activity	Continuous, unbroken linear feature providing shelter and/or foraging opportunities and connectivity with other landscape features including roost and foraging areas. Includes tree lines, woodland edge, hedgerows, waterways, walls, woodland tracks, road and drainage networks, buildings
Medium	Roost sites and access points in cracks, crevices and gaps present but not ideal due to size, disturbance levels, exposure. Between 1 in 50 and 1 in 100 trees have roost potential	Moderately high insect abundance. Native woodland/trees/ hedgerows offering some shelter and edge habitat. Fast flowing freshwater features offering some shelter	Partly discontinuous feature (gaps up to 30m wide) offering some shelter and/ or foraging opportunities
Low	No suitable roost sites or access points visible. Fewer than 1 tree in 100 has roost potential due to age or type of trees High disturbance levels	Conifer woodland, improved agriculture and built up areas with low plant diversity and/or insect abundance. Lack of shelter, poorly connected to roost sites and commuting routes High disturbance levels from lighting, pollutants, human activity	Discontinuous feature (gaps greater than 30m wide) offering no shelter and/or isolated from potential roosting and/or foraging areas

5 Confirmed/potential roost sites within the survey area were identified and assigned a roost potential category according to the criteria outlined in Table 3, below. Areas of woodland of different age structure or composition were sampled for bat activity. Trees with no potential were ignored and were not recorded. Notes about potential roost site context were also recorded where applicable.







Table C2.3 - Criteria for Assessing Bat Tree Roost Potential

Main Tree Roost Category	Sub-Category	Category Description	Indicator
	A	Trees with direct evidence of current use by bats	Sighting/hearing of bats Presence of fresh droppings/ staining
1 (Roost)	В	Trees with evidence of recent use by bats	Small numbers of old droppings/ old staining, smoothing and lack of cobwebs. Roosts identified by personal communication from reliable source
2 (Potential Roost)	A	Trees with high potential for use as roost	Presence of cracks, splits, knot holes, loose bark, woodpecker holes, snag ends and other hollows etc
	В	Trees with some potential for use as roost	Presence of dense ivy cover or dead wood
No potential		Trees with no or low potential for use as roost	No such features; immature, smooth bark or lack of branches; isolated from foraging or commuting routes.

- 6 Buildings and trees identified during the walkover survey as having evidence of use by roosting bats, or providing good potential opportunities for bats (i.e. categories 1A, 1B and 2A), were monitored at dusk or dawn using bat detectors to determine if they were occupied (surveys were undertaken over three visits from June - August 2008 with at least one pre-dawn visit). All sightings or detections were recorded, including species, number, location and time. Surveys were only carried out in suitable weather conditions.
- 7 Evening bat activity surveys were also carried out with the aim of identifying key areas of bat activity, roosts and commuting routes. Surveys were carried out in suitable weather conditions. Broadband ultrasonic detectors were used for all activity surveys. Bat detectors were used to detect and interpret bat calls in the field. Recordings were analysed later, using suitable software. The species, number of bat passes (where a pass is defined as >1 consecutive echolocation call) and activity type (foraging, commuting, social calling) were recorded on standardised survey forms. Notes about specific behaviour including the direction of travel or the use of features in the landscape (foraging over water or swarming around buildings) were also be made where relevant.
- For bat activity surveys, surveyors walked a pre-defined route at a slow speed, regularly stopping at sampling points, for two minutes, in order to sample activity, with at least 100m between sampling points. Bat activity surveys were carried out between sunset and three hours after sunset. Each transect was repeated three times, during the period June to August, and walked in the opposite direction on the second visit using the same stationary sampling points.
- 9 A remote bat detector recording survey was carried out in locations where the terrain is unsuitable or unsafe for manual bat activity surveys (e.g. clearfell, marshy grassland with drainage ditches). The exact location for the placement of remote recording was determined following the initial site visit in June 2008. This technique achieves a greater level of survey intensity than manual bat detector surveys and provides

comparable results, allowing several sample points to be surveyed simultaneously. Remote recording systems were placed at predetermined locations guided by daytime habitat profile and roost surveys, to establish likely commuting, feeding or roosting habitat. Remote recording systems were left in place overnight and either collected or re-loaded the next day. All recordings were analysed to identify, where possible, species, type and intensity of activity.

C.2.7.3 Otter

10 Targeted walkover surveys were undertaken of all watercourses (including a 250m buffer zone on either side of any proposed watercourse crossing) that may be affected by the proposed development. This was undertaken using standardised methodology (Strachan 2007) and involved searching the watercourse and both of its banks for signs of otter, including spraints, footprints, feeding remains, holts and couches. While surveys for otter can be undertaken at any time of year, they should be completed within periods of relatively dry weather, as evidence may be washed away by rising water levels.

C.2.7.4 Pine marten

1 Suitable habitats within the survey area were carefully searched for signs of pine marten presence, such as feeding remains, scats, footprints and den sites. All signs were searched for and carefully mapped / described. Caution needs to be applied in the identification of scats due to the difficulty in consistently separating marten scats from those of polecat, mink and stoat. Any scats that could not be clearly identified as not being of pine marten origin were sent for genetic testing to ensure correct identification, due to the potential for misidentification with other species, such as fox. Depending on site sensitivity, further detailed surveys, including techniques such as hair snagging stations, were considered (Messenger & Birks 2000). Any potentially suitable denning sites were assessed for the presence of the species. The optimal survey period for pine marten is from mid-May through to the end of September.

C.2.7.5 **Red Squirrel**

1 Red squirrel surveys were undertaken using a standardised methodology (Gurnell et al. 2001) that involves surveying any potentially suitable habitat, such as coniferous or broadleaved woodland. The survey took the form of habitat assessment, drey searches (and drey activity level assessments) and cone transect surveys to assess population density and areas of relatively high red squirrel activity. Particular focus was given to areas of woodland that may be subject to tree felling. Habitat quality for red squirrel was identified and evaluated (see outline criteria described in Table 4). Favourable woodland habitats were identified as containing large blocks of mixed coniferous species of varying age classes, such as Scots pine and Norway spruce; whilst single-species coniferous plantations of Sitka spruce were identified as only supporting low densities of red squirrel. In addition, all signs of red squirrel presence, such as animal sightings, feeding remains and drey sites, were recorded.

Table C2.4 - Red Squirrel H

ategory	Habitat Quali
	Variety of conif Norway spruce Variety of ages age classes in th Tree blocks: See great expanses Lots of cone be Presence of sm Aspect: South f
1	Conifers: Less v spruce. Age class: Not a Tree blocks: Iso Aspect: South f
2	Conifers: Sitka s Age class: All sa Tree blocks: Lar Aspect: Not sou
	Conifers: Clear Age class: All sa Large seeded bu Grey Squirrel pr

C.2.7.6 Water vole

C.2.8 Other Terrestrial Fauna

C.2.8.1

abitat Quality Classification
ty
Ters: A mixture of tree species. Species of value to red squirrels include Scots pine Corsican pine and larch. I deally there should be around one-third of each of the following tree ne wood: younger than 15 years; 15-30 years; older than 30 years. ed bearing tree blocks not isolated from each other (i.e. not separated by of clear fell); feathered edges to blocks. aring trees.
all-seeded species such as rowan, willow, birch, alder, ash. acing slope (encourages seed production).
ariety of conifers (e.g. only one or two species); predominantly Sitka a great variety of age structure. lated from each other to some extent; feathered edges. acing.
spruce with larch on only a few of the forest edges. Ime age. ge separation between tree blocks; uniform edges. Ith facing.
fell/ young conifers not of cone bearing age. Ime age. road-leaves only (will encourage grey squirrel). resent.

2 (NB blocks of woodlands of >200ha (depending on habitat quality) and ideally over 2000ha, offer the best opportunity for long-term red squirrel conservation.)

1 Targeted walkover surveys for water vole were undertaken. All watercourses (including a 250m wide buffer zone on either side of all proposed crossings), suitable ditches (particularly those fringed with rushes / sedges and with exposed or undercut peaty or sandy banks) and areas of wet grassland / rush pasture, were carefully searched for signs indicating the presence of water vole. Signs include sightings of water voles, faeces (latrines and droppings), burrow entrances, nests, paths, feeding signs (chopped vegetation or grazed areas), footprints and the remains of dead water voles (Strachan & Moorhouse 2006). Disused burrows were distinguished from active ones by the amount of vegetation covering the entrance and whether the edges of the hole were eroded. Any sings of mink were also noted during this survey, as their presence can greatly reduce the likelihood of the presence of water voles. The optimal survey period for water vole is from late April through to early October, when the species is most active. Surveys were undertaken in periods of relatively dry weather to reduce to potential for signs to be washed away. Where justifiable, surveys for otters and water vole would be combined, giving cost and time efficiency savings. Based on the survey findings a description and assessment was made of the current status of water voles on the site (e.g. extant or historical population), extent of activity and the habitats and other site features that are important to them.

Herpetiles / Invertebrates

1 Following the desk study, EIA Scoping and initial surveys detailed reptile, amphibian or invertebrate surveys were not considered necessary to inform the assessment of potentially significant ecological effects. However, records of all notable fauna were recorded during the habitat and protected mammal walkover surveys, as were incidental records from the walkover bird surveys.

C.2.9 References

- Averis, A. M., Averis A. B. G., Birks, H. J. B., Horsfield, D., Thompson, D. B. A., & Yeo, M. J. M. (2004). An Illustrated Guide to British Upland Vegetation. Joint Nature Conservation Committee, Peterborough.
- 2 BCT (2007). Bat Surveys Good Practice Guidelines. Bat Conservation Trust, London.
- 3 Gurnell, J., Lurz, P. & Pepper, H. (2001). Practical Techniques for Surveying and Monitoring Squirrels. Forestry Commission Practice Note 11 (FCPN11), September 2001
- 4 Harris, S., Cresswell, S. & Jefferies, D. (1989). Surveying Badgers. The Mammal Society, London
- 5 Hill, M.O. (1992). Sphagnum: a field guide. Joint Nature Conservation Committee, Peterborough, United Kingdom.
- 6 Ivanov, K. E. (1981). Water movement in Mirelands. Translated from the Russian by A Thompson and H. A. P. Ingram. Academic Press, London.
- 7 JNCC (1993) Handbook for Phase 1 Habitat Survey a technique for environmental audit Joint Nature Conservation Committee, Peterborough, England.
- 8 Messenger, J. E. and Birks, J. D. S. (2000) Monitoring the very rare: pine marten populations in England and Wales. in H. I. Griffiths editor. Mustelids in a modern world. Management and conservation aspects of small carnivore: human interactions. Backhuys, Leiden. Netherlands.
- Natural England (2008). Bats and Trees. Natural Environment Team Advice Note 2a
 Oct 2006 (last updated Feb 2008). http://www.dorsetforyou.com/media/pdf/s/m/
 Bats___Trees_Advice_Note___Good_Practice_Guidance.pdf
- 10 Rodwell, J. (1998). British Plant Communities: Volumes 1 5. Cambridge University Press, Cambridge, UK
- 11 SNH (2005). A Handbook on Environmental Impact Assessment. Scottish Natural Heritage
- 12 Stace, C. (1997). New Flora of the British Isles. Cambridge University press, United Kingdom.
- 13 Strachan, R. and Moorhouse, T. (2006). Water Vole Conservation Handbook, Second Edition
- 14 Strachan, R. (2007). National Survey of Otter Lutra lutra Distribution in Scotland 2003-2004. Scottish Natural Heritage Commissioned Report No. 211.
- 15 Watson, E.V. (1981). British Mosses and Liverworts. Cambridge University Press, United Kingdom.





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C.3 Non-Confidential Desk Study Information

Table C3.1 - Protected Mammal Records from the National Biodiversity Network Gateway [Accessed October 2009]

Species	Square	Location	Grid Ref	Record	Date recorded	Sensitivity	Status and Legal Protection		
	NS 40	No site name available	NS446083	1988	Year	N	ConsRegs:Sch2 WACA:Sch5_sect9.5b		
Natterer's Bat (Myotis nattereri)	NS 40	No site name available	NS40	Between 1980 and 1994	Year Range	Ν	WACA:Sch5_sect9.5a WACA:Sch5_sect9.4c WACA:Sch5_sect9.4b Scottish Biodiversity List Bern:A2 HabDir:A4 Bonn:A2		
	NS 40	No site name available	NS40	Between 1736 and 1960	Year range	Ν	ConsRegs:Sch2 WACA:Sch5_sect9.5b		
	NS 41	No site name available	NS 41	Between 1736 and 1960	Year Range	Ν	WACA:Sch5_sect9.5a WACA:Sch5_sect9.4c		
Pipistrelle (Pipistrellus spp.)	NS 41	Patna	NS 41	Unknown	Year Range	N	WACA:Sch5_sect9.4b Scottish Biodiversity List Bern:A2 HabDir:A4 Bonn:A2		
Daubenton's bat (Myotis Daubentonii)	NS 41	Patna	NS 41	Unknown	Year Range	N	ConsRegs:Sch2 WACA:Sch5_sect9.4b WACA:Sch5_sect9.5a WACA:Sch5_sect9.4c WACA:Sch5_sect9.5b Scottish Biodiversity List Bern:A2 HabDir:A4 Bonn:A2		
	NX 59	No site name available	NX553946	Between 12th and 17th June, 1905	Day Range	Ν			
	NX 68	Alangibbon Bridge, St Johns Town of Dalry	NX615821	21/06/1905	Day Range	Ν			
	NX 68	Knocknailling	NX600848	26/06/1905	Day Range	Ν			
	NX 68	No site name available	NX653846	Between 12th and 17th June 1905	Day Range	Ν			
	NX 68	Entrance to Garroch House	NX615824	22/06/1905	Day Range	Ν			
	NX 68	Entrance to Garroch House	NX601814	18/06/1905	Day Range	Ν	WACA:Sch5_sect9. WACA:Sch5_sect9.1(taking) WACA:Sch5_sect9.4a		
Ded Seuterel (Seivere valeraie)	NX 69	No site name available	NX652946	Between 12th and 17th June, 1905	Day Range	Ν	WACA:Sch5_sect9.1(kill/injuring) WACA:Sch5_sect9.5a		
Keu Squirrei (Sciurus vaigaris)	NX 58	No site name available	NX596824	07/09/1994	Day	Ν	WACA:Sch5_sect9.4b WACA:Sch5_sect9.5b		
	NX 58	No site name available	NX596824	08/09/1994	Day	Ν	WACA:Sch5_sect9.4c Scottish Biodiversity List		
	NX 58	No site name available	NX596824	11/09/1994	Day	Ν	DAF.2007		
	NX 58	No site name available	NX596824	11/09/1994	Day	N			
	NX 58	Garroch Burn	NX595812	19/06/1905	Day	N			
	NX 58	No site name available	NX553846	Between the 12th and 17th June 1905	Day	Ν			
	NX 58	No site name available	NX596824	05/09/1994	Day	Ν			

Species	Square	Location	Grid Ref	Record	Date recorded	Sensitivity
	NX 58	No site name available	NX5982	21/09/1994	Day	N
	NX 58	No site name available	NX5982	23/09/1994	Day	N
	NX 49	No site name available	NX49	Between 1990 and 1997	Year Range	N
Red Squirrel (Sciurus vulgaris)	NS 40	No site name available	NS40	Between 1990-1997	Day Range	N
	NS 40	No site name available	NS452047	Between 12th and 17th June 1905	Day Range	N
	NS 41	No site name available	NS 41	Between 1990 and 1997	Year Range	N
	NX 59	Water of Deugh at Greenwell of Scotland	NX557946	Between 3rd September and 7th May, 1991	Day Range	N
	NX 59	Garryhorn Burn near mine	NX534934	31/10/1978	Day	N
	NX 59	Garryhorn Burn near mine	NX534934	Between 14th May and 15th November, 1984	Day Range	N
	NX 59	Garryhorn Burn near mine	NX534934	Between 3rd September and 7th May, 1991	Day Range	N
	NX 59	Inflow to Loch Doon	NX509993	31/10/1978	Day	N
	NX 59	Water of Deugh below Waterhead	NX546984	31/10/1978	Day	N
	NX 59	Water of Deugh below Waterhead	NX546984	Between 14th May and 15th November, 1984	Day Range	N
	NX 59	Water of Deugh below Waterhead	NX546984	Between 3rd September and 7th May, 1991	Day Range	N
	NX 68	Water of Ken at outflow from Earlstoun Loch	NX616821	31/10/1978	Day	N
	NX 68	Fingland Lane	NX655891	21/11/1978	Day	N
	NX 68	Burn at Glenlee Mains	NX603810	22/11/1978	Day	N
Otter (Lutra lutra)	NX 68	Water of Ken at outflow from Earlstoun Loch	NX616821	Between 14th May and 15th November, 1984	Day Range	N
	NX 68	Lochinvar	NX656856	21/11/1978	Day	N
	NX 68	Lochinvar	NX656856	Between 14th May and 15th November, 1984	Day Range	N
	NX 68	Lochinvar	NX656856	Between 3rd September and 7th May, 1991	Day Range	N
	NX 68	Black Water above Kendoon Power Station	NX617884	22/11/1978	Day	N
	NX 68	Black Water above Kendoon Power Station	NX617884	Between 14th May and 15th November, 1984	Day Range	N
	NX 68	Black Water above Kendoon Power Station	NX617884	Between 3rd September and 7th May, 1991	Day Range	N
	NX 68	Garple Burn near Corriedoo	NX680830	21/11/1978	Day	N
	NX 68	Garple Burn near Corriedoo	NX680830	Between 14th May and 15th November, 1984	Day Range	N
	NX 68	Garple Burn near Corriedoo	NX680830	Between 3rd September and 7th May, 1991	Day Range	N
	NX 68	Trolane Burn near Bogue	NX644812	21/11/1978	Day	N







Species	Square	Location	Grid Ref	Record	Date recorded	Sensitivity
	NX 68	Trolane Burn near Bogue	NX644812	Between 14th May and 15th November, 1984	Day Range	Ν
	NX 68	Trolane Burn near Bogue	NX644812	Between 3rd September and 7th May, 1991	Day Range	Ν
	NX 69	Kendoon Loch	NX608908	Between 14th May and 15th November, 1984	Day Range	Ν
	NX 69	Kendoon Loch	NX608908	Between 3rd September and 7th May, 1991	Day Range	Ν
	NX 69	Fingland Burn	NX697972	Between 14th May and 15th November, 1984	Day Range	Ν
	NX 69	Fingland Burn	NX697972	Between 3rd September and 7th May, 1991	Day Range	Ν
	NX 69	Water of Ken near Smeatons Farm	NX633918	31/10/1978	Day	Ν
	NX 69	Water of Ken near Smeatons Farm	NX633918	Between 14th May and 15th November, 1984	Day Range	Ν
	NX 69	Water of Ken near Smeatons Farm	NX633918	Between 3rd September and 7th May, 1991	Day Range	Ν
	NX 69	Kendoon Loch	NX608908	05/10/1978	Day	Ν
	NX 69	Water of Ken	NX656975	Between 14th May and 15th November, 1984	Day Range	N
	NX 69	Water of Ken	NX656975	Between 3rd September and 7th May, 1991	Day Range	Ν
	NX 69	Polifferie Burn below Moorbrock	NX633963	31/10/1978	Day	Ν
	NX 69	Polifferie Burn below Moorbrock	NX633963	Between 14th May and 15th November, 1984	Day Range	Ν
Otter (Lutra lutra)	NX 69	Polifferie Burn below Moorbrock	NX633963	Between 3rd September and 7th May, 1991	Day Range	Ν
	NX 69	Fingland Burn	NX697972	31/10/1978	Day	Ν
	NX 69	Carroch Lane	NX667914	31/10/1978	Day	Ν
	NX 69	Carroch Lane	NX667914	Between 14th May and 15th November, 1984	Day Range	Ν
	NX 69	Carroch Lane	NX667914	Between 3rd September and 7th May, 1991	Day Range	Ν
	NX 69	Water of Ken	NX656975	31/10/1978	Day	Ν
	NX 58	Garroch Burn at Drumbuie	NX566822	31/10/1978	Day	Ν
	NX 58	Garroch Burn at Drumbuie	NX566822	Between 14th May and 15th November, 1984	Day Range	Ν
	NX 58	Garroch Burn at Drumbuie	NX566822	Between 3rd September and 7th May, 1991	Day Range	Ν
	NX 58	Glenlee Burn near Garroch	NX592813	09/05/1979	Day	Ν
	NX 58	Glenlee Burn near Garroch	NX592813	Between 14th May and 15th November, 1984	Day Range	Ν
	NX 58	Polharrow Burn near Forest Lodge	NX553864	Between 14th May and 15th November, 1984	Day Range	Ν
	NX 58	Polharrow Burn near Forest Lodge	NX553864	Between 3rd September and 7th May, 1991	Day Range	Ν
	NX 58	Polmaddy Burn above Castlemaddy	NX550894	09/05/1979	Day	Ν



Species	Square	Location	Grid Ref	Record	Date recorded	Sensitivity
	NX 58	Crummy Burn	NX591843	31/10/1978	Day	N
	NX 49	Loch Doon	NX478994	14/10/1978	Day	N
	NX 49	Gala Lane	NX482925	13/10/1978	Day	N
	NX 49	Gala Lane	NX482925	Between 14th May and 15th November, 1984	Day Range	N
	NX 49	Gala Lane	NX482925	Between 3rd September and 7th May, 1991	Day Range	N
	NX 49	Whitespout Lane	NX457932	13/10/1978	Day	N
	NX 49	Whitespout Lane	NX457932	Between 14th May and 15th November, 1984	Day Range	N
	NX 49	Whitespout Lane	NX457932	Between 3rd September and 7th May, 1991	Day Range	N
	NX 49	Water of Girvan below Loch Braden	NX433983	Between 3rd September and 7th May, 1991	Day Range	N
	NX 49	Water of Girvan below Loch Skelloch	NX406954	Between 3rd September and 7th May, 1991	Day Range	N
	NX 49	Loch Doon	NX478994	Between 14th May and 15th November, 1984	Day Range	N
	NX 49	Loch Doon	NX478994	Between 3rd September and 7th May, 1991	Day Range	N
	NX 49	Water of Girvan below Loch Braden	NX433983	14/10/1978	Day	N
	NX 49	Water of Girvan below Loch Skelloch	NX406954	14/10/1978	Day	N
Otter (Lutra lutra)	NX 49	Water of Girvan below Loch Braden	NX433983	Between 14th May and 15th November, 1984	Day Range	N
	NX 49	Water of Girvan below Loch Skelloch	NX406954	Between 14th May and 15th November, 1984	Day Range	N
	NX 49	Water of Girvan below Loch Braden	NX433983	14/10/1978	Day	N
	NS50	Water of Deugh above Moor	N\$574038	Between 3rd September and 7th May, 1991	Day Range	N
	NS50	Linn Water	NS512074	05/10/1978	Day	N
	NS50	Linn Water	NS512074	Between 14th May and 15th November, 1984	Day Range	N
	NS50	Linn Water	NS512074	Between 3rd September and 7th May, 1991	Day Range	N
	NS50	Brownhill Burn / Water of Deugh confluence	NS549005	31/10/1978	Day	N
	NS50	Brownhill Burn / Water of Deugh confluence	N\$549005	Between 14th May and 15th November, 1984	Day Range	N
	NS50	Loch Muck	N\$515006	Between 14th May and 15th November, 1984	Day Range	N
	NS50	Loch Muck	NS515006	Between 3rd September and 7th May, 1991	Day Range	N
	N\$50	Water of Deugh above Moor	NS574038	09/05/1979	Day	N
	N\$50	Water of Deugh above Moor	N\$574038	Between 14th May and 15th November, 1984	Day Range	N
	N\$50	Brownhill Burn / Water of Deugh confluence	N\$549005	Between 3rd September and 7th May, 1991	Day Range	N







Species	Square	Location	Grid Ref	Record	Date recorded	Sensitivity
	NS50	Headstreams of River Nith	NS537094	05/10/1978	Day	Ν
	NS50	Headstreams of River Nith	NS537094	Between 14th May and 15th November, 1984	Day Range	Ν
	NS50	Headstreams of River Nith	NS537094	Between 3rd September and 7th May, 1991	Day Range	Ν
	NS50	Water of Deugh above Moor	NS574038	Between 3rd September and 7th May, 1991	Day Range	N
	NS 40	Tributary to Lambdoughty Burn near Gass	NS413057	13/10/1978	Day	N
	NS50	Headstreams of River Nith	NS537094	Between 14th May and 15th November, 1984	Day Range	Ν
	NS 40	Tributary to Lambdoughty Burn near Gass	NS413057	Between 14th May and 15th November, 1984	Day Range	N
	NS 40	Tributary to Lambdoughty Burn near Gass	NS413057	Between 3rd September and 7th May, 1991	Day Range	N
	NS 40	Muck Water near Mossdale	NS494041	05/10/1978	Day	Ν
	NS 40	Muck Water near Mossdale	NS494041	Between 14th May and 15th November, 1984	Day Range	Ν
	NS 40	Muck Water near Mossdale	NS494041	Between 3rd September and 7th May, 1991	Day Range	Ν
	NS 40	River Doon near Bogton Loch	NS462060	Between 3rd September and 7th May, 1991	Day Range	N
	NS 40	Water of Girvan at Glenauchie	NS421009	Between 3rd September and 7th May, 1991	Day Range	Ν
	NS 40	River Doon near Bogton Loch	NS462060	13/10/1978	Day	N
Otter (Lutra lutra)	NS 40	Water of Girvan at Glenauchie	NS421009	14/10/1978	Day	N
	NS 40	River Doon at Waterside	NS434088	Between 14th May and 15th November, 1984	Day Range	N
	NS 40	River Doon near Bogton Loch	NS462060	Between 14th May and 15th November, 1984	Day Range	Ν
	NS 40	Water of Girvan at Glenauchie	NS421009	Between 14th May and 15th November, 1984	Day Range	Ν
	NS 40	River Doon at Waterside	NS434088	Between 3rd September and 7th May, 1991	Day Range	Ν
	NS 40	Outflow from Loch Doon	NS477014	13/10/1978	Day	N
	NS 40	Outflow from Loch Doon	NS477014	Between 14th May and 15th November, 1984	Day Range	Ν
	NS 40	Outflow from Loch Doon	NS477014	Between 3rd September and 7th May, 1991	Day Range	Ν
	NS41	Outflow from Kerse Loch	NS435148	13/10/1978	Day	N
	NS41	Outflow from Kerse Loch	N\$435148	Between 14th May and 15th November, 1984	Day Range	Ν
	NS41	Outflow from Kerse Loch	NS435148	Between 3rd September and 7th May, 1991	Day Range	N
	NS41	Hawford burn	NS458132	Between 3rd September and 7th May, 1991	Day Range	Ν
	NS41	Tributary to Burnoch Water	NS494186	Between 3rd September and 7th May, 1991	Day Range	Ν
	N\$41	Water of Coyle at Millmannoch	NS432184	13/10/1978	Day	N



Species	Square	Location	Grid Ref	Record	Date recorded	Sensitivity
	NS41	Water of Coyle at Millmannoch	NS432184	Between 14th May and 15th November, 1984	Day Range	N
	NS41	Water of Coyle at Millmannoch	N\$432184	Between 3rd September and 7th May, 1991	Day Range	N
	NS41	Hawford burn	N\$458132	13/10/1978	Day	N
	NS41	Hawford burn	N\$458132	Between 14th May and 15th November, 1984	Day Range	N
	NS41	Belston Loch	N\$478171	Between 3rd September and 7th May, 1991	Day Range	N
	NS41	River Doon at Polnessan	NS417116	13/10/1978	Day	N
	NS41	River Doon at Polnessan	NS417116	Between 14th May and 15th November, 1984	Day Range	N
	NS41	River Doon at Polnessan	NS417116	Between 3rd September and 7th May, 1991	Day Range	N
	NS41	Tributary to Burnoch Water	N\$494186	Between 14th May and 15th November, 1984	Day Range	N
	NS 31	Burn at Otterden Ho.	N\$316144	25/10/1978	Day	N
	NS 31	Burn at Otterden Ho.	N\$316144	Between 14th May and 15th November, 1984	Day Range	N
	NS 31	Burn at Otterden Ho.	N\$316144	Between 3rd September and 7th May, 1991	Day Range	N
	NS 31	Burn by Cassilis House lodge	N\$332128	Between 3rd September and 7th May, 1991	Day Range	N
Otter (Lutra lutra)	NS 31	River Doon at Alloway	N\$326191	Between 3rd September and 7th May, 1991	Day Range	N
	NS 31	Outflow from Martnaham Loch	N\$385168	Between 14th May and 15th November, 1984	Day Range	N
	NS 31	River Doon at Kilmore	N\$379137	Between 14th May and 15th November, 1984	Day Range	N
	NS 31	Burn by Cassilis House lodge	N\$332128	Between 14th May and 15th November, 1984	Day Range	N
	NS 31	River Doon at Alloway	NS326191	Between 14th May and 15th November, 1984	Day Range	N
	NS 31	Outflow from Martnaham Loch	N\$385168	Between 3rd September and 7th May, 1991	Day Range	N
	NS 31	River Doon at Kilmore	N\$379137	Between 3rd September and 7th May, 1991	Day Range	N
	NS 31	Outflow from Martnaham Loch	N\$385168	25/10/1978	Day	N
	NS 31	River Doon at Kilmore	N\$379137	25/10/1978	Day	N
	NS 31	Burn by Cassilis House lodge	N\$332128	25/10/1978	Day	N
	NS 31	River Doon at Alloway	N\$326191	25/10/1978	Day	N
	NS 31	Dyrock Burn at Dalvennan	N\$386105	25/10/1978	Day	N
	NS 31	Dyrock Burn at Dalvennan	N\$386105	Between 14th May and 15th November, 1984	Day Range	N
	NS 31	Dyrock Burn at Dalvennan	N\$386105	Between 3rd September and 7th May, 1991	Day Range	N









Species	Square	Location	Grid Ref	Record	Date recorded	Sensitivity	Status and Legal Protection		
Wildcat (Felis sylvestris)	NS 40	No site name available	NS40	Between 1736 and 1899	Year range	Ν	ConsRegs:Sch2 WACA:Sch5Sect9.4c WACA:Sch5_sect9.4b WACA:Sch5_sect9.5a WACA:Sch5_sect9.5b Scottish Biodiversity List BAP:2007 Bern:A2 ECCITES:A HabDir:A4		
	NX 68	No site name available	NX68	Recorded before 1980	Day Range	Ν			
	NX 58	No site name available	NX58	Recorded before 1980	Day	Ν			
	NX 49	Glentrool	NX 49	1973	Year	Ν			
	NS31	No site name available	NS31	Before Year	N/A	N/A			
	NS31	No site name available	NS31	Year Range	N/A	N/A			
	NS31	Nr Minishant	NS333148	19/06/1905	Day	Ν			
	NS31	No site name available	NS303144	31/07/1994	Day	Ν			
Padgar (Malas malas)	NS31	No site name available	NS31	Between 1990 and 1997	Year Range	Ν	Protection of Badgers Act (1992)		
Dauger (meles meles)	NS31	No site name available	NS3315	30/07/1994	Day N Month N		Scottish Biodiversity List		
	NS31	No site name available	NS3319	April, 1994					
	NS31	No site name available	NS3419	14/07/1997	Day	Ν			
	NS31	No site name available	NS3618	01/06/1997	Day	Ν			
	NS31	No site name available	NS338193	Between 1st January and 31st May, 1997	Day Range	Ν			
	NS31	No site name available	NS352145	Between 12th and 17th June, 1905	Day Range	Ν			
	NS41	No site name available	NS 41	Recorded before 1967	Before Year	Ν			
	NS41	No site name available	NS 41	Between 1736 and 1959	Year Range	Ν			
	NS40	No site name available	NS40	Between 1736 and 1959	Year range	Ν	WACA:Sch5_sect9.4a WACA:Sch5_sect9.2		
Water Vole (Arvicola terrestris)	NS41	Site name not available	NS41	Between 1736 and 1959	Year Range	N	WACA:Scn5_sect9.1(taking) WACA:Sch5_sect9.1(kill/injuring) WACA:Sch5_sect9.5b		
	NS41	Site name not available	NS41	1970	Year	Ν	WACA:Sch5_sect9.5a WACA:Sch5_sect9.4c		

Table C3.2 - Reptile and Amphibian Records from the National Biodiversity Network Gateway [Accessed October 2009]

Species	Square	Location	Grid Ref	Record	Date recorded	Sensitivity
	NX59	No site name available	NX59	1982	Year	N
	NX59	No site name available	NX59	1987	Year	N
	NX59	No site name available	NX59	Recorded circa 1990	Circa	N
	NX 49	Loch Doon	NX49	1964	Year	N
	NX 49	No site name available	NX49	Between 1975 and 1995	Year Range	N
	NX 49	No site name available	NX49	1982	Year	N
	NX 49	No site name available	NX49	1987	Year	N
	NX 49	No site name available	NX49	1992	Year	N
	NX 48	Glen Trool	NX48	No date available	No date	N
	NS 50	No site name available	NS50	1982	Year	N
	NS 50	No site name available	NS50	1987	Year	N
	NS 50	No site name available	NS50	1992	Year	N
	NS 41	No site name available	NS41	Recorded circa 1990	Circa	N
Adder (Vipera berus)	NS 31	No site name available	N\$31	Between 1650 and 1982	Year Range	N
	NS 31	No site name available	N\$31	Recorded circa 1990	Circa	N
	NS 31	No site name available	NS31	1992	Year	N
	NS 40	No site name available	NS40	1987	Year	N
	NS 40	No site name available	N540	Recorded circa 1990	Circa	N
	NS 40	No site name available	NS40	1992	Year	N
	NS 40	No site name available	NS40	1982	Year	N
	NS 40	No site name available	N\$40	1987	Year	N
	NX 68	Mackilston,nr	NX627865	30/05/1983	Day	N
	NX 68	Mackilston	NX627865	30/05/1983	Day	N
	NX 68	No site name available	NX68	Recorded circa 1990	Circa	N
	NX 68	No site name available	NX68	1992	Year	N
	NX 68	No site name available	NX68	1982	Year	N
	NX 68	No site name available	NX68	Recorded circa 1985	Circa	N









Species	Square	Location	Grid Ref	Record	Date recorded	Sensitivity
	NX 68	No site name available	NX68	1987	Year	Ν
	NX 68	No site name available	NX68	Between 1650 and 1982	Year Range	Ν
	NX 69	No site name available	NX69	1992	Year	Ν
Adder (Vipera berus)	NX 69	No site name available	NX69	Recorded circa 1990	Circa	Ν
	NX 69	No site name available	NX69	Recorded circa 1985	Circa	Ν
	NX 69	No site name available	NX69	Between 1650 and 1982	Year Range	Ν
	NX 59	No site name available	NX59	1992	Year	Ν
	NX 49	No site name available	NX49	1992	Year	N
Viviparous Lizard (Zootoca vivipara)	NX 50	No site name available	NS50	1992	Year	Ν
	NS 40	No site name available	NS40	Between 1975 and 1995	Year Range	N
	NX 68	No site name available	NX68	1992	Year	Ν
	NX 69	MANQUHILL	NX660950	21/05/1990	Day	Ν
	NX 59	No site name available	NX59	1992	Year	Ν
	NX 49	No site name available	NX49	Between 1650 and 1958	Year Range	Ν
	NS 41	No site name available	NS41	Between 1960 and 1995	Year Range	N
	NS 41	No site name available	NS41	1992	Year	Ν
Slow-Worm (Anguis fragilis)	NS 31	No site name available	NS31	Between 1650 and 1958	Year Range	N
	NS 31	No site name available	NS31	Between 1960 and 1995	Year Range	Ν
	NS 40	No site name available	NS40	Between 1650 and 1958	Year Range	Ν
	NS 60	No site name available	NS60	1992	Year	Ν
	NS 68	No site name available	NX68	1992	Year	Ν
	NS 41	No site name available	NS41	Between 1650 and 1958	Year Range	Ν
Common Toad (Bufo bufo)	NS 40	No site name available	NS40	Between 1960 and 1995	Year Range	Ν
Smooth Newt (Lissotriton vulgari)	NX 65	Lochinvar Loch	NX6585	1960	Year	N

i - Status and Legal Protection information taken from Joint Nature Conservation Committee Taxon Designations (dated 23rd November 2009):

BAP:2007 - Biodiversity Action Plan (BAP) UK priority species list

- Bern:A1 Bern Convention (Appendix 1)
- Bern:A2 Bern Convention (Appendix 2)
- Bonn:AI Bonn Convention (Appendix 1)

Bonn:A2 - Bonn Convention (Appendix 2)

ConsRegs:Sch2 - The Conservation (Natural Habitats, &c.) Regulations 1994 (Schedule 2) ConsRegs:Sch3 - The Conservation (Natural Habitats, &c.) Regulations 1994 (Schedule 3) ConsRegs:Sch4 - The Conservation (Natural Habitats, &c.) Regulations 1994 (Schedule 4) ECCITES:A - EC CITES Agreement (Annex A) ECCITES:B - EC CITES Agreement (Annex B) ECCITES:C - EC CITES Agreement (Annex C) ECCITES:D - EC CITES Agreement (Annex D) HabDir:A2 - EC Habitats Directive (Annex 2) HabDir:A4 - EC Habitats Directive (Annex 4) HabDir:A5 - EC Habitats Directive (Annex 5) Notable - Nationally Notable Species RedList_GB_post2001:CR - National Red List Species post 2001 (Critically Endangered) RedList_GB_post2001:DD - National Red List Species post 2001 (Data Deficient) RedList_GB_post2001:EN - National Red List Species post 2001 (Endangered) RedList_GB_post2001:EN - National Red List Species post 2001 (Least Concern)

Status and Legal Protection
WACA:Sch5_sect9.1(kill/injuring) WACA:Sch5_sect9.5a
WACA:Sch5_sect9.5b BAP:2007
WACA:Sch5_sect9.1(kill/injuring)
WACA:Sch5_sect9.5b WACA:Sch5_sect9.5a
BAP:2007
WACA:Sch5_sect9.5a WACA:Sch5_sect9.5b
BAP:2007
WACA:Sch5_sect9.5a WACA:Sch5_sect9.5b

RedList_GB_post2001:NT - National Red List Species post 2001 (Near Threatened) RedList GB post2001:VU - National Red List Species post 2001 (Vulnerable) RedList GB post2003:RE - National Red List Species post 2001 (Regionally Extinct) RedList_GB_post94:CR - National Red List Species post 1994 (Critically Endangered) RedList_GB_post94:DD - National Red List Species post 1994 (Data Deficient) RedList GB post94:EN - National Red List Species post 1994 (Endangered) RedList GB post94:NT - National Red List Species post 1994 (Near Threatened) RedList_GB_post94:VU - National Red List Species post 1994 (Vulnerable) RedList_GB_Pre94:EN - National Red List Species prior to 1994 (Endangered) RedList GB Pre94:Inde - National Red List Species prior to 1994 (Intermediate) RedList GB Pre94:Insu - National Red List Species prior to 1994 (Insufficiently known) RedList GB Pre94:NR - National Red List Species prior to 1994 (Rare) RedList GB Pre94:Thre - National Red List Species prior to 1994 (Threatened endemic) RedList GB Pre94:VU - National Red List Species prior to 1994 (Critically Endangered) RedList Global post2001:CR - International Red List Species post 2001 (Critically Endangered)

RedList Global post2001:EN - International Red List Species post 2001 (Endangered) RedList Global post2001:VU - International Red List Species post 2001 (Vulnerable) RedList_Global_post94:CR - International Red List Species post 1994 (Critically Endangered) RedList_Global_post94:EN - International Red List Species post 1994 (Endangered) RedList Global post94:NT - International Red List Species post 1994 (Near Threatened) RedList Global post94:VU - International Red List Species post 1994 (Vulnerable) RedList Global pre94:EN - International Red List Species post 1994 (Endangered) Scottish Biodiversity List - Species on the Scottish Biodiversity List Status:NR - Nationally Rare (Occurring in 15 or fewer hectads in Great Britain) Status:NS - Nationally Scarce (Occurring in 16-100 hectads in Great Britain)

WACA:Sch5_sect9.1 (kill/injuring) - Species listed on Schedule 5 and protected under Section 9.1 of the Wildlife and Countryside Act 1981

WACA:Sch5 sect9.1 (taking) - Species listed on Schedule 5 and protected under Section 9.1 of the Wildlife and Countryside Act 1981

WACA:Sch5_sect9.2 - Species listed on Schedule 5 and protected under Section 9.2 of the Wildlife and Countryside Act 1981

WACA:Sch5 sect9.4a - Species listed on Schedule 5 and protected under Section 9.4a of the Wildlife and Countryside Act 1981

WACA:Sch5 sect9.4b - Species listed on Schedule 5 and protected under Section 9.4b of the Wildlife and Countryside Act 1981

WACA:Sch5_sect9.4c - Species listed on Schedule 5 and protected under Section 9.4c of the Wildlife and Countryside Act 1981

WACA:Sch5 sect9.5a - Species listed on Schedule 5 and protected under Section 9.5a of the Wildlife and Countryside Act 1981

WACA:Sch5_sect9.5b - Species listed on Schedule 5 and protected under Section 9.5b of the Wildlife and Countryside Act 1981

WACA:Sch8 - Species listed on Schedule 8 to the Wildlife and Countryside Act 1981

Table C3.3 - SEPA Watercourse Status Data

[SEPA data received 06/08/2009. SEPA Web site accessed 19/02/210 (http://www.sepa.org.uk/water/river_basin_planning.aspx#Interactivemap)]

Table C3.3.1 - River Doon

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Measurement Point: Skeldon							Diffuse collution due to mixed forming		
Measurement Point: Patna	40025	Contract		NS 47542	6.26L m	Mid- altitude,	Charactering Charactering		
Measurement point : Waterside	10925	Scotland	River Doon	04347	6.36KM	Medium, Siliceous	production of renewable electricity		Moderate
Measurement point: Upstream of Waterside	1								

Table C3.3.2 - Cummock Water

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Cummock Water				NS 50680		Mid-	Abstraction due to mining and quarrying of coal		
Tributary: Linn Water	10443	Scotland	River Doon	NS 50680 07152	9.29km	Small, Calcareous	Morphological alternations due to intensive forestry use, cultivation and planting of riparian areas	A2	Bad

Table C3.3.3 - Muck Water

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Muck Water							Morphological alternations due to		
Tributary: Parrie Burn	10444	Scotland	River Doon	NS 49178 04137	10.26km	Mid- altitude, Small, Siliceous	impounding by weir or dam thus impeding fish passage		Ded
Tributary: Mossdale Burn	10444						Abstraction due to mining and quarrying of	AI	вао
Tributary: Trough Burn							coal		

Table C3.3.4 - Carsphairn Lane

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Carsphairn Lane									
Tributary: Lambford Burn						Mid-			
Tributary: Burn north of Carsphairn	10566	Solway Tweed	River Dee (Solway)	NS 52560 96696	10.68km	altitude, Small, Siliceous	Production of renewable electricity Impounding (weir / dam)	A2	Moderate
Tributary: Burn at Carsphairn									
Tributary: Burn at Carminnows									







Table C3.3.5 - Water of Ken

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body
Surface Water Body: Water of Ken							
Measurement Point: (u/s High Bridge of Ken)							Morphological alterations due to production of renewable electricity. Abstraction due to production of renewable electricity.
Measurement Point: Water of Ken (d/s Kendoon)	10761	Solway Tweed	River Dee (Solway)	NS 63000 79619	9.62km	Mid-altitude, Medium, Siliceous	Alternation of natural flow conditions due to production of renewable energy. Alternations to compensation flows due to production of renewable electricity. Morphological alternations due to mixed farming
Tributary: Burns(s) at Mackliston Hill							Alien Species - North American Signal crayfish (<i>Pacifastacus leniusculus</i>)
Tributary: Burn(s) at Hogg Hill							

Table C3.3.6 - Dalcairnie Burn

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Туроlоду	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Dalcairnie Burn	10445	Scotland	River Doon	NS44612 03545	9.03km	Mid-Altitude, Medium, Siliceous	No pressures exist on this water body	A1	Good

Table C3.3.7 - Garyhorn Burn

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Туроlogy	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Garyhorn Burn	10567	Solway Tweed	River Dee (Solway)	NS 53018 93344	7.84km	Mid-altitude, Small, Siliceous	Morphological alterations due to barriers impeding fish passage.	A2	Moderate

Table C.3.3.8 - Polmaddy Burn

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Surface water Body: Polmaddy Burn 10	10568	Solway	River Dee	NS 54775	15 23km	Mid-Altitude, Small, Siliceous	Morphological alternations due to forestry	B	Poor
	10508	Tweed	(Solway)	89312	15.23km		Diffuse source pollution due to production of non-renewable electricity (e.g. by coal, gas, nuclear or pumped Hydro)	в	PUUI

Table C.3.3.9 - Black Water of Dee

Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Туроlоду	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Black Water of Dee (Pullaugh Burn to Loch Ken)	10546	Solway Tweed	River Dee (Solway)	NS 62111 71129	8.16km	Mid-altitude, Medium, Siliceous	Production of renewable electricity (NB nuclear and pumped hydro are not renewable forms of electricity generation). Diffuse source pollution due to the production of non-renewable electricity (e.g. by coal, gas, nuclear or pumped hydro)	A1	Bad ecological potential

Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
A2	Bad

Table C.3.3.10 - Castlefairn / Blackmark Burn

Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Туроlоду	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Castlefairn Water/ Blackmark Burn	10607	Solway Tweed	River Nith	NX 74021 86978	12.95km	Mid-altitude, Small, Siliceous	No pressure exists on this water body	A2	Good

Table C.3.3.11 - Black Burn / Shimmers Burn

Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Туроlоду	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Black Burn / Shimmers Burn	10556	Solway Tweed	River Dee (Solway)	NX 68159 78123	16.56km	Lowland, Small, Siliceous	No pressures exist on this water body.	A1	Good

Table C.3.3.12 - Water of Deugh

Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Black Water (near Butterhole Bridge)	10546	Solway Tweed	River Dee (Solway)	NS 62111 71129	8.16km	Mid-altitude, Medium, Siliceous	Production of renewable electricity (NB nuclear and pumped hydro are not renewable forms of electricity generation). Diffuse source pollution due to the production of non-renewable electricity (e.g. by coal, gas, nuclear or pumped hydro)	A1	Bad
Surface Water Body: Water of Deugh (u/s Carsphairn Lane)	10563	Solway Tweed	River Dee (Solway)	NS 56212 02782	24.40km	Mid-altitude, Small, Organic	Alterations caused by abstraction due to the production of renewable electrify Alternations in the natural flow conditions due to production of renew able electricity Morphological alterations due to the production of renewable electricity Morphological alternations due to the impending by weir or dam preventing the passage of fish Morphological changes due to forestry especially along riparian edges	A1	Bad
Surface Water Body: Water of Deugh (Carsphairn Lane to Water of Ken)	10562	Solway Tweed	River Dee (Solway)	NS 58485 92531	8.16km	Mid-altitude, Medium, Siliceous	Morphological alterations due to production of non-renewable electricity (e.g. by coal, gas, nuclear or pumped hydro) Impounding by weir or dam impeding fish passage	A2	Moderate

Table C.3.3.13 - Garple & Margree Burns

Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Туроlоду	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Margree / Garple Burn	10572	Solway	River Dee	NX 67761	15 19km	Mid-altitude, Small,	Alian Spacias Amorican Signal craufish (Pacifortagus Ianiusgulus)	۸2	Modorato
Tributary: Burn(s) at Knockdollachan	10372	Tweed	(Solway)	82523	13.1000	Siliceous		A2	wouldate







Table C3.2 - SEPA Watercourse Status Data

[SEPA data received 06/08/2009. SEPA Web site accessed 19/02/210 (http://www.sepa.org.uk/water/river_basin_planning.aspx#Interactivemap)]

Table C3.2.1 - River Doon

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Measurement Point: Skeldon							Diffuse pollution due to mixed farming		
Measurement Point: Patna	10025	Cootland	Diver Deer	NC 47542 04247	C 2Clum	Naid altituda Nandium Cilianaua			Madavata
Measurement point : Waterside	10925	Scotland	River Doon	NS 47542 04347	6.30Km	wid-altitude, wedium, siliceous	Change in natural flow conditions due to production of renewable	AI	Woderate
Measurement point: Upstream of Waterside							electricity		

Table C3.2.2 - Cummock Water

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Cummock Water							Abstraction due to mining and quarrying of coal		
Tributary: Linn Water	10443	Scotland	River Doon	NS 50680 07152	9.29km	Mid-altitude, Small, Calcareous	 Morphological alternations due to intensive forestry use, cultivation and planting of riparian areas 	A2	Bad

Table C3.2.3 - Muck Water

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Muck Water									
Tributary: Parrie Burn	10444	Contland	River Deen	NC 40179 04127	10.26km	Mid altituda Cmall Cilisaaus	 Morphological alternations due to impounding by weir or dam thus impeding fish passage 	1	Dad
Tributary: Mossdale Burn	10444	Scotland	River Doon	NS 49178 04137	10.26KM	Mid-altitude, Small, Siliceous	Abstraction due to mining and quarrying of coal	AI	Bad
Tributary: Trough Burn							Austraction due to mining and quartying of coal		

Table C3.2.4 - Carsphairn Lane

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Туроlоду	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Carsphairn Lane									
Tributary: Lambford Burn							Draduction of renowable electricity		
Tributary: Burn north of Carsphairn	10566	Solway Tweed	River Dee (Solway)	NS 52560 96696	10.68km	Mid-altitude, Small, Siliceous	• Production of renewable electricity	A2	Moderate
Tributary: Burn at Carsphairn							Impounding (weir / dam)		
Tributary: Burn at Carminnows									

Table C3.2.5 - Water of Ken

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Water of Ken							Morphological alterations due to production of renewable electricity.		
Measurement Point: (u/s High Bridge of Ken)							 Abstraction due to production of renewable electricity. Alternation of natural flow conditions due to production of 		
Measurement Point: Water of Ken (d/s Kendoon)	10761	Solway Tweed	River Dee (Solway)	NS 63000 79619	9.62km	Mid-altitude, Medium, Siliceous	renewable energy.	A2	Bad
Tributary: Burns(s) at Mackliston Hill							 Alternations to compensation flows due to production of renewable electricity. 		
Tributary: Burn(s) at Hogg Hill							 Morphological alternations due to mixed farming. 		

Blackcraig & Margree Grid Connection

Table C3.2.6 - Dalcairnie Burn

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Dalcairnie Burn	10445	Scotland	River Doon	NS44612 03545	9.03km	Mid-Altitude, Medium, Siliceous	No pressures exist on this water body	A1	Good

Table C3.2.7 - Garyhorn Burn

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Garyhorn Burn	10567	Solway Tweed	River Dee (Solway)	NS 53018 93344	7.84km	Mid-altitude, Small, Siliceous	Morphological alterations due to barriers impeding fish passage.	A2	Moderate

Table C3.2.8 - Polmaddy Burn

Surface Water Body Name, Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
							Morphological alternations due to forestry		
Surface water Body: Polmaddy Burn	10568	Solway Tweed	River Dee (Solway)	NS 54775 89312	15.23km	Mid-Altitude, Small, Siliceous	Diffuse source pollution due to production of non-renewable electricity	В	Poor
							(e.g. by coal, gas, nuclear or pumped Hydro)		

Table C3.2.9 - Black Water of Dee

Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Black Water of Dee (Pullaugh Burn to Loch Ken)	10546	Solway Tweed	River Dee (Solway)	NS 62111 71129	8.16km	Mid-altitude, Medium, Siliceous	 Production of renewable electricity (NB nuclear and pumped hydro are not renewable forms of electricity generation). Diffuse source pollution due to the production of non-renewable 	A1	Bad ecological potential
							electricity (e.g. by coal, gas, nuclear or pumped hydro)		

Table C3.2.10 - Castlefairn / Blackmark Burn

Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Castlefairn Water/ Blackmark Burn	10607	Solway Tweed	River Nith	NX 74021 86978	12.95km	Mid-altitude, Small, Siliceous	No pressure exists on this water body	A2	Good

Table C3.2.11 - Black Burn / Shimmers Burn

Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Black Burn / Shimmers Burn	10556	Solway Tweed	River Dee (Solway)	NX 68159 78123	16.56km	Lowland, Small, Siliceous	No pressures exist on this water body.	A1	Good

Table C3.2.12 - Water of Deugh

Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Туроlоду	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Black Water (near Butterhole Bridge)	10546	Solway Tweed	River Dee (Solway)	NS 62111 71129	8.16km	Mid-altitude, Medium, Siliceous	 Production of renewable electricity (NB nuclear and pumped hydro are not renewable forms of electricity generation). 	A1	Bad
510507			(contray)				 Diffuse source pollution due to the production of non-renewable electricity (e.g. by coal, gas, nuclear or pumped hydro) 		







Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Surface Water Body: Water of Deugh (u/s Carsphairn Lane)	10563	Solway Tweed	River Dee (Solway)	NS 56212 02782	24.40km	Mid-altitude, Small, Organic	 Alterations caused by abstraction due to the production of renewable electrify Alternations in the natural flow conditions due to production of renew able electricity Morphological alterations due to the production of renewable electricity Morphological alternations due to the impending by weir or dam preventing the passage of fish Morphological changes due to forestry especially along riparian edges 	A1	Bad
Surface Water Body: Water of Deugh (Carsphairn Lane to Water of Ken)	10562	Solway Tweed	River Dee (Solway)	NS 58485 92531	8.16km	Mid-altitude, Medium, Siliceous	 Morphological alterations due to production of non-renewable electricity (e.g. by coal, gas, nuclear or pumped hydro) Impounding by weir or dam impeding fish passage 	A2	Moderate

Table C3.2.13 - Garple & Margree Burns

Tributaries or Measurement Points	ID No	River Basin District	Catchment	SEPA Recording Location	Length	Typology	Pressures & Measures on water body	Classification as of 09/08/2009)	RBMP Classification as of (19/02/2010)
Margree / Garple Burn	10572	Solway Tweed	River Dee	NY 67761 82523	15 18km	Mid-altitude Small Siliceous	Alian Spaciae American Signal cravitich (Pacifactarus Ianiusculus)	Δ2	Moderate
Tributary: Burn(s) at Knockdollachan	10372	Solway Iweeu	(Solway)	14 07701 82323	13.1000	Wild-altitude, Small, Siliceous	Allen Species. American Signal Craynsh (Pachastacus leniusculus)		Woderate

C.4 Details of Statutory & Non-Statutory and Ancient Woodland Sites

Table C4.1 - East Ayrshire – Statutory Designated Sites for Nature Conservation

Site Name	Designations	Grid Ref.	Site Size (ha)	Site information	Site Name	Designations
	SSSI	NS 465 064	27.41	Notified for an area of raised bog. Supports locally rare/uncommon plant species – great sundew (Drosera anglica), bog rosemary (Andromeda polifolia) and white beak-sedge (Rhynchospora alba). A valley mire also forms part of the site – adds interest to the site as it is rare for a raised bog and valley mire to occur side by side.	Ness Glen Loch Doon	SSSI SSSI
Bogton Loch	SSSI	NS 470 052	26.61	Notified for its open water transition fen and breeding bird assemblage – including song thrush (Turdus philomelos), grasshopper warbler (Locustella naevia), spotted flycatcher (Muscicapa striata), willow tit (Poecile montanus), reed bunting (Emberiza schoeniclus) and black- headed gulls. Part of a larger hydrological unit which also encompasses Dalmellington Moss	Source: SNH	SiteLink

Grid Ref.	Site Size (ha)	Site information
NS 477 021	18.2	Notified for its upland mixed ash woodland. The best example of this type of gorge woodland in East Ayrshire.
NS 497 975	880.3	Notified for: being the last known site in south-west Scotland for the Arctic charr (<i>Salvelinus</i> <i>alpinus</i>) – these are thought to be genetically distinct from other populations; the loch being the largest and best example of an oligotrophic water body in south Strathclyde. A number of locally uncommon plants have also been recorded including slender parsley-piert (<i>Aphanes microcarpa</i>), round-leaved crowfoot (<i>Ranunculus omiophyllus</i>) and osier (<i>Salix viminalis</i>).

Table C4.2 - Dumfries & Galloway – Statutory Designa	ated Sites for Nature Conservation
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Site Name	Designations	Grid Ref.	Site Size (ha)	Site information
Merrick Kells	SAC and SSSI	NX 450 840	8,924.80	SSSI notified for a number of features: as the most important and varied system of patterned blanket mire in Britain; the only example of unmodified upland vegetation in South Scotland;
Merrick Kells	SAC and SSSI	NX 450 840	8,924.80	two end-moraine complexes; bare granite and summit of unfissured granite pavements with perched blocks; upland breeding birds, particularly raptors and waders; the rare azure hawker dragonfly (Aeshna caerulea); a notable beetle (Coleoptera). A number of higher plant species and bryophytes not normally found south of the Highland Boundary Fault, including a rare hawkweed (Hieracium holosericeum), downy willow (Salix lapponum), alpine saw-wort (Saussurea alpine), purple saxifrage (Saxifraga oppositifolia) and the localised liverworts, (Pleurozia purpurea) and (Campylopus setifolius). SAC qualifying interests are: blanket bog; depressions on peat substrates of the Rhynchosporion; European dry heaths; otter (Lutra lutra), Natural dystrophic lakes and ponds; Northern Atlantic wet heaths with Erica tetralix; Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto- Nanojuncetea; siliceous alpine and boreal grasslands; siliceous rocky slopes with chasmophytic vegetation; and siliceous scree of the montane to snow levels.
Cleugh	SSSI	NX 611 867	54.3	Notified for being the best example of unimproved grassland now left in the Dumfries and Galloway Region. A number of uncommon plants including field gentian (<i>Gentianella campestris</i>), frog orchid (<i>Coeloglossum viride</i>), greater butterfly orchid (<i>Platanthera chlorantha</i>) and spignel (<i>Meum athamanticum</i>) are found on this site.
Water of Ken Woods	SSSI	NX 594 823	73.4	Notified for: mixed and yew woodland; rich lichen flora (302 taxa) including a number of northern species that are generally rare outside north-west Scotland; for rare beetles and a fly. Also some vascular plant interest including wood fescue (Festuca altissima), woodruff (Galium odoratum), sanicle (Sanicula europaea) and moschatel (Adoxa moschatelling).

Site Name	Designations	Grid Ref.	Site Size (ha)	Site information	Site Name
Hannaston SSSI NX 596 824 25.76 Notified for: u Wood of herb-rich na The woodland		Notified for: upland oak woodland; its lichen assemblage; a small area of herb-rich neutral grassland. The woodland contains important	Craigengillan and Ness G		
				lichen species, and the grassland	Cumnock Burn / Pennyy
				contains uncommon species such	Dalleagles Woodland
				and various orchids.	Dallowie Burn Woods
Kenmure	SSSI	NX 638 765	154.1	Notified for: the best example of a	Dalmellington Moss
Holms				herb-rich fen meadow developed	Dalmellington Town Con
				from flooded pasture in the Stewartry District: a number of	Doon Valley Wetlands
				important invertebrates including	Dunanskin Glen / Benqu
				aquatic beetles, spiders and	Martyre's Moss
				or localised plant species occur	Nith Bridge
			including purple iris (Iris versicolor)	Nith Flood Plain	
			at one of only four UK sites,	Rankiston Scrub	
					water sedge (<i>Carex elongate</i>), purple small-reed (<i>Calamagrostis</i>
				canescens), marsh hawk's beard	River Doon (Dalrymple t
				(Crepis paludosa), marsh stitchwort (Stellaria balustris) and whorled	Wallace Moor / Keirs Hil
Loch Ken and River Dee Marshes	SPA and Ramsar Site	NX 639 763, NX 713 685	769.1	caraway (<i>Carum verticillatum</i>). SPA qualifying feature is regularly supporting, in winter, internationally important numbers of Greenland white-fronted geese	Table C4.4 - Dumfries a Conservation Site Name
Marsnes				(Anser albifrons flavirostris) and greylag geese (Anser anser). Ramsar qualifying features are: supporting a number of rare species of plants and animals including purple iris, elongated sedge, water sedge, wood bitter-vetch (Vicia orobus), spignel, a jumping spider (Sitticus florida) and two species of water beetle (Hydrophorus rufifrons and Bidessus minutissimus); supporting large non-breeding populations of Greenland white-fronted geese and	Carsphairn Forest Castlemaddy Galloway Forest Galloway Forest Park Garcrogo
Source: SNH	Sitel ink			greylag geese in winter.	Island Block Oak Woodland

Source: SNH SiteLink

Table C4.3 - East Ayrshire - Non Statutory Designated Sites for Nature Conservation

Site Name	Designation Type	Distance from Proposed / existing OHL route (km)	Direction from OH route
Belston Loch	Provisional Wildlife Site	9.8	N
Benbeoch / Pennyvennie Glen	Provisional Wildlife Site	1.1	NW
Bent Burn	Provisional Wildlife Site	9.6	N
Bow Burn and Ashentree Glen Wood	Provisional Wildlife Site	2.0	NE
Bryan's Heights	Provisional Wildlife Site	0.4	SW
Carsphairn Forest	Red Squirrel Priority Woodland	0.0	N/A
Connel Burn / Benty Cowan Hill	Provisional Wildlife Site	4.8	E

Location
Bellsbank
Bellsbank Plantation
Bogton Plantation
Boreland Glen

Knowetop Lochs Loch Ken & Dee

Marshes Polmaddy The Lowes

CAPITA LOVEJOY



me	Designation Type	Distance from Proposed / existing OHL route (km)	Direction from OHL route
ngillan and Ness Glen and	Provisional Wildlife Site	1.3	SW
ck Burn / Pennyvenie Bing	Provisional Wildlife Site	1.0	NE
les Woodland	Provisional Wildlife Site	5.4	NE
ie Burn Woods	Provisional Wildlife Site	3.0	W
lington Moss	SWT Reserve	0.2	Ν
lington Town Common	Provisional Wildlife Site	0.0	N/A
alley Wetlands	Provisional Wildlife Site	0.2	Ν
skin Glen / Benquhat Hill	Provisional Wildlife Site	1.1	NE
e's Moss	Provisional Wildlife Site	4.0	N
idge	Provisional Wildlife Site	9.2	NE
ood Plain	Provisional Wildlife Site	13.1	NE
on Scrub	Provisional Wildlife Site	4.1	NE
/ Lanemark / Bogside ds	Provisional Wildlife Site	8.0	NE
oon (Dalrymple to Patna)	Provisional Wildlife Site	0.0	N/A
e Moor / Keirs Hill	Provisional Wildlife Site	0.5	SW

C4.4 - Dumfries & Galloway - Non Statutory Designated Sites for Nature

Designation Type	Distance from Proposed / existing OHL route (km)	Direction from Proposed OHL route
Red Squirrel Priority Woodland	0.0	N/A
Red Squirrel Priority Woodland	0.0	N/A
Red Squirrel Priority Woodland	0.3	SW
Important Bird Area	0.0	N/A
Red Squirrel Priority Woodland	3.8	SE
Local Wildlife Site	1.0	Ν
SWT Reserve	5.7	SE
Important Bird Area	8.9	SW
Local Wildlife Site	0.6	W
Local Wildlife Site	5.2	SE

Table C4.5 - East Ayrshire – Ancient Woodland Inventory Sites

Grid ref.	Site Size (ha)	Ancient Woodland Type
NS 476 048	10.11	Ancient (of semi-natural origin)
NS 487 032	29.53	Long-established (of plantation origin)
(i) NS 477 041 (ii) NS 479 037 (iii) NS 481 033	16.73 4.8 1.93	Ancient (of semi-natural origin) Long-established (of plantation origin) Other (on Roy map)
(i)NS 402 132 (ii)NS 399 135	21.22 1.96	Ancient (of semi-natural origin) Other (on Roy map)

Location	Grid ref.	Site Size (ha)	Ancient Woodland Type
Carskeoch Hill	NS 416 092	23.70	Other (on Roy map)
Craighead Wood	(i) NS 476 015 (ii) NS 474 024	20.88 21.3	Ancient (of semi-natural origin) Long-established (of plantation origin)
Cummnock Burn	NS 486 057	3.98	Long-established (of plantation origin)
Dalcairnie Glen	NS 466 043	2.58	Ancient (of semi-natural origin)
Grimmet Glen	NS 446 064	4.71	Ancient (of semi-natural origin)
Hollybush mains	(i) NS 395 145 (ii) NS 396 146 (iii) NS 394 142	3.68 8.45 2.46	Ancient (of semi-natural origin) Long-established (of plantation origin) Other (on Roy map)
Keirs Glen	NS 431 080	3.13	Ancient (of semi-natural origin)
Milreoch Cross Wood	NS 407 150	3.06	Long-established (of plantation origin)
Pennyvenie Glen	NS 499 072	3.06	Ancient (of semi-natural origin)
Shankston Farm	NS 405 118	1.43	Long-established (of plantation origin)
Sloanston Burn	NS 486 074	2.82	Long-established (of plantation origin)
South Craig	NS 426 148	2.09	Long-established (of plantation origin)
Yonderton	NS 396 139	2.07	Ancient (of semi-natural origin)

Table C4.6 - Dumfries and Galloway – Ancient Woodland Inventory Sites

Location	Grid ref.	Site Size (ha)	Ancient Woodland Type
Barscobe Wood	NX 657 807	8.65	Ancient (of semi-natural origin)
Carnavel	NX 567 925	3.19	Ancient (of semi-natural origin)
Carsfad Loch	NX 607 855	2.93	Ancient (of semi-natural origin)
Dalshangan Plantation	NX 597 892	2.82	Ancient (of semi-natural origin)
Drummanister	(i) NX 676 824 (ii) NX 674 824	1.19 0.85	Ancient (of semi-natural origin Other (on Roy map)
Dundeugh Hill	NX 598 893	26.96	Other (on Roy map)
Dundeugh Wood	(i) NX 604 885 (ii) NX 612 891	24.99 12.16	Ancient (of semi-natural origin) Other (on Roy map)
Glenhoul Wood	NX 608 882	9.23	Ancient (of semi-natural woodland)
Green Well of Scotland	NX 560 947	4.06	Ancient (of semi-natural origin)
High Bridge of Ken	(i) NX 621 907 (ii) NX 620 902	4.12 8.86	Ancient (of semi-natural origin) Other (on Roy map)
Lamloch	NX 522 962	5.52	Long-established (of plantation origin)
Mitchell's hill	NX 645 817	5.21	Other (on Roy map)
Water of Deugh	NX 602 904	6.64	Ancient (of semi-natural origin)

C.5 Target Notes from Phase 1 Habitat Survey

Table C5.1 - Target Notes from Phase 1 habitat Survey (to be viewed in reference to Figures 8.07 - 8.09 within the ES)

Target note no.	Easting	Northing	Target Note
1	252247	608518	Area of scattered planted rowans (Sorbus aucuparia) by road.
2	251914	608291	Small area of heather (<i>Calluna vulgaris</i>) on marshy grassland.

Target note no.	Easting	Northing	Target Note	Target note no.	Easting
3	252303	608166	Slow flowing stream 0.5m wide, no banks, surrounding area is marshy grassland with soft-rush (Juncus effusus) (d).	16	248971
4	251721	608091	Area of marshy grassland between road and conifer (Sitka spruce [Picea sitchensis]) plantation, with scattered grey willow (Salix cinerea) trees.	17	248737
			Waterfall c. 20m high, width 2m, depth c. 1m, fast flowing, rocky, in 'v' shaped valley c. 20m deep, lots of devil's-bit scabious (<i>Succisa pratensis</i>) and common	18	248939
5	252461	607612	knapweed (Centaurea nigra). Yorkshire-fog (Holcus lanatus) (d), ribwort plantain (Plantago lanceolata) (a), tormentil (Potentilla erecta), heather (f), lady's bedstraw (Galium verum), Lady's mantle (Alchemilla	19	248957
			vulgaris), rowan, meadowsweet (Filipendula ulmaria) (o), sneezewort (Achillea ptarmica) (r).	20	249271
6	251737	607499	Small stream fast flowing through larch plantation c. 1m wide, 0.5m deep.	21	248780
7	251028	607292	Marshy grassland is predominant but habitat is mainly mosaic. The marshy grassland has soft-rush and jointed rush (Juncus articulatus) (d), and there are some areas where purple moor-grass (Molinia caerulea) is dominant. There are occasional areas with frequent wavy hair-grass (Deschampsia flexuosa) and deergrass (Trichophorum cespitosum) mixed in, with occasional heather	22	249150
8	250952	607197	Small area of wet heath with heather (d) and deergrass (a). Also in the area are several small, steep knolls that are semi-improved grassland, with wavy hair-grass, fescue sp. (<i>Festuca</i> spp.) (a), tormentil (f) and heather (o).	23	248825
9	251133	606980	Small patches - 5 x 10m - of semi-improved acid grassland within bog, with wavy hair-grass (d) and tormentil (a).	24	249800
10	251248	606881	Stream running through 2nd rotation, with marshy grassland either side.		
11	250788	606710	Watercourse 1m wide, fast flowing. Bank vegetation is marshy grassland, with soft-rush (d), jointed rush (ld) and tufted hair-grass (<i>Deschampsia cespitosa</i>) (f). Nearby to the south is a small patch of wet heath with bilberry (<i>Vaccinium myrtillus</i>) (d), wavy hair-grass (a),	25	248809
			heather and hare's-tail cottongrass (f). 2nd rotation Sitka / Scots pine (<i>Pinus sylvestris</i>) over	26	248599
12	251087	606604	wet modified bog, peat depth >0.5m, false oat grass (Arrhenatherum elatius) (f), rosebay willowherb (Chamerion angustifolium) (f), heath bedstraw (Galium saxatile) (d), Sphagnum spp. (a), moss sp. (a), heather (o), hare's-tail cottongrass (r), heath rush (Juncus	27	250070
			squarrosus) (0), common bent (Agrostis stolonifera) (0), marsh willowherb (Epilobium palustre) (f).	28	249936
13	250775	606602	Thin strip of wet modified bog up to the eastern edge of the ride with wavy hair-grass, hare's-tail cottongrass (a), bilberry and Sphagnum spp. (f).		
14	250976	606570	Stream through wet modified bog with soft-rush and sharp-flowered rush (<i>Juncus acutiflorus</i>) (d). Stream not visible, covered by vegetation.	29	250038
15	250947	605959	Wet heath within conifer forestry but occasional small patches where ericoids are less than 25%, with purple moor-grass (d), so can be classified as marshy grassland.	30	249984
				1	

Northing	Target Note
605929	Marshy grassland grades into wet heath with young heather.
605745	Small area of heath and semi-improved acid grassland mosaic between fences / marshy grassland and conifers and scattered young hawthorn (<i>Crataegus</i> <i>monogyna</i>) (c. 2m high).
605641	Broadleaved plantation on semi-improved neutral grassland with Yorkshire-fog (d), tufted hair-grass (f) and false oat-grass (o).
605538	Broadleaved plantation on marshy grassland, with purple moor-grass (d), mature heather (f) and bilberry (o).
605529	Occasional small patches of dry heath up to 20 x 20m where heather and bilberry are abundant.
605510	Small watercourse, c. 30 cm width, medium flow, bank vegetation is grassland / marshy grassland with jointed rush (d).
605500	Steep slope from plantation down to watercourse. The top of the slope alongside the plantation is marshy grassland dominated by purple moor-grass, while the steeper banks are covered in bracken (<i>Pteridium aquilinum</i>).
605445	Patches of dry heath up to 30 x 30m on steep slopes down to watercourse, with heather and bell heather (<i>Erica cinerea</i>) (a). There are also scattered trees along watercourse - young alder (<i>Alnus glutinosa</i>) (a) and ash (<i>Fraxinus excelsior</i>) (f).
605250	Recently replanted conifer plantation, however, ground habitat is wet modified bog, with frequent small patches of marshy grassland dominated by jointed rush, occasional small patches of semi- improved acid grassland dominated by creeping soft-grass (<i>Holcus mollis</i>), mainly on the steeper slopes down to the watercourse, and some very small patches of dry heath dominated by heather with frequent bell heather on the rockier parts of the slope.
605245	River c. 5-8m wide, fast flowing, larger rocks, gravel areas, others very wide, dominated by marshy grassland with occasional willow spp.
605001	Improved neutral grassland but some tormentil (o) and purple moor-grass (o).
604680	Watercourse with slow flow, most overgrown by marshy grassland. This section has a steep drop to watercourse. Mix of acid grassland, heather, bell heather and scattered trees - ash (d), willow spp. (f), rowan and hazel (<i>Corylus avellana</i>) (o).
604661	Small patches of marshy grassland with purple moor- grass, jointed rush and tufted hair-grass (a).
604597	Watercourse by ravine. Tree lined here, few willow and rowan. Watercourse has moss covered boulders, rocky sides, concrete revetments on south side. On the east bank marshy grassland, up to the watercourse. Species present include false oat grass, abundant rowan, knapweed, lady's mantle, self heal (<i>Prunella vulgaris</i>), tufted hair-grass, creeping soft-grass and meadow vetchling (<i>Lathyrus pratensis</i>).
604537	On steep cleugh sides down to watercourse is neutral grassland, with few rocky outcrops and small patches of dry heath with abundant <i>Vaccinium</i> spp. and occasional heather.

Target note no.	Easting	Northing	Target Note
31	249350	604524	Now marshy grassland but tree stumps suggest the area was previously used for a plantation.
32	250099	604486	Wet modified bog with trenches dug out for tree planting every 1.5m, peat depth c. 0.7m, dominated by purple moor-grass and a few scattered rowan tree seedlings.
33	249865	604477	Dominated by bracken however has a small area of semi-improved acid grassland with sweet vernal-grass (Anthoxanthum odoratum) (d), tormentil (a), Yorkshire- fog (f), creeping bent (f), quaking grass (Briza media) (o) and a small area of marshy grassland with purple moor-grass (d), jointed rush, tormentil, tufted hair- grass (f) and bog asphodel (Narthecium ossifragum) (o). Also four common spotted-orchids (Dactylorhiza fuchsii) found nearby.
34	249728	604390	Scattered broadleaved trees along riverbank. Fairly young - grey willow (Salix cinerea), silver birch (Betula pendula), sycamore (Acer pseudoplatanus) and rowan.
35	250059	604276	Small patch of neutral grassland which is transitional from marshy grassland to neutral grassland down by waterfall on watercourse, which has large boulders in the channel plus numerous cobbles, c. 1m wide in places and 0.4m deep in the middle. Scattered trees such as rowan, willow, wild cherry (<i>Prunus avium</i>) and hazel on steep side banks and small patches of dry heath.
36	249580	604245	Small, fast flowing watercourse with steep sides banks of semi-improved neutral grassland and occasional small patches of wet heath.
37	249096	604244	Stream c. 4m wide, slow flowing, peaty with rocks, c. 0.3m deep, grassy banks.
38	250288	604024	Patches of dry heath on small rocky cleugh on east side of burn. Heather (f), bilberry (a).
39	250943	604057	Wet modified bog dominated by hare's-tail cotton grass, peat depth 0.7m, <i>Sphagnum palustre</i> , wavy hair- grass, common bent (<i>Agrostis capillaris</i>) and creeping bent (o).
40	250863	603982	Wet heath on thinner soils. Bilberry (a), cross-leaved heath (<i>Erica tetralix</i>) (o), wavy hair-grass (o), deergrass (a), <i>Sphagnum</i> sp. (o).
41	250367	603916	Tentative identification of dwarf willow (Salix herbacea), to be confirmed.
42	249686	603864	Acid flush with Polytrichum commune, Sphagnum palustre, star sedge (Carex echinata) (f), common cottongrass (Eriophorum angustifolium) (f), jointed rush (o), marsh lousewort (Pedicularis palustris) (o), crested dog's tail (Cynosurus cristatus) (o), round-leaved sundew (Drosera rotundifolia) (o) and carnation sedge (Carex panicea) (a).
43	250133	603736	On higher ground the grassland is more akin to acid grassland, less improved, but still sheep grazed. Species include wavy hair-grass (a), heath rush (f), deergrass (f), tormentil (o), bilberry (o), Sphagnum compactum (o).
44	250737	603671	Tentative identification of dwarf willow (Salix herbacea) small stand, to be confirmed.
45	250985	603658	Small patches of wet heath and rocky outcrops dominated by bilberry, deergrass (a), heath rush (o) and bog asphodel.

	Target note no.	Easting	Northing	Target Note		Target note no.
	46	250223	603620	Small patch of wet heath. Cross-leaved heath, Sphagnum capillifolium (f), deergrass (d), Sphagnum palustre (o). Close by several metres to the north is an acid flush. Sphagnum spp. cover c. 50-60% of the habitat. Sphagnum papillosum and jointed rush are dominant.	-	61 62 63
	47	250397	603566	Blanket bog grades into wet heath of peat depth c. 0.4m. Bilberry (a), hare's-tail cottongrass (d) and cross- leaved heath (r).		64
	48	250873	602973	On both sides of track are planted native trees such as alder, willow spp. and rowan.		
	49	251139	602321	Young broadleaved plantation on marshy grassland / wet modified bog. Purple moor-grass and jointed rush (Id), tufted hair-grass (Ia), Yorkshire-fog (o).		65
				Steep slope down to water is wet heath, peat depth 10 cm. Dominated by purple moor-grass with abundant hilberry, frequent crowberry (Embetrum		66
	50	251552	602257	nigrum) and occasional tormentil. There are scattered trees along watercourse edge - abundant rowan and willow spn_occasional ash	-	67
				Recently planted broadleaved trees, very young - up to 1m height on ridges with furrows between the lines of		68
	51	251659	602129	trees. The vegetation between is semi-improved acid grassland with Yorkshire-fog (d), jointed rush, crested dog's-tail, creeping buttercup (<i>Ranunculus repens</i>) (f),		69
		(If). To the north of the area the vegetation changes slightly, with purple moor-grass dominant in the ground layer and abundant tormentil and jointed rush		70		
	52	251956	602070	Very young broadleaved plantation, up to 0.5m tall, on a mix of semi-improved acid grassland - locally dominant creeping bent and creeping soft-grass (ld), tormentil (a), Yorkshire-fog, wavy hair-grass, sedge sp. and sneezewort (f) and marshy grassland - purple moor-grass (d), wavy hair-grass (f), soft-rush, jointed rush (lf) and tufted bair-grass (o)	_	71
				Broadleaved trees on wet modified bog. Drainage		72
	53	251591	601981	ground has been upturned trees have been planted including silver birch, Scots pine and rowan. The area is surrounded by a deer fence.		73
	54	251978	601612	Very young second rotation with tufted hair-grass (d), rosebay willowherb (f), eyebright (<i>Euphrasia officinalis</i> agg.) (o), dog rose (<i>Rosa canina</i>) (r), willow seedlings		74
	55	251417	601517	Very small patch of acid flush with Sphagnum cuspidatum and common cottongrass (d) and round- leaved sundew (o)	-	75
	56	251327	600896	Small pond with Sphagnum spp. (d), jointed rush (d), grey willow (d), soft-rush (a). Along a track nearby is scattered grey willow and rowan.	-	76
	57	251505	600670	Area of submerged, boggy plants on edge of loch, including bogbean (Menyanthes trifoliata) (f).		77
	58	251640	600666	Stream c. 1m wide, banks 1m high, rocky and fast flowing. Banks dominated by soft-rush.		
	59	252026	600580	Stream c. 2m wide, 1m deep, very peaty. Lots of soft- rush, jointed rush and moss on banks.		78
	60	251393	600536	Loch Muck - a freshwater loch. On the edges are areas of horsetail sp. Otherwise vegetation on the perimeter is dominated by soft-rush.		



Easting	Northing	Target Note		
251922	600498	Stream approx 2-4m wide, 1-3m high banks. Banks very eroded. Very rocky. Earthy banks.		
252280	600344	Stream through area of soft-rush, channel largely visible, fast flowing, 0.5m wide and 0.5m high.		
252169	600319	Very wet Sphagnum flush (10 x 5m).		
251696	600233	Small pool c. 4x4m, full of Sphagnum spp., round- leaved sundew (d), hare's-tail cotton grass (a), heath rush (o), tormentil (o) and heather (a).		
252424	600188	Stream flowing through blanket bog / marshy grassland. Fast flowing. Enclosed into peat. Peat depth >0.5m, width 0.5m depth 0.5m. Jointed rush (d), marsh thistle (<i>Cirsium palustre</i>) (f), heath bedstraw (d), moss spp. (d), <i>Sphagnum</i> spp. (a), creeping buttercup (o), Yorkshire-fog (o) and tormentil (o).		
252335	600144	Small wet flush, dominated by Sphagnum cuspidatum with occasional sedges.		
252038	600094	Area on slope that is marshy grassland rather than bog.		
251826	599948	Small - 20 x 10m patch of blanket bog, peat depth 80 cm. <i>Sphagnum</i> spp. and hare's-tail cottongrass (a), purple moor-grass and heather (f).		
251997	599936	Small patch of improved grassland, sweet vernal-grass, crested dog's-tail, white clover (<i>Trifolium repens</i>) (a), creeping buttercup and marsh thistle (f).		
251530	599844	Fast flowing stream c. 3m wide. 1m high banks of semi-improved acid grassland with some soft-rush, marsh thistle, common sorrel (<i>Rumex acetosa</i>), marsh thistle, heath bedstraw and hard fern (<i>Blechnum spicant</i>).		
252332	599691	Marshy grassland. In some patches jointed rush is dominant, and others purple moor-grass. The composition / proportions of the other species are similar throughout both types of marshy grassland here.		
252361	599572	Small pool 1.5 x 1m, 40 cm deep, pondweed spp. (<i>Potamogeton</i> spp.) (a).		
252536	599569	Small patch of wet modified bog, peat depth >1m, purple moor-grass (d), Sphagnum spp. (lf), wavy hair- grass, hare's-tail cottongrass and bilberry (f).		
251790	599480	Road verge has semi-improved acid grassland and large patches of rosebay willowherb. Young scattered trees.		
252166	599397	Occasional small patches of bog in marshy grassland. Peat depth >1m, with Sphagnum spp. (la), purple moor-grass (a), hare's-tail cottongrass (f).		
251755	599339	Stream, goes through area of semi-improved acid grassland. Very rocky, silty, rocky banks, soft-rush occasional on bank.		
252130	599152	Small enclosed area with improved grassland. Soft- rush (f), common nettle (<i>Urtica dioica</i>) (a), butterbur (<i>Petasites hybridus</i>) along edge of wall by stream. Scattered trees. Sycamore, beech (<i>Fagus sylvatica</i>), rowan and Sitka spruce.		
252670	599056	Watercourse up to 1m wide, medium flow on rocks and peat. Bank vegetation as surrounding habitats.		

Target note no.	Easting	Northing	Target Note
79	251994	599046	Small patches heavily modified wet bog. Purple moor grass (f), common cottongrass, Sphagnum spp. (a), heather (o). Heavily grazed with bare patches of peat. Peat depth >1m
80	252192	598858	Continuous bracken on steep east side boundary slope down to water from here to small road.
81	252371	598841	Occasional small patches of wet heath. Bilberry (f), deergrass, heather (o) and cross-leaved heath.
82	252103	598738	Old track slightly raised. From where the tarmac section ends is semi-improved acid grassland. Red fescue (<i>Festuca rubra</i>) (f), crested dog's tail, clover spp., Yorkshire-fog, soft-rush, marsh thistle, tormentil (o), heath bedstraw, eyebright and heath rush.
83	251868	598687	Stream c. 2m wide, very rocky, slow flowing with pools. Large quantity of soft-rush on banks.
84	252660	598000	Watercourse c. 50 cm width, medium flow. Surrounding habitat is marshy grassland with jointed rush (d).
85	253497	597598	Stream in marshy grassland. 1m wide, 1m deep. Banks rocky and earthy.
86	252494	597522	Gravel/stone pit, sparse vegetation cover.
87	252512	597510	Drumjohn settling pool, enclosed by metal fence. Vegetation around pool - semi-improved neutral grassland false oat-grass (d), Yorkshire-fog (f), patches of rosebay willowherb (o).
88	252750	597070	Watercourse up to 3m wide at the road, where banks have been stabilised, but narrower in the plantation. Rocky substrate, medium flow.
89	253029	596723	Clearing dominated by neutral grassland, with occasional young larch planted around edges.
90	253843	596714	Freshwater pond with pondweed, sedge and rush species.
91	253290	596510	Watercourse 20 - 30 cm wide, almost overgrown with vegetation from the surrounding habitat.
92	254285	596485	Stone walled enclosure with marshy grassland inside and outside. Planted oak (<i>Quercus</i> spp.), rowan and birch.
93	253380	596459	Grassland ride grades into wet modified bog.
94	254625	596451	Small freshwater pond, c. 10m x 10m
95	253630	596290	Watercourse c. 30 cm wide, medium flow. Becoming overgrown with vegetation. The surrounding habitat is marshy grassland in a ride.
96	253553	596212	Marshy grassland ride, purple moor-grass (a), soft- rush, tufted hair-grass, false oat-grass, marsh thistle and black knapweed (f).
97	253868	596130	Road verges are semi-improved neutral grassland with bracken, heather, rosebay willowherb, occasional hawthorn and willow species.
98	254462	595952	Stream in marshy grassland. 1m deep, 1m wide, large rocks, clearly visible channel, fast flowing.
99	255259	595557	Small area of wet heath, marshy grassland with modification.
100	255432	595404	Small area of marshy grassland / wet heath and modified.
101	255344	595224	Area marshy grassland / dry grassland, with modification.
102	255362	594972	Small area of species rich marshy grassland.

Target note no.	Easting	Northing	Target Note	Target n no.
103	255360	594948	Small area of species rich marshy grassland.	144
104	255373	594864	Species-rich flush in marshy grassland.	144
105	255700	594600	Species rich grassland - riparian mosaic,.	145
106	255832	594579	Small area of species rich marshy grassland.	
107	256823	593747	Patch of marshy grassland.	146
108	256838	593396	Localised area of marshy grassland.	147
109	257140	593200	Patch of species-poor marshy grassland within wider habitat type.	148
110	257502	592974	Species rich marsh / grassland mosaic.	
111	256931	592837	Species rich grassland margin.	1/0
112	257300	592800	Ad hoc record not relevant to this survey.	145
113	256812	592762	Ad hoc record not relevant to this survey.	
114	257025	592632	Marshy grassland mosaic within wider habitat type.	150
115	256929	592583	Patch of species rich marshy grassland.	
116	256834	592571	Species rich marshy grassland.	151
117	257335	592518	Area of species rich grassland.	152
118	257463	592470	Species rich marshy grassland within wider habitat.	
119	257447	592405	Watercourse running through semi-improved neutral grassland.	153
120	257447	592405	Watercourse within open semi-improved neutral grassland field with no trees.	154
121	257096	592384	Area of species rich marshy grassland within wider habitat type.	154
122	257580	592164	Area of species rich marshy grassland within wider habitat type.	155
123	257428	592145	Watercourse running through semi-improved neutral grassland.	156
124	257428	592145	Watercourse running through open field of semi- improved grassland.	157
125	257500	592100	Ad hoc record not relevant to this survey.	
126	257879	591870	Ad hoc record not relevant to this survey.	
127	257810	591827	Ad hoc record not relevant to this survey.	158
128	257896	591004	Area of flush seepage - Carex rich.	
129	257770	590968	Ad hoc record not relevant to this survey.	
130	257781	590930	Ad hoc record not relevant to this survey.	159
131	258064	590901	Small strip of marshy grassland, jointed rush (d) along Polquhanity Burn.	
132	258175	590900	Ad hoc record not relevant to this survey.	
133	257827	590857	Ad hoc record not relevant to this survey.	160
134	258215	590822	Small flush - Carex rich.	
135	257834	590814	Flush seepage - Carex rich within wider habitat.	101
136	257851	590786	Ad hoc record not relevant to this survey.	101
137	258210	590720	Small stream through marshy grassland.	
138	258273	590692	Smaller area of species rich dry grassland within the wider habitat type.	162
139	257885	590688	Ad hoc record not relevant to this survey.	
140	258170	590663	Ad hoc record not relevant to this survey.	163
141	258321	590654	Ad hoc record not relevant to this survey.	
142	250270	500000	Ad has record not relevant to this survey	
	258270	590633	Ad noc record not relevant to this survey.	

Target note no.	Easting	Northing	Target Note
144	258120	590500	Where ground is lower / wetter - i.e. ditches - there are occasional patches of jointed rush (d).
145	258335	590420	Small patch wet heath, deergrass (d), heather and cross-leaved heath (f), bog asphodel (o).
146	258087	590407	Occasional small clumps of continuous bracken.
147	258505	590292	Narrow stream c. 25 wide, slow flowing running through the area
148	258825	590009	Minor tributary of burn, mainly lined with soft-rush and lesser spearwort (Ranunculus flammula).
149	258883	589510	Marshy grassland, slightly wetter area with a few pools. Common pondweed present, jointed rush (d). Just south-east of here is a small stand of Scots pine c. 100 years old with a couple of beech trees.
150	258848	589335	Bracken encroaching into semi-improved neutral grassland.
151	259500	589254	Many heath spotted-orchids (Dactylorhiza maculata), bog asphodel and Sphagnum cover.
152	259495	589064	Circle of mature oak and sycamore trees and beech.
153	259358	588977	Transitional zone of blanket bog grading to marshy grassland. Small area on slightly higher ground, close to gate. Eyebright (r), purple moor-grass and soft-rush (d), jointed rush (f).
154	259576	588942	Private grounds with large rhododendrons to 15m, similar running down side of road where young Scots pines are also found.
155	259463	588923	Woodland with sycamore, beech and oak in marshy, soft-rush dominated grassland.
156	259179	588893	Small slow moving watercourse, banks of semi- improved grassland fringed by coniferous forest.
157	259812	588842	Area of gorse (<i>Ulex europaeus</i>) scrub 15m diameter. Just south is a cluster of 5-10 fragrant orchids (<i>Gymnadenia conopsea</i>), possibly northern species/sub- species.
158	259843	588809	Area of 100 fragrant orchid on southern slope between oak trees. Some heath spotted-orchids also present, many fruiting.
159	259534	588769	Small patch of semi-improved acid grassland where water table must be lower. Species present include meadowgrass spp. (<i>Poa</i> spp.) (a), soft-rush (f), spignel (<i>Meum athamanticum</i>), creeping buttercup, common sorrel, white clover and oval sedge (<i>Carex ovalis</i>) (o).
160	259410	588756	Wet modified bog. Peat depth 0.7m. Sphagnum <20%, purple moor-grass (a), jointed rush (f), common lousewort (<i>Pedicularis sylvatica</i>) (r), star sedge (o), tormentil (f) and common spotted-orchid (o).
161	259577	588749	Area where Sphagnum cover is 50% in places but cannot be classified as blanket bog as peat depth <0.5m. Spignel is also frequent.
162	262576	588691	Watercourse around 1m wide, silty and pebbly bed, soft-rush occasional in-stream, banks are marshy grassland.
163	262892	588691	Watercourse 0.4 - 0.5m wide, medium flow, bedrock of large pebbles. Little vegetation in the water. Banks are a thin strip of marshy grassland with sharp- flowered rush (d).
164	259888	588675	Over 200 heath spotted-orchids adjacent to fence line. Several metres to the south-east are two other clusters of over 50 heath spotted-orchids.

Target note no.	Easting	Northing	Target Note
165	262689	588656	Small watercourse, 30-40cm wide, shallow, slow flowing, some jointed rush in the stream, and banks are marshy grassland.
166	262097	588642	Small area 30 x 40m of semi-improved acid grassland, sweet vernal-grass (d), fescue sp. (a), soft-rush and jointed rush (f) between patches of improved grassland.
167	263100	588653	Occasional patches of wet modified bog, peat depth c. 0.8m to >1m, wavy hair-grass and purple moor-grass (a), heath rush (f), Sphagnum spp. (o).
168	262201	588640	Area is marshy grassland, but has around 50% rush species, 50% sweet vernal-grass.
169	262456	588588	Steep rocky slope down to Black Water. Semi- improved acid grassland at the top, red fescue and wavy hair-grass (a) with heather, mat-grass, bell heather, sweet vernal-grass and bracken on and between rocks on the slope. There are scattered trees along the watercourse edge - goat willow (<i>Salix</i> <i>caprea</i>), grey willow, silver birch, hawthorn, hazel and rowan.
170	262366	588553	Two patches of continuous bracken on steep rocky riverbank, with scattered bracken in between.
171	262770	588546	Watercourse, c. 0.5m wide, medium flow, 10cm deep. Little in-stream vegetation, banks has the same vegetation as the surrounding habitat - marshy grassland.
172	263419	588534	Small patch - 10 x 10m neutral grassland, sweet vernal-grass (d), Yorkshire-fog (a).
173	259807	588530	Roadside verge planted with rowan, Scots pine and silver birch.
174	261055	588522	Large watercourse, several metres wide, medium to slow flow with pools. Banks are steep and rocky, with male fern and great woodrush growing.
175	262906	588504	50 x 15m area along bank of the Black Water with jointed rush and red fescue (a), meadow buttercup (f) and sweet vernal-grass (o).
176	261513	588487	Semi-natural broadleaved woodland ground flora consists of bracken, cock's-foot (<i>Dactylis glomerata</i>), Yorkshire-fog and creeping buttercup (a), stinging nettle (f).
177	263145	588479	Patch of marshy grassland with jointed rush (d), on flat area by Black Water.
178	262191	588454	Small patch of wet modified bog, around 20 x 20m, purple moor-grass (d), jointed rush (a), marsh thistle (f).
179	261216	588453	Semi-natural broadleaved woodland ground flora is extensive bracken (d), cock's-foot, Yorkshire-fog and creeping buttercup (a), stinging nettle (f).
180	261378	588450	Track ends in flat area of loose stone. Some plants growing here - mouse-ear hawkweed (<i>Pilosella</i> officinarum) (a), false oat-grass, white clover and meadow vetchling (o).
181	262841	588419	Marshy grassland with large quantity of <i>Sphagnum</i> spp. and common cottongrass (a). Peat depth approx 1m.
182	261460	588397	Tall ruderals - rosebay and stinging nettle - either side of the track, up to 5m wide with bramble (<i>Rubus fruticosus</i> agg.) and raspberry (<i>Rubus idaeus</i>) (o).

Target note no.	Easting	Northing	Target Note		Target note no.	Easting
183	261627	588396	Strip of semi-improved neutral grassland between woodland and road. Cock's-foot, Yorkshire-fog, false oat-grass and tufted hair-grass (a).		204	26096
184	261786	588390	Bracken dominant with species poor semi-improved acid grassland in small patches and under bracken.		205	25994
185	259798	588364	Small stand of trees. Dominated by goat willow with rowan, oak and sycamore.	-	206	26320
186	261126	588339	Small rocky outcrop, crested dog's-tail (d), mouse- ear-hawkweed (a), common rock-rose (Helianthemum nummularium) and wild thyme (Thymus polytrichus) (o).	-	207	26360
187	263262	588308	Several common spotted-orchids in marshy grassland.			
188	261018	588288	Small rocky outcrop, English stonecrop (Sedum anglicum) (d) with wavy hair-grass (a).	-	208	26001
189	263338	588309	Marshy grassland grades into semi-improved acid grassland along fence / wall.		209	26391
190	260543	588276	The edges of the track here are dominated by bracken.			
191	259856	588244	Small stream approx 0.5m wide, shallow banks, small boulders in bottom and a few pebbles. Water depth 10cm. Surrounded by semi-improved acid grassland.	-	210	26342
192	264439	588241	At confluence of two watercourses. Side channel bars. Covered in monkey flower (<i>Mimulus guttatus</i>), common spike-rush (<i>Eleocharis palustris</i>) and water mint (<i>Mentha</i>	-	211	26126
193	261214	588234	aquatica). C. 5m wide. Large underground pipe forms mound that runs from dam to tower. Fairly well used as a footpath.		212	26396
194	262883	588176	Small area of 5 x 5m with over 50 common and heath spotted-orchid spikes on border of bracken / wet heath areas.	-	213	26434
195	259962	588170	Pond is artificial with raised stones banks and overflow chute. Depth difficult to ascertain but >1m in deeper areas. Planted with various willows on island and banks. Typical marshy species.	-	214	26254
196	260755	588169	Ground flora in woodland has cock's-foot (a), wood sorrel (Oxalis acetosella), ash saplings (f), red campion (Silene dioica) and male fern (Dryopteris filix-mas) (o).	-	215	26370
197	263271	588153	50 x 15m area scattered bracken in semi-improved acid grassland.		216	26428
198	263079	588145	Continuous bracken grades into grassland.	-		
199	263445	588145	Small patch of marshy grassland, peat depth 20-40cm, purple moor-grass (a), jointed rush, sweet vernal-grass and tormentil (f).		217	26056
200	264418	588136	Meandering watercourse, c. 0.5m deep in places, pebbly banks poached in places and erosion of banks,	-	218	26303
201	261739	588088	30 x 15m patch of marshy grassland, soft-rush (d) with very small SI acid grassland patches between the	-	219	26117
			Meandering watercourse recky hed a 2m wide		220	26044
202	264336	588076	and no greater than 0.4m deep. Rocky margins and bank sides. Marshy grassland by side of stream dominated by jointed rush. Also bird's-foot-trefoil (<i>Lotus corniculatus</i>) (a), meadowsweet, yellow rattle	-	221	26429
			(<i>Rhinanthus minor</i>) (o). Monkey flower close to water's edge in places.	-	223	26465
203	261639	588069	Small patch of wet heath. Heather (a), wavy hair-grass, heath rush, <i>Sphagnum</i> spp., purple moor-grass and common cottongrass (f).	-	224	26555



Easting	Northing	Target Note
260969	588068	Patch of marshy grassland, around 50 x 20m, soft-rush (d), ragged robin (<i>Lychnis flos-cuculi</i>) (f), tufted hair- grass (o), some heavy poaching.
259940	588043	Grassland is species rich and good condition (including yellow rattle). Has some boulders and stone dyke supporting good community.
263200	588040	20 x 20m area wet modified bog, peat depth c. 60cm, purple moor-grass (d), jointed rush (a), tormentil (f).
263608	588036	Semi-improved grassland with large quantities of rush pasture.
260018	588021	River channel approx 5m wide with pools and small waterfalls. Large boulders, pebbles and cobbles. Tree lined with willow, bracken, alder and rowan.
263915	588019	Meandering watercourse, slow flowing, cobbles and pebbles in channel. The bank is heavily poached in places and surrounded by semi-improved acid grassland and marshy grassland.
263428	588006	Small 30 x 30m area of dry heath, heavily modified, heather (a), heath bedstraw (la), mat-grass (<i>Nardus</i> <i>stricta</i>), wavy hair-grass and purple moor-grass (f).
261268	587943	This grassland has several areas with many common spotted-orchid plants.
263963	587930	Small peaty watercourse surrounded by wet modified bog. Species at margins similar to wet modified bog habitat with approx 1.5m water flow very low in places. Pondweed present.
264343	587844	Small, peaty stream c. 1m wide and 40cm deep in places, surrounded by marshy grassland right up to edge of stream. In places a pondweed sp. is present.
262549	587824	Acid flush on hillside. <i>Sphagnum</i> hummocks present alongside other moss dominated hummocks, soft-rush is abundant.
263708	587813	Small area of dry heath with large number of exposed areas of rock. Heath rush and heather both abundant here. Also small patches of bracken nearby.
264285	587783	Peaty watercourse approx 1m wide, barely any water in channel, peaty banks, surrounded by marshy grassland and bog.
260565	587759	Woodland ground flora quite rich and abundant. Bracken is frequent but there are many other species including wood crane's-bill (<i>Geranium sylvaticum</i>), an ancient woodland indicator.
263038	587736	Heath clipped very short by grazing livestock, very degraded, patches of marshy grassland throughout.
261174	587678	Patch of tall ruderals - around 5 x 30m, creeping thistle (d).
260447	587660	Watercourse c. 12m wide, banks 6m in height. Bed rock with overhanging vegetation. Including oak, rhododendron and ash.
264292	587634	On rocky outcrops, dry heath with heather (d), heath rush (f), heath bedstraw (f) wavy hair-grass (o).
263728	587567	Watercourse 50cm wide, 10cm deep, very slow flow, flush in surrounding land. Infilled with vegetation.
264652	587480	Spring in forest. Large exposure of acid grassland with mosaic of dry heath on rocky outcrops.
265552	587235	Watercourse, very slow moving, no obvious channel under vegetation.

Target note no.	Easting	Northing	Target Note						
225	265734	587185	On the edge of thicket conifers is a small scattering of alder trees in wet modified bog.						
226	264941	587161	Pond c. 70 x 40cm with lots of greater pondweed. Surrounded by willow sp. trees.						
227	265787	587009	Small patch, around 20m x 30m semi-improved acid grassland on a small hillock, wavy hair-grass (d), hare's-tail cottongrass (a), purple moor-grass (f) and bilberry (f).						
228	266185	586874	Semi-improved neutral grassland close to watercourse with large clumps of bracken and also patches of soft-rush in places.						
229	266451	586856	Watercourse close to origins, totally devoid of water with exposed bouldery bed, surrounded by a thin strip of marshy grassland.						
230	265150	586829	Small watercourse through woodland with marshy grassland up to edges and rocky banks. C. 0.3m wide and 0.3m deep, water still present.						
231	265136	586792	Small watercourse through marshy grassland. Cattle grazed approx 0.5m wide. <15cm deep. Shingle base. Riparian vegetation is the same as nearby marshy grassland.						
232	266714	586763	Small band of scattered trees close to track, separating track from clear fell. Between clear fell and trees (broadleaved) is a thin band of planted larch (<i>Larix</i> sp.).						
233	265887	586673	Common spotted-orchid plants in this area.						
234	266056	586655	Dry river bed with hollow rocky substrate, in small cleugh. Dominated in places by soft-rush and surrounded by marshy grassland.						
235	266367	586605	Watercourse, slow flowing approx 1m wide in places but in others < 0.5m. Pebbles and few boulders surrounded by marshy grassland and forestry. Similar vegetation to marshy grassland and semi-improved neutral. Nearby is an eared willow (<i>Salix aurita</i>) clump on the edge of the coniferous plantation.						

Target note no.	Easting	Northing	Target Note	Target note no.	Easting
236	266132	586601	Small area, around 20m x 30m marshy grassland, jointed rush (d), Yorkshire-fog (a), soft-rush (f to la), purple moor-grass (f).	249	267329
237	266272	586509	Watercourse here very shallow, <5cm water. Surrounded by semi-improved neutral grassland		
238	265720	586380	Narrow strip of broadleaf trees planted down the west side of plantation, alder (d).	250	267406
239	266284	586322	Thin strip of marshy grassland between watercourse and forestry	251	267426
240	266241	586237	Slightly wider section of stream. Back to soft banks. Muddy bottom. Approx 0.6m deep. 1m wide in places.	252	268529
			Surrounded by marshy grassland and plantation.	253	268037
241	266134	586200	Watercourse, dry exposed stream bed, few small boulders, shallow peaty banks. Approx 1m wide. < 0.5m deep.	254	267939
242	266073	586121	Small patch of wet modified bog, around 30 x 30m either side of a watercourse. Wavy hair-grass, deergrass and bog myrtle (<i>Myrica gale</i>) (a), star sedge (la), hare's-tail cottongrass (f).	255	268602
243	266090	586071	Minor water course into loch, c. 0.7m wide, very shallow with peaty banks. <0.4m deep at this time of year with no flow and surrounded by marshy	256	269040
			grassiand.	257	268658
244	267369	586003	with common cottongrass (d), sedge sp., soft-rush, tormentil, heath bedstraw and bog myrtle (f).	258	268709
245	267497	586000	10 x 3m stand of spignel.	259	268812
246	266959	585899	Pond c. 20 x 10m with pondweed sp. (d), and willow sp. on bank (f).		
247	266967	585885	Stream 1m wide, 1m deep water, no flow, vegetation is bracken and marsh thistle.	260	268797
248	267855	585553	Thin band of planted trees. Beech, larch, rowan. Close to track before clear fell.	261	268665

C.6 List of Vascular and Non-Vascular Plant Species Recorded

Table C6.1 - List of Plant Species and the Phase I Habitat Type where they were Recorded

Common name	Scientific name	Broadleaved woodland - semi- natural	Broadleaved woodland - Plantation - Glenshimmeroch	Acid Grassland - SI	Neutral Grassland - SI	Improved Grassland	Marshy Grassland	Bracken - Continuous	Dry Heath	Wet Heath	Dry Heath / Acid Grassland Mosaic	Wet Heath / Acid Grassland Mosaic	Wet Modified Bog
Alder	Alnus glutinosa												
Amphibious bistort	Persicaria amphibia												
Annual meadowgrass	Poa annua												
Ash	Fraxinus excelsior												
Autumn hawkbit	Leontodon autumnalis												
Beech	Fagus sylvatica												

Northing	Target Note
585536	Corner of water body 20m x 40m, edge dominated by soft-rush, bugle (<i>Ajuga reptans</i>), purple moor-grass and marsh thistle. Hart's-tongue fern is occasional. The water is silty with some vegetation. Edge of clear fell is 5m from water (south to east).
585138	Series of deeper pools, reaching 40cm depth, over c. 50-70m stretch of watercourse.
585083	Extensive in-channel vegetation including sharp- flowered rush and jointed rush.
584764	Pool just downstream of track, around 1m deep on main, very slow moving stream.
584682	Start of heath section of ride, ends at NX 84683 67963.
584681	Watercourse maximum 50cm wide, slow flowing, shallow, fairly overgrown, edges have soft-rush (d) and tormentil (o).
584384	Rocky stream, 3m wide, slow flowing, some moss covered boulders, silty.
584285	Stream, stagnant, 30 cm wide, water 30 cm deep, lots of purple moor-grass on banks, no obvious rocks free from grass.
584227	Small patch of dry heath, heather (d), bilberry (a), deergrass, heath milkwort (<i>Polygala serpyllifolia</i>), heath rush and mat-grass (o).
584167	Small area of spignel scattered over a 4 x 4m area.
584024	Planted alders over wet modified bog, around 15 years old, 8 - 12m tall.
583839	Very small tributary around 20cm wide, less than 10cm deep at this time of year, vegetation similar to surrounding marshy grassland, often in filled with vegetation.
583738	5m x 20m area of wet modified bog, purple moor- grass (d), bog myrtle (o).

Standing water - Glenshimmeroch	Running water - Margree Coniferous Plantation	Running water - Margree (Large open ride)	Running water - open ground	Inland cliff - acid/neutral

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Common name	Scientific name																	
Bell heather	Erica cinerea																	
Bilberry	Vaccinium myrtillus																	
																		
Bitter vetch																		
Blinks	Montia fontana																	
Bog asphodel	Narthecium ossifragum																	
Bog myrtle	Myrica gale																	
Bog pondweed	Potamogeton polygonifolius													-				
Bottle sedge	Carex rostrata																	4
Bracken	Pteridium aquilinum																	
Bramble	Rubus fruticosus agg.																	4
Broad buckler fern	Dryopteris dilatata																	
Broad-leaved dock	Rumex obtusifolius																	
Broad-leaved willowherb	Epilobium montanum																	
Brooklime	Veronica beccabunga																	
Broom	Cytisus scoparius																	
Bugle	Ajuga reptans																	
Butterwort	Pinguicula vulgaris																	
Carnation sedge	Carex panicea																	
Cleavers	Galium aparine																	
Cock's-foot	Dactylis glomerata																	4
Coltsfoot	Tussilago farfara																	
Common bent	Agrostis capillaris																	
Common cat's-ear	Hypochaeris radicata																	
Common chickweed	Stellaria media																	<u> </u>
Common cottongrass	Eriophorum angustifolium									_								ļ
Common cow-wheat	Melampyrum pratense																	ļ
Common dog violet	Viola riviniana																	
Common figwort	Scrophularia nodosa																	
Common knapweed	Centaurea nigra																	4
Common milkwort	Polygala vulgaris																	
Common mouse-ear	Cerastium fontanum																	ļ
Common nettle	Urtica dioica																	
Common polypody	Polypodium vulgare																	
Common ragwort	Senecio jacobaea																	L
Common rock-rose	Helianthemum nummularium																	
Common sedge	Carex nigra																	
Common sorrel	Rumex acetosa																	
Common spike-rush	Eleocharis palustris																	1
Common spotted orchid	Dactylorhiza fuchsii																	ļ
Common yellow sedge	Carex viridula subsp. oedocarpa																	



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Common name	Scientific name																	
Compact rush	Juncus conglomeratus																	
Cowberry	Vaccinium vitis-idaea																	
Cow parsley	Anthriscus sylvestris																	+
Cranberry	Vaccinium oxycoccos																	
Creeping bent	Agrostis stolonifera																	
Creeping buttercup	Ranunculus repens																	
Creeping softgrass	Holcus mollis																	<u> </u>
Creeping thistle	Cirsium arvense																	
Crested dog's-tail	Cynosurus cristatus																	<u> </u>
Cross-leaved heath	Erica tetralix																	
Crowberry	Empetrum nigrum									1								
Cuckooflower	Cardamine pratensis																	
Curled dock	Rumex crispus																	
Daisy	Bellis perennis																	
Dandelions	Taraxacum agg.																	
Deergrass	Trichophorum cespitosum																	
Devil's-bit scabious	Succisa pratensis																	
Dog rose	Rosa canina																	
Downy birch	Betula pubescens																	
Downy rose	Rosa sp.																	
Dripwort (a liverwort)	Pellia epiphylla																	
English Stonecrop	Sedum anglicum																	
Eyebright	Euphrasia sp.																	
False oat-grass	Arrhenatherum elatius																	
Field forget-me-not	Myosotis arvensis																	
Field horsetail	Equisetum arvense																	
Field speedwell	Veronica persica																	1
Field woodrush	Luzula campestris																	
Flea sedge	Carex pulicaris																	
Fool's watercress	Apium nodiflorum																	
Foxglove	Digitalis purpurea																	1
Fragrant orchid	Gymnadenia conopsea																	
Germander speedwell	Veronica chamaedrys																	
Glaucous sedge	Carex flacca																	1
Goat willow	Salix caprea																	í –
Gorse	Ulex europaeus																	
Great willowherb	Epilobium hirsutum																	1
Great wood-rush	Luzula sylvatica																	Í
Greater bird's-foot trefoil	Lotus pedunculatus																	1
Greater plantain	Plantago major																	1
Green-ribbed sedge	Carex binervis																	1
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Common name	Scientific name	•																
Grey willow	Salix cinerea																	
Ground elder	Aegopodium podagraria																	
Hard fern	Blechnum spicant																	
Harebell	Campanula rotundifolia																	
Hare's-tail cottongrass	Eriophorum vaginatum																	
Hawkbit sp.	Leontodon sp.																	
Hawthorn	Crataegus monogyna																	
Heath bedstraw	Galium saxatile																	
Heath grass	Danthonia decumbens																	
Heath milkwort	Polygala serþyllifolia																	
Heath rush	Juncus squarrosus																	
Heath speedwell	Veronica officinalis																	
Heath spotted orchid	Dactylorhiza maculata																	
Heath woodrush	Luzula multiflora																	
Heather	Calluna vulgaris																	
Hedge parsley	Iorilis japonica																	
Hedge woundwort	Stachys sylvatica																	
Herb Robert	Geranium robertianum																	
Hogweed	Heracleum sphondylium																	
Honeysuckle	Lonicera periclymenum																	
Jointed rush	Juncus articulatus																	
Knotgrass	Polygonum aviculare																	
Lady's bedstraw	Galium verum																	
Lady's mantle	Alchemilla vulgaris agg.																	
Lemon-scented fern	Oreopteris limbosperma																	
Lesser celandine	Ranunculus ficaria																	
	Stellaria graminea																	
Lesser water-plantain	Baldellia ranunculoides																	
Lichen	Cladonia sp.																	
Lousewort	Pedicularis sylvatica																	
Maidenhair spleenwort	Asplenium trichomanes																	
	Dryopteris filix-mas																	
Marsh bedstraw	Galium palustre																	
Marsh cinquetoil	Potentilla palustris																	
Marsh hawk's-beard	Crepis paludosa																	
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Iviarsh violet	viola palustris																	
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Common name	Scientific name	'																
Mat grass	Nardus stricta																	
Meadow buttercup	Ranunculus acris																	4
Meadow foxtail	Alopecurus pratensis																	
Meadow vetchling	Lathyrus pratensis										-							
Meadowsweet	Filipendula ulmaria																	4
Monkey flower	Mimulus guttatus																	<u> </u>
Moss	Hylocomium splendens																	<u> </u>
Moss	Pleurozium schreberi																	
Moss	Polytrichum commune									1	1			1				<u> </u>
Moss	Polytrichum formosum																	<u> </u>
Moss	Rhytidiadelphus squarrosus																	<u> </u>
Moss	Sphagnum compactum																	
Moss	Sphagnum fallax																	4
Moss	Sphagnum papillosum																	
Mouse-ear hawkweed	Hieracium pilosella													_				_
Narrow buckler fern	Dryopteris carthusiana																	<u> </u>
Native bluebell	Hyacinthoides non-scripta																	
Opposite-leaved golden saxifrage	Chrysosplenium oppositifolium																	
Oval sedge	Carex ovalis																	
Oxeye daisy	Leucanthemum vulgare																	
Pedunculate oak	Quercus robur																	L
Pennywort	Hydrocotyle vulgaris																	
Perennial rye-grass	Lolium perenne																	<u> </u>
Pignut	Conopodium majus																	
Primrose	Primula vulgaris																	L
Purple loosestrife	Lythrum salicaria																	
Purple moorgrass	Molinia caerulea																	l
Quaking grass	Briza media																	
Ragged robin	Lychnis flos-cuculi															-		l
Red clover	Trifolium pratense																	<u> </u>
Red fescue	Festuca rubra																	<u> </u>
Red leg	Persicaria maculosa																	<u> </u>
Reed canary-grass	Phalaris arundinacea																	
Ribwort plantain	Plantago lanceolata																	
Rosebay willowherb	Chamerion angustifolium																	<u> </u>
Rough meadowgrass	Poa trivialis																	
Rough sow-thistle	Sonchus asper																	
Round-leaved sundew	Drosera rotundifolia																	
Rowan	Sorbus aucuparia																	
Scentless mayweed	Tripleurospermum inodorum																	
Self heal	Prunella vulgaris																	

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Common name	Scientific name	<u>.</u> .															<u>.</u>	
Sharp flowered rush	Juncus acutiflorus																	
Sheep's fescue	Festuca ovina																	
Sheep's sorrel	Rumex acetosella																	
Silver birch	Betula pendula																	
Slender St John's-wort	Hypericum pulchrum																	
Smooth meadowgrass	Poa pratensis																	
Sneezewort	Achillea ptarmica																	
Soft rush	Juncus effusus																	
Spear thistle	Cirsium vulgare																	
Spignel	Meum athamanticum																	
Spike rush	Eleocharis palustris																	
Spring sedge	Carex caryophyllea																	
Star sedge	Carex echinata																	
Stinging nettle	Urtica dioica																	
Stitchwort sp.	Stellaria sp.																	
Sweet vernal grass	Anthoxanthum odoratum																	
Sycamore	Acer pseudoplatanus																	
Thyme-leaved speedwell	Veronica serpyllifolia																	
Timothy	Phleum pratense																	
Tormentil	Potentilla erecta																	
Tufted hair-grass	Deschampsia cespitosa																	
Tufted vetch	Vicia cracca																	
Various-leaved pondweed	Potamogeton gramineus																	
Velvet bent	Agrostis canina																	
Viviparous fescue	Festuca vivipara																	
Water forget-me-not	Myosotis scorpioides																	
Water horsetail	Equisetum fluviatile																	
Water mint	Mentha aquatica																	
Wavy bittercress	Cardamine flexuosa																	
Wavy hairgrass	Deschampsia flexuosa																	
Wavy meadowgrass	Poa flexuosa																	
White clover	Trifolium repens																	
White willow	Salix alba																	
Whorled caraway	Carum verticillatum																	
Wild angelica	Angelica sylvestris																	
Wild pansy	Viola tricolor																	
Wild thyme	Thymus polytrichus																	
Willow sp.	Salix sp.																	
Wood anemone	Anemone nemorosa																	
Wood crane's-bill	Geranium sylvaticum																	
Wood sage	Teucrium scorodonia																	
Wood sorrel	Oxalis acetosella																	



Common name	Scientific name	Broadleaved woodland - semi- natural	Broadleaved woodland - Plantation - Glenshimmeroch	Acid Grassland - SI	Neutral Grassland - SI	Improved Grassland	Marshy Grassland	Bracken - Continuous	Dry Heath	Wet Heath	Dry Heath / Acid Grassland Mosaic	Wet Heath / Acid Grassland Mosaic	Wet Modified Bog	Standing water - Glenshimmeroch	Running water - Margree Coniferous Plantation	Running water - Margree (Large open ride)	Running water - open ground	Inland cliff - acid/neutral
Wood-rush spp.	Luzula spp.																	
Yarrow	Achillea millefolium																	
Yellow pimpernel	Lysimachia nemorum																	
Yellow rattle	Rhinanthus minor																	
Yellow sedge	Carex viridula subsp. oedocarpa																	
Yorkshire fog	Holcus lanatus																	

Table C6.2 - Complete List of Plant Species Recorded and their Status

Common name	Scientific name	Status ⁱ
Alder	Alnus glutinosa	LC
Amphibious bistort	Persicaria amphibia	LC
Annual meadow grass	Poa annua	LC
Ash	Fraxinus excelsior	LC
Autumn hawk-bit	Leontodon autumnalis	LC
Beech	Fagus sylvatica	LC
Bell heather	Erica cinerea	LC
Bilberry	Vaccinium myrtillus	LC
Bird's-foot trefoil	Lotus corniculatus	LC
Bitter vetch	Lathyrus linifolius	LC
Blinks	Montia fontana	LC
Bog asphodel	Narthecium ossifragum	LC
Bog myrtle	Myrica gale	LC
Bog pondweed	Potamogeton polygonifolius	LC
Bottle sedge	Carex rostrata	LC
Bracken	Pteridium aquilinum	LC
Bramble	Rubus fruticosus agg.	LC
Broad buckler fern	Dryopteris dilatata	LC
Broad-leaved dock	Rumex obtusifolius	LC
Broad-leaved willowherb	Epilobium montanum	LC
Brooklime	Veronica beccabunga	LC
Broom	Cytisus scoparius	LC
Bugle	Ajuga reptans	LC
Butterwort	Pinguicula vulgaris	LC
Carnation sedge	Carex panicea	LC
Cleavers	Galium aparine	LC
Cock's-foot	Dactylis glomerata	LC
Colt's-foot	Tussilago farfara	LC
Common bent	Agrostis capillaris	LC
Common cat's-ear	Hypochaeris radicata	LC
Common chickweed	Stellaria media	LC
Common cottongrass	Eriophorum angustifolium	LC
Common cow-wheat	Melampyrum pratense	LC

Common name	Scientific name	Status ⁱ
Common dog violet	Viola riviniana	LC
Common figwort	Scrophularia nodosa	LC
Common knapweed	Centaurea nigra	LC
Common milkwort	Polygala vulgaris	LC
Common mouse-ear	Cerastium fontanum	LC
Common nettle	Urtica dioica	LC
Common polypody	Polypodium vulgare	LC
Common ragwort	Senecio jacobaea	LC
Common rock-rose	Helianthemum nummularium	LC
Common sedge	Carex nigra	LC
Common sorrel	Rumex acetosa	LC
Common spike-rush	Eleocharis palustris	LC
Common spotted orchid	Dactylorhiza fuchsii	LC
Common yellow sedge	Carex viridula subsp. oedocarpa	LC
Compact rush	Juncus conglomeratus	LC
Cowberry	Vaccinium vitis-idaea	LC
Cow parsley	Anthriscus sylvestris	LC
Cranberry	Vaccinium oxycoccos	LC
Creeping bent	Agrostis stolonifera	LC
Creeping buttercup	Ranunculus repens	LC
Creeping soft-grass	Holcus mollis	LC
Creeping thistle	Cirsium arvense	LC
Crested dog's-tail	Cynosurus cristatus	LC
Cross-leaved heath	Erica tetralix	LC
Crowberry	Empetrum nigrum	LC
Cuckooflower	Cardamine pratensis	LC
Curled dock	Rumex crispus	LC
Daisy	Bellis perennis	LC
Dandelions	Taraxacum agg.	LC
Deergrass	Trichophorum cespitosum	LC
Devil's-bit scabious	Succisa pratensis	LC
Dog rose	Rosa canina	LC
Downy birch	Betula pubescens	LC

Common name	Scientific name	Status ⁱ
Downy rose	Rosa sp.	LC
Dripwort (a liverwort)	Pellia epiphylla	LC
English Stonecrop	Sedum anglicum	LC
Eyebright	Euphrasia sp.	LC
False oat-grass	Arrhenatherum elatius	LC
Field forget-me-not	Myosotis arvensis	LC
Field horsetail	Equisetum arvense	LC
Field speedwell	Veronica persica	LC
Field woodrush	Luzula campestris	LC
Flea sedge	Carex pulicaris	LC
Fool's watercress	Apium nodiflorum	LC
Foxglove	Digitalis purpurea	LC
Germander speedwell	Veronica chamaedrys	LC
Glaucous sedge	Carex flacca	LC
Goat willow	Salix caprea	LC
Gorse	Ulex europaeus	LC
Great willowherb	Epilobium hirsutum	LC
Great wood-rush	Luzula sylvatica	LC
Greater bird's-foot trefoil	Lotus pedunculatus	LC
Greater plantain	Plantago major	LC
Green-ribbed sedge	Carex binervis	LC
Grey willow	Salix cinerea	LC
Ground elder	Aegopodium podagraria	LC
Hard fern	Blechnum spicant	LC
Harebell	Campanula rotundifolia	LC / SBL
Hare's-tail cottongrass	Eriophorum vaginatum	LC
Hawkbit sp.	Leontodon sp.	LC
Hawthorn	Crataegus monogyna	LC
Heath bedstraw	Galium saxatile	LC
Heath grass	Danthonia decumbens	LC
Heath milkwort	Polygala serpyllifolia	LC
Heath rush	Juncus squarrosus	LC
Heath speedwell	Veronica officinalis	LC

Common name	Scientific name	Status ⁱ
Heath spotted orchid	Dactylorhiza maculata	LC
Heath woodrush	Luzula multiflora	LC
Heather	Calluna vulgaris	LC
Hedge parsley	Torilis japonica	LC
Hedge woundwort	Stachys sylvatica	LC
Herb Robert	Geranium robertianum	LC
Hogweed	Heracleum sphondylium	LC
Honeysuckle	Lonicera periclymenum	LC
Jointed rush	Juncus articulatus	LC
Knotgrass	Polygonum aviculare	LC
Lady's bedstraw	Galium verum	LC
Lady's mantle	Alchemilla vulgaris agg.	LC
Lemon-scented fern	Oreopteris limbosperma	LC
Lesser celandine	Ranunculus ficaria	LC
Lesser stitchwort	Stellaria graminea	LC
Lichen	Cladonia sp.	LC
Lousewort	Pedicularis sylvatica	LC
Maidenhair spleenwort	Asplenium trichomanes	LC
Male fern	Dryopteris filix-mas	LC
Marsh bedstraw	Galium palustre	LC
Marsh cinquefoil	Potentilla palustris	LC
Marsh hawk's-beard	Crepis paludosa	LC
Marsh horsetail	Equisetum palustre	LC
Marsh lousewort	Pedicularis palustris	LC
Marsh marigold	Caltha palustris	LC
Marsh thistle	Cirsium palustre	LC
Marsh violet	Viola palustris	LC
Marsh willowherb	Epilobium palustre	LC
Mat grass	Nardus stricta	LC
Meadow buttercup	Ranunculus acris	LC
Meadow foxtail	Alopecurus pratensis	LC
Meadow vetchling	Lathyrus pratensis	LC
Meadowsweet	Filipendula ulmaria	LC
Monkey flower	Mimulus guttatus	LC
Moss	Hylocomium splendens	LC
Moss	Pleurozium schreberi	LC
Moss	Polytrichum commune	LC
Moss	Polytrichum formosum	LC

Common name	Scientific name	Status ⁱ	Common name
Moss	Rhytidiadelphus squarrosus	LC	Spignel
Moss	Sphagnum compactum	LC	Spike rush
Moss	Sphagnum fallax	LC	Spring sedge
Moss	Sphagnum papillosum	LC	Star sedge
Mouse-ear hawkweed	Hieracium pilosella	LC	Stinging nettle
Narrow buckler fern	Dryopteris carthusiana	LC	Stitchwort sp.
Native bluebell	Hyacinthoides non-scripta	LC / SBL	Sweet vernal grass
Fragrant orchid	Gymnadenia conopsea	LC	Sycamore
Opposite-leaved golden saxifrage	Chrysosplenium oppositifolium	LC	Thyme-leaved speedwell
Oval sedge	Carex ovalis	LC	Timothy
Oxeye daisy	Leucanthemum vulgare	LC	Tormentil
Pedunculate oak	Quercus robur	LC	Tufted hair-grass
Pennywort	Hydrocotyle vulgaris	LC	Tufted vetch
Perennial rye-grass	Lolium perenne	LC	Various-leaved pondweed
Pignut	Conopodium majus	LC	Velvet bent
Primrose	Primula vulgaris	LC	Viviparous fescue
Purple loosestrife	Lythrum salicaria	LC	Water forget-me-not
Purple moor-grass	Molinia caerulea	LC	Water horsetail
Quaking grass	Briza media	LC	Water mint
Ragged robin	Lychnis flos-cuculi	LC	Wavy bittercress
Red clover	Trifolium pratense	LC	Wavy hair-grass
Red fescue	Festuca rubra	LC	White clover
Reed canary-grass	Phalaris arundinacea	LC	White willow
Ribwort plantain	Plantago lanceolata	LC	Whorled caraway
Rosebay willowherb	Chamerion angustifolium	LC	Wild angelica
Round-leaved sundew	Drosera rotundifolia	LC	Wild pansy
Rowan	Sorbus aucuparia	LC	Wild thyme
Scentless mayweed	Tripleurospermum inodorum	LC	Willow sp.
Self heal	Prunella vulgaris	LC	Wood anemone
Sharp flowered rush	Juncus acutiflorus	LC	Wood crane's-bill
Sheep's fescue	Festuca ovina	LC	Wood sage
Sheep's sorrel	Rumex acetosella	LC	Wood sorrel
Silver birch	Betula pendula	LC	Wood-rush spp.
Slender St John's-wort	Hypericum pulchrum	LC	Yarrow
Smooth meadowgrass	Poa pratensis	LC	Yellow pimpernel
Sneezewort	Achillea ptarmica	LC	Yellow rattle
Soft rush	Juncus effusus	LC	Yellow sedge
Spear thistle	Cirsium vulgare	LC	Yorkshire fog

Protected Species Target Notes and Survey Results C.7

Table C7.1 - Target Notes - Otter and Water Vole Surveys / Non-confidential Records

Date	Location	Easting	Northing	Target Note
	Glenmuck Craig	50963	03086	Very narrow (approx 30cm) and very deep (approx 30cm) channel. Fast flowing. Peaty banks and bed. Dominated by sedges and rush. Barely visible in some stretches. No otter of
21/07/2008	Glenmuck Craig	50973	02975	Drainage ditch now dry with some stagnant pools. No flow. No otter or water vole sign found.
21/07/2008	Glenmuck Craig	50912	02964	Drainage ditch now dry with some stagnant pools. No flow. No otter or water vole sign found.
17/07/2008	Glenmuck Craig	54704	95787	Very narrow slow moving watercourse. Not visible in several places. Muddy bottom no banks. Turns into marshy areas dominated by rushes and sedges. No otter or water vole s
17/07/2008	Glenmuck Craig	54000	96767	Watercourse runs through coniferous plantation. Channel choked with sphagnum moss. No banks. Looks like forestry drain. No flowing water in upper region. Terminates in bogy sign found.
17/07/2008	Glenmuck Craig	53119	87644	Watercourse very shallow. Slow moving. Barely visible in several places. Dominated by thistle. Lower area starts to develop banks. No otter or water vole sign found.

CAPITA LOVEJOY

Ecology



Scientific name	Status ⁱ
Meum athamanticum	NT
Eleocharis palustris	LC
Carex caryophyllea	LC
Carex echinata	LC
Urtica dioica	LC
Stellaria sp.	LC
Anthoxanthum odoratum	LC
Acer pseudoplatanus	LC
Veronica serpyllifolia	LC
Phleum pratense	LC
Potentilla erecta	LC
Deschampsia cespitosa	LC
Vicia cracca	LC
Potamogeton gramineus	LC
Agrostis canina	LC
Festuca vivipara	LC
Myosotis scorpioides	LC
Equisetum fluviatile	LC
Mentha aquatica	LC
Cardamine flexuosa	LC
Deschampsia flexuosa	LC
Trifolium repens	LC
Salix alba	LC
Carum verticillatum	LC
Angelica sylvestris	LC
Viola tricolor	NT / SBL
Thymus polytrichus	LC
Salix sp.	LC
Anemone nemorosa	LC
Geranium sylvaticum	LC
Teucrium scorodonia	LC
Oxalis acetosella	LC
Luzula spp.	LC
Achillea millefolium	LC
Lysimachia nemorum	LC
Rhinanthus minor	LC
Carex viridula subsp. oedocarpa	LC
 Holcus lanatus	LC

i - Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Data Deficient (DD), Near Threatened (NT), Nationally Rare (NR), Nationally Scarce (NS) & Least Concern (LC)

or water vole sign found.

sign found.

y area. Water course in forestry ride approx 50m across. No otter or water vole

Date	Location	Easting	Northing	Target Note
17/07/2008	Glenmuck Craig	53173	97559	Watercourse has deep channel. Approx 30cm wide and 10cm deep. Undercut, grassy banks. Some banks heavily poached by cattle and sheep. No otter or water vole sign found.
03/07/2008	Mosshead	62645	88318	Channel very narrow (c 20cm) between undercut bank. Upper extremes from this point marked by line of bracken. No otter or water vole sign found.
03/07/2008	Mosshead	62683	88276	Channel splits into 2 (walking up stream) westerly channel split almost immediately into several channels (every four meters). Draining from the bracken belt. No otter or water vol
03/07/2008	Mosshead	62594	88202	Difficult to distinguish channels. Marshy grassland with drier areas. No otter or water vole sign found.
03/07/2008	Mosshead	62712	88231	Channel line marked by bracken. Channel dry with some sphagnum. No otter or water vole sign found.
03/07/2008	Mosshead	62544	88414	Channel marked by jointed rush, forget-me-not and lesser spearwort plus occasional marsh thistle and common cotton grass, no otter or water vole signs found.
03/07/2008	Mosshead	62510	88475	Wide marshy area, marked by same mix of plants, plus more obvious mosses (still obvious channel), no otter or water vole evidence.
03/07/2008	Mosshead	62454	88539	Wide marshy area, no otter or water vole evidence.
03/07/2008	Mosshead	62426	88569	3m wide stretch of the Black Water. Below waterfall and into gorge area. Rocks, rapids, eddys. Widest approx 5m. No otter or water vole evidence.
03/07/2008	Mosshead (a)	62227	88329	Deeply incised channel. Very similar to upper section. No otter or water vole sign found.
03/07/2008	Mosshead (a)	62220	88175	Bracken making upper extent of channel (narrow & undercut). No otter or water vole sign found.
03/07/2008	Mosshead (a)	62185	88087	Upper end of channel lost in marsh and bracken belt. No otter or water vole sign found.
03/07/2008	Mosshead (a)	62248	88323	Extensive area of bog. No obvious channels. No otter or water vole sign found.
03/07/2008	Mosshead (a)	62251	88267	Channel found (diffuse) denser jointed rush. No otter or water vole sign evident.
03/07/2008	Mosshead (a)	62306	88224	Narrow, undercut, incised channel marked by bracken. No otter or water vole sign found.
03/07/2008	Mosshead (a)	62368	88156	Cobbled bed just below confluence with tributary (in bracken belt). No otter or water vole sign found.
03/07/2008	Mosshead (a)	63278	88038	Channel lost in marshy area. No otter or water vole sign found.
03/07/2008	Mosshead (a)	62514	88666	Series of waterfalls and rapids. No otter or water vole sign found.
03/07/2008	Mosshead (a)	62590	88722	Well-defined channel, undercut banks, large areas disturbed by livestock (30-50cm wide). No otter or water vole sign found.
03/07/2008	Mosshead (a)	62498	88638	Slower section of watercourse between rapids. No otter or water vole sign found.
03/07/2008	Mosshead (a)	62330	88559	Black Water, deep pool in this area. No otter or water vole sign found.
03/07/2008	Mosshead (a)	61939	88437	Cataract at end of section. 3x waterfall to lower pool in gorge. No otter or water vole sign found.
03/07/2008	Mosshead (a)	61907	88447	Pool at base of falls. Approx 15m of deep water before next rapids. Mixed broad leaved woodland either side. Ash, oak, lime silver birch, rowan. No otter or water vole sign found.
03/07/2008	Mosshead (a)	51852	88396	Deeper section. Slower flow. Well defined sides (Vertical banks). Bracken on either side. No otter or water vole sign found.
03/07/2008	Mosshead (a)	61750	88376	Weir. Below weir are rapids. Before the gorge under the road bridge. No otter or water vole sign found.
03/07/2008	Mosshead (a)	62272	88454	Series of pools and rapids. 3-5m wide. Dipper sighted. No otter or water vole sign found.
03/07/2008	Mosshead (a)	62236	88418	Deep section. 5m wide. 20m long. Dipper on rock at lower end. Fish sighted. No otter or water vole sign found.
03/07/2008	Mosshead (a)	62158	88350	Large rock in stream with old weathered spraint on top with fish bones.
17/06/2008	Glenshimmeroch	64352	87959	Two otter spraints. Fairly fresh on rock in stream
04/07/2008	Dundeugh	61552	88133	Pond skaters, forget-me-not, crested dogtail, soft rush, lesser spearwort, bedstraw. Well defined channel. Aprox 30cm. Wide (max) with rushes over growing it, edges poached by li
04/07/2008	Dundeugh	61587	88101	Wider, cobble-bottomed pool. Approx 50cm wide (pond skaters) channel marked by L-spearwort and stands of bracken. No otter or water vole sign found.
04/07/2008	Dundeugh	61627	87933	Series of small waterfalls. Incised channel. No otter or water vole sign found.
04/07/2008	Dundeugh	61655	87936	Rowan tree growing out of steep bank, bracken marking deeply incised channel. No otter or water vole sign found.
04/07/2008	Dundeugh	61672	87910	Marshy areas poached by livestock. Channel still clearly obvious. No otter or water vole sign found.
04/07/2008	Dundeugh	61752	87858	Rocky stream bed, no otter or water vole sign found.
04/07/2008	Dundeugh	61793	87774	Channel barely visible, however, waterfall viable above. Marshy area. No otter or water vole sign found.
04/07/2008	Dundeugh	61748	87754	Wide marshy area poached by cattle, no otter or water vole sign found.
04/07/2008	Dundeugh	61769	87619	Channel ends in wet grassland area dominated by sphagnum moss. No otter or water vole sign found.
17/06/2008	Glenshimmeroch	64405	88089	Four otter spraints. Fairly fresh on boulder in stream.
17/06/2008	Glenshimmeroch	64336	88076	Three otter spraints on large boulder in channel at confluence.
17/06/2008	Glenshimmeroch	64426	88143	Six otter spraints on boulder by side of stream. Some quite fresh.
17/06/2008	Glenshimmeroch	64443	88224	Three otter spraints fresh on boulder in stream. Just at confluence.
17/06/2008	Glenshimmeroch	64325	88051	Four otter spraints on boulder at edge of stream.
15/07/2008	Carsphairn	57045	92438	Small medium flowing watercourse. Approx 1.5m wide and 5cm deep. Some peaty banks. Rocky bed. Fringed by rushes and sedges. Some banks poached by sheep. Watercourse rusign found.
15/07/2008	Carsphairn	56870	92526	Small medium flow watercourse. Approx 40cm wide. 5cm deep. Runs through area of birch trees where it turns into a bigger patch. Small banks and rocky bed. No otter or water very
15/07/2008	Carsphairn	56772	92643	Very small slow moving watercourse. Much like a field drainage ditch. Approx 30cm wide and 3cm deep. Dominated by sedges and rushes. No banks. No otter or water vole sign for
15/07/2008	Carsphairn	56700	92678	Vary small watercourse. At top of area start off as marshy area. Muddy bed. No banks. No otter or water vole sign found.
15/07/2008	Carsphairn	56710	92683	Watercourse with very little movement of water in channel. Some peaty banks. No otter or water vole sign found.

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s through large patch of bracken in upper regions. No otter or water vole
e sign found.
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Date	Location	Easting	Northing	Target Note
15/07/2008	Carsphairn	56917	92724	Shallow slow moving watercourse. No banks. Heavily poached by sheep. No otter or water vole sign found.
15/07/2008	Carsphairn	56933	92737	Shallow slow moving watercourse. Muddy and rocky bed. Heavily poached. No otter or water vole sign found.
15/07/2008	Carsphairn	57033	927400	Shallow medium flowing watercourse. Approx 30cm wide and 5cm deep. Dominated by sedges and rushes. Rocky bed. No otter or water vole sign found.
15/07/2008	Carsphairn	56670	93060	Watercourse runs through semi-improved grassland. Chocked with rushes and sedges. Barely visible in areas. Very boggy. No otter or water vole sign found.
15/07/2008	Carsphairn	56037	93569	Area inaccessible. Small watercourse running through plantation. Channelled. No evidence of otter or water vole found.
15/07/2008	Carsphairn	55957	93609	Slow moving to still water in channel. Water choked with rushes and sedges. Muddy bed. No otter or water vole sign found.
15/07/2008	Carsphairn	56334	93606	Small medium flow burn. Approx 30cm wide and 3cm deep. Some grassy banks. Dominated by sedges. No otter or water vole sign found.
15/07/2008	Carsphairn	56294	93503	Very small watercourse. Poor flow of water. Heavily poached by sheep. No otter or water vole sign found.
10/07/2008	Cummnock Knowes	57427	92145	Slow moving water (approx 1/2 wide and 2cm deep). Heavily poached by cattle and sheep. Dominated by rushes and sedges. Taller grasses at edge. No trees. No otter or water
09/07/2008	Polquhanity	59217	89719	Very shallow and wide watercourse (5cm deep and 2cm wide). Banks fringed with ash and alder. Steep banks. Rocky stream bed. No otter or water vole sign found.
09/07/2008	Polquhanity	59192	89770	Two otter spraints under bridge. Last time stream in spate was Feb 2008. Watercourse at 59135 89831 runs through garden area and into semi-improved grassland heavily poac 20cm deep and 1.5m wide) No trees. Third otter sprint at 58993 89891.
09/07/2008	Polquhanity	58766	90101	Watercourse runs through conifer plantation. Shallow and bogy. Choked with rushes and sedges. No otter or water vole sign found.
09/07/2008	Polquhanity	58361	90313	Watercourse runs through semi-improved grassland. Water very slow and shallow. Dominated by sedges and rushes. Appears to dry up in summer. No trees. No otter or water v
09/07/2008	Polquhanity	58173	90513	Area of semi-improved grassland. Watercourse very shallow and boggy. Rocky bed. Small banks. No trees. No otter or water vole sign found.
09/07/2008	Polquhanity	57974	90754	Watercourse running through semi-improved grassland running into semi-heathland area. Channel seems to disappear. Area has boggy/marshy areas dominated by rushes and
08/07/2008	Polmaddy (a)	59238	88796	Watercourse in forestry plantation. Becomes very boggy. Dominated by horsetail, sedges and rushes. Sitka spruce plantation on either side. No otter or water vole sign found.
08/07/2008	Polmaddy (a)	58167	90415	Marshy. Slow moving burn. Shallow and narrow. No otter or water vole sign found.
08/07/2008	Polmaddy (a)	57861	90629	Marshy. Slow moving burn. Shallow and narrow. No otter or water vole sign found.
08/07/2008	Polmaddy (a)	57868	90515	Marshy. Slow moving burn. Shallow and narrow. No otter or water vole sign found.
01/07/2008	Dundeugh (a)	61594	88396	Fast running water body. Banks 5-10m. Rocky and steep. Water 1m depth. No otter or water vole sign found.
01/07/2008	Dundeugh (a)	61473	88424	Slow moving water. Water backed up behind dam. Surrounded by mixed woodland. South western edge concrete dam. Water depth 1-10m. S/E edge gravel bank with grassy fri
01/07/2008	Dundeugh (a)	61485	88454	Shallow and slow moving burn. Terminating in bogy area dominated by sedge and rushes. No otter or water vole sign found.
01/07/2008	Dundeugh (a)	61496	88164	Shallow slow moving water (30cm deep and 50cm wide). Gravel bed. Steep grassy banks. Some sedges. Banks heavily poached. No otter or water vole sign found.
01/07/2008	Dundeugh (a)	61246	88273	Shallow, slow moving water (30cm deep and 50cm wide). Running into marshy ground. Peaty bed. Diverted under dam pipeline towards plantations. No otter or water vole sign
01/07/2008	Dundeugh (a)	61559	88126	Very shallow water (20cm deep and 50cm wide). Shallow grassy banks. Very shallow running. Dominated by sedges. No otter or water vole sign found.
01/07/2008	Dundeugh (a)	61628	88347	Very shallow, very slow moving water. Steep banks. Dominated by sedges etc. Banks stony. Bed stony. Small channel. Watercourse may dry out in summer. No otter or water volu
01/07/2008	Dundeugh (a)	60636	87208	Water course has dried up at top end. Water course marshy and dominated by sedges and rushes. Course runs into marshy area near river. No otter or water vole sign found.
01/07/2008	Dundeugh (a)	61346	87763	Shallow, slow moving burn. Narrow 1/2m wide. Terminates in marshy area with dominated with large sedges and rushes. No otter or water vole sign found.
01/07/2008	Dundeugh (a)	60805	88206	Small river approx 1m deep and 2m wide. Rocky bed. In deep ravine. Vertical banks dominated by mature broadleaved woodland. No otter or water vole sign found.
01/07/2008	Dundeugh (a)	60925	87633	Very shallow, slow moving water. Occasionally becoming marshy area. In field of semi-improved grassland. Dominated by sedges and rushes along edges. Some very small sandy terminates in private garden. Surrounded by mature broad leaved trees on both banks. No otter or water vole sign found.
01/07/2008	Dundeugh (a)	60648	87453	Faster flowing water. Course has been channelled by farmer. Banks and channel dominated by sedges and rushes. No otter or water vole sign found.
26/06/2008	Mackilston	63473	88272	Very small old remnant spraint (bones) on right bank of tributary near confluence.
26/06/2008	Mackilston	63467	88269	Very fresh spraint on large boulder on right bank of main river. Still slimy.
26/06/2008	Mackilston	63446	88271	Another very fresh spraint on small boulder on right bank of main stream.
26/06/2008	Mackilston	63380	88325	Recent spraint on right bank - not as fresh as above but no older than a few days. Boulder in not directly on channel but 0.5m off.
27/06/2008	Mackilston	63303	8353	Very small, very old spraint on boulder in stream.
27/06/2008	Mackilston	63274	88345	Old spraint on very large boulder near left bank (in stream)
27/06/2008	Mackilston	63194	88472	Frog remains on top of very large boulder on slope above river near drainage ditch. Very prominent position. Could be heron feeding remains.
27/06/2008	Mackilston	63194	88480	Very old spraint on low boulder.
27/06/2008	Mackilston	63180	88453	Old spraint on low boulder at confluence of above ditch up river 1st large boulder up the ditch.
27/06/2008	Mackilston	63170	88459	Old spraint on boulder on right bank of river.
27/06/2008	Mackilston	63106	88504	Old spraints remains on large boulder in stream.
27/06/2008	Mackilston	62704	88611	Spraint on boulder on right bank near field boundary wall.
27/06/2008	Mackilston	62638	88635	Remains of several old spirants on very large boulder of bedrock on left bank.
27/06/2008	Mackilston	63211	88356	Very fresh solid spraint - maybe last night on a small boulder nestled into left bank behind tufts of saw grass.
27/06/2008	Mackilston	63276	88338	Spraint on large boulder along left bank in-stream.
02/07/2008	Kendoon	60426	87514	Holes in bank slip, but no obvious tracks. Approx 25-30m from confluence. Line of alder and birch. Both quite old. Bracken, grasses, bedstraw, buttercup, and hawthorn.
02/07/2008	Kendoon	60451	87389	Marshy ill-defined channel. Sheep poached edge. Bed straw, forget-me-not, bracken, to far side, rush and grasses. Channel more defined near confluence. With river (20-30m).
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Date	Location	Easting	Northing	Target Note
02/07/2008	Kendoon	60462	87190	Fast flowing feeder stream. Well defined channel. Under cut banks. Very narrow channel. No water vole or otter signs found.
02/07/2008	Kendoon	60376	87222	Wide marshy area. No channel definition. Up to road culvert. No water vole or otter signs found.
02/07/2008	Kendoon	60246	87242	Marshy area above road. Large willow. Watercourse vanishes above willow tree. No water vole or otter signs found.
02/07/2008	Kendoon	60221	87106	Barely defined channel above the road. No water vole or otter signs found.
02/07/2008	Kendoon	60281	87118	Very large willow in marshy area just below road. No channel. Some old birch and alder. No water vole or otter signs found.
02/07/2008	Kendoon	60339	87110	Hollow dead birch. 3.5m tall. No water vole or otter signs found.
02/07/2008	Kendoon	60336	87069	Barely defined channel. No water vole or otter signs found.
02/07/2008	Kendoon	60491	87147	Jointed rush, marshy, undercut bank. Ragged robin, bedstraw, common cotton grass, bog myrtle, marsh thistle, pignut, soft rush, Yorkshire fog, hawkbit, bracken, white clover, forget-
03/07/2008	Kendoon	60585	86978	Sparse old birch woodland plus an oak (60543 86958). Alder at waterline (60539 87061 and 60471 87088). No water vole or otter signs found.
26/06/2008	Makliston	63828	87717	Old bones on large boulder on left bank (spraint).
26/06/2008	Makliston	63803	87746	Possible couch w/in very large J. effusus tussock.
17/06/2008	Glenshimmeroch	66313	86448	Two otter spraints found on small boulder. Very fresh.
17/06/2008	Glenshimmeroch	66316	86439	Otter spraints on boulder.
17/06/2008	Glenshimmeroch	66315	86389	Three otter spraints on boulder near stream. Stream becomes wider. More small boulders. Still very shallow. Approx 0.5m deep. Less in places. 1m wide.
17/06/2008	Glenshimmeroch	66241	86237	This section suitable for water vole however no signs. Slow moving. Muddy banks. Marshy grassland. No otter signs found.
17/06/2008	Glenshimmeroch	66118	86002	Two otter spraints on boulder at tributary into loch. Tributary is full of boulders. Shallow, through area of forestry. Surrounding vegetation incised by loch is marshy grassland. No water
17/06/2008	Glenshimmeroch	66110	86003	One fresh otter spraint in similar area and habitat as above.
17/06/2008	Glenshimmeroch	66104	86005	Otter sprint on boulder close to loch at tributary confluence.
17/06/2008	Glenshimmeroch	66107	85986	Otter sprint on boulder close to loch at tributary draining into loch. Quite fresh.
17/06/2008	Glenshimmeroch	66091	85981	Otter spraint on boulder by loch. Quite fresh.
17/06/2008	Glenshimmeroch	66081	86014	Otter spraint on boulder at tributary into loch.
17/06/2008	Glenshimmeroch	64284	87783	One otter spraints (old) in stream channel.
17/06/2008	Glenshimmeroch	64240	87690	Two old otter spraints on rock in channel.
17/06/2008	Glenshimmeroch	64358	87928	One otter spraints (old) in stream channel.
18/06/2008	Craigencorr Hill	65344	86786	Possible otter runs into water/stream by stone. Also animal (sheep) poaching near stream on other side of wall/fence.
19/06/2008	Craigencorr Hill	65257	86684	Stream with tall (up to 5m high) banks. Surrounded by acid grassland. Sheep grassing, heavily poached in areas. 1m wide, gently flowing stream. Assorted sized rocks/boulders. No wa
20/06/2008	Craigencorr Hill	64991	87057	Otter spraint fresh on mossy wooden bridge over stream. Banks densely vegetated. Juncus .sp, bog myrtle, Yorkshire-fog, sorrel, tormentil, wavy hair grass, creeping buttercup. Very re
21/06/2008	Craigencorr Hill	64962	87182	Possible otter couch by pond.
23/06/2008	Craigencorr Hill	64923	87157	Tree stump next to water lots of frog remains on top. Next to stump frog remain. Otter spraint and lots of old bones on rock in water. Potential runs.
24/06/2008	Craigencorr Hill	64899	87224	Pellets and frog remains on top of mossy clump in ride next to watercourse.
17/06/2008	Glenshimmeroch	65126	86950	Three old spraints on culvert pipes by track. Very small stream.
17/06/2008	Glenshimmeroch	65381	87060	At small culvert under track. Otter spraints. Very small burn. Disappears into dense plantation forest.
17/06/2008	Glenshimmeroch	65553	87225	At small culvert. No otter sign here. Very small burn. Vegetation encroaching. Burn only 10m wide. Very shallow.
16/06/2008	Corriedoo C	67298	85924	Large rocks approx 2m. Deep banks. Slow moving. Lots of associated rock sizes. Dominated by horsetail, heath bedstraw, bracken, marsh thistle, purple moorgrass.
16/06/2008	Corriedoo C	67315	85669	Watercourse entering wood. Slow moving. 1m banks. Soil banks. 1 wide. Water 10cm deep. Water vole and otter potential. Banks dominated by horsetail.
16/06/2008	Corriedoo C	67329	85605	Watercourse entering clear fell area. Next to pond. 20mx40m long. Corner of clear fell area 67367 85628. No otter or water vole sign found.
16/06/2008	Corriedoo C	67314	85505	Very rocky stream. Fast flowing, Water vole and otter potential. Silty. Vegetation dominated by alder, willow, sedge sp. Water mint, wavy hair grass. Bugle, tormentil, blaeberry, yarrow
16/06/2008	Corriedoo c	57311	85466	Otter spraint on rock. Fresh.
16/06/2008	Corriedoo C	66932	85329	Watercourse not moving. 60cm deep. 05m wide. Peaty no rocks. Otter potential. No otter or water vole sign found.
16/06/2008	Corriedoo C	67425	85629	Near ruin. Watercourse along edge of CF and plantation. Slow moving. Small rocks. Almost no Vegetation. Little otter and water vole potential. Edge of clear fell at 67722 85775 and the track and at 67686 86159.
16/06/2008	Corriedoo (a)	68669	84193	Forest. Two otter spraints (old) found on bedrock outcrop at burn.
16/06/2008	Corriedoo (a)	68688	84167	Otter run into water also used by roe deer. In plantation forest.
16/06/2008	Corriedoo (a)	68716	84137	Old otter spraint on rock in burn. Also section here is very still flowing. Surrounded by acid grassland. Small fish in deep pools. No otter or water vole sign found.
16/06/2008	Corriedoo (a)	68777	84085	Otter spraint (old) on rocky side bar of stream. Plenty of small fish in burn.
16/06/2008	Corriedoo (a)	68809	84044	Three old otter spraints on ride in stream.
16/06/2008	Corriedoo (a)	68800	83974	Otter spraint (old) on rocky side bar.
16/06/2008	Corriedoo (a)	68800	83848	Otter spraint (old) at side channel (pebbles).
16/06/2008	Corriedoo (a)	68671	83741	Two old otter spraints on rock in stream.

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v, heath bedstraw. No otter or water vole sign found.	
v, heath bedstraw. No otter or water vole sign found.	
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No otter or water vole sign found.	
v, heath bedstraw. No otter or water vole sign found. hen at 67681 85843. Edge with track 67848 85939 and 67775 85984 by	
w, heath bedstraw. No otter or water vole sign found. hen at 67681 85843. Edge with track 67848 85939 and 67775 85984 by	
w, heath bedstraw. No otter or water vole sign found.	
v, heath bedstraw. No otter or water vole sign found. hen at 67681 85843. Edge with track 67848 85939 and 67775 85984 by	
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nocky bed in common with area further up stream.	
v, heath bedstraw. No otter or water vole sign found. hen at 67681 85843. Edge with track 67848 85939 and 67775 85984 by	
v, heath bedstraw. No otter or water vole sign found. hen at 67681 85843. Edge with track 67848 85939 and 67775 85984 by	

Date	Location	Easting	Northing	Target Note
16/06/2008	Corriedoo (a)	67807	84647	No signs of water vole or otter. Habitat not suitable for water vole. No suitable banks for burrowing. Very little water. Otter may use watercourse for commuting.
16/06/2008	Corriedoo (a)	67668	84611	Three otter spraints on rocky side basin in stream. One recent. Two old
16/06/2008	Corriedoo (b)	84367	68622	Spraints on rock. New and old. Water slow flowing. 1m deep. 1m wide. Rocky. 2cm deep water. Possible run into stream through J. effusus. No water vole sign found.
16/06/2008	Corriedoo (b)	84420	68581	More spraints on rock. Recent. Same stream habitat as above. No water vole sign found.
16/06/2008	Corriedoo (b)	84992	68581	One meter deep banks dominated by Molinia caerulea, creeping buttercup, common sorrel, J. effusus, marsh thistle. Limited water vole potential. No otter or water vole sign found
01/07/2008	Polmaddy	5945	8798	Wide fast moving water with many rapids. Deep rocky ravine (approx 10m) fringed with mature broadleaved trees and large patches of bracken. No otter or water vole sign found.
01/07/2008	Polmaddy	5925	8798	Wide fast moving water with many rapids. Deep rocky ravine (approx 10m) fringed with mature broadleaved trees and large patches of bracken. No otter or water vole sign found.
01/07/2008	Polmaddy	5900	8977	River enters water meadow area. Water broad and shallow (approx 6m wide and 30cm deep). River bed made up of boulder with area of riffles. Top stretch of river passes through
01/07/2008	Polmaddy	5888	8777	River broad and shallow (approx 6m wide and 30cm deep). River bed comprised of boulder with riffle areas. Top stretch of river passes through Sitka plantation. No otter or water wa
01/07/2008	Polmaddy	5945	8798	Wide fast moving water with many rapids. Deep rocky ravine (approx 10m) fringed with mature broadleaved trees and large patches of bracken. No otter or water vole sign found.
01/07/2008	Polmaddy	5900	8977	River enters water meadow area. Water broad and shallow (approx 6m wide and 30cm deep). River bed made up of boulder with area of riffles. Top stretch of river passes through found.
17/06/2008	Glenshimmeroch	66241	86237	This section suitable for water vole however no signs. Slow moving. Muddy banks. Marshy grassland.
16/06/2008	Corriedoo C	67315	85669	Watercourse entering wood. Slow moving. 1m deep earth banks and well vegetated bank tops. Water 10cm deep. Water vole and otter potential. No otter or water vole sign found
16/06/2008	Corriedoo C	67314	85505	Very rocky stream. Fast flowing, but silty. Vegetation dominated by alder, willow, sedge sp. water mint, wavy hair grass. Bugle, tormentil, blaeberry, yarrow, heath bedstraw. No otte
16/06/2008	Corriedoo (a)	68716	84137	Old otter spraint on rock in burn. Also section here is very slow flowing. Surrounded by acid grassland. Small fish in deep pools. No water vole sign found.
16/06/2008	Corriedoo (a)	67807	84647	No signs of water vole or otter. Habitat not suitable for water vole. Very little water. Otter may use watercourse for commuting.

Table C7.2 - Red Squirrel Survey Transect Summary Results

Date	Site Name	Map No	Tran No	Start Easting	Start Northing	End Easting	End Northing	Total Cone Tally	'Squirreled' Cones	Grid Ref for 'Squirreled' cones
29/07/2008	Carminnows	1	1	257610	592480	257870	591910	150	None	None
29/07/2008	Carminnows	2	2	257870	591910	258380	591900	95	5	58090 51940
29/07/2008	Carminnows	2	3	258380	591900	258572	591230	425	3	580870 91890
29/07/2008	Carminnows	2	4	258572	591230	25800	592500	250	1	58671 90815
29/07/2008	Carminnows	2	5	258500	592500	258730	593200	0	None	None
29/07/2008	Carminnows	2	6	259240	589700	259370	589235	11	None	None
31/07/2008	Glenmuck Craig/Kyle Forest	2	5	52316	08162	52448	08334	357	None	N/A
31/07/2008	Glenmuck Craig/Kyle Forest	2	6	52448	08334	52379	08425	93	None	N/A
31/07/2008	Glenmuck Craig/Kyle Forest	2	7	52377	08420	52233	08503	5	None	N/A
31/07/2008	Glenmuck Craig/Kyle Forest	2	8	52158	08519	51979	08398	405	None	N/A
30/07/2008	Kyle Forest	4	1(a)	51779	07440	51582	07286	90	None	N/A
31/07/2008	Brownhills Forest	4	1(b)	51193	06889	51041	06830	400	7	51174 06894, 51167 06894
30/07/2008	Kyle Forest	4	2(a)	51369	07334	51340	07495	>100	None	N/A
307/07/2008	Brownhills Forest	4	2(b)	50905	06759	51115	06308	10	None	N/A
30/07/2008	Kyle Forest	4	3(a)	51384	07397	51184	07411	>100	None	N/A
30/07/2008	Brownhills Forest	4	3(b)	51122	06287	51192	05909	>100	None	N/A
30/07/2008	Kyle Forest	4	4(a)	51178	07412	51310	07192	43	None	N/A
30/07/2008	Brownhills Forest	4	4(b)	51193	05911	50742	05891	>300	None	N/A
30/07/2008	Kyle Forest	4	5(a)	51429	07063	51400	07011	55	None	N/A
30/07/2008	Brownhills Forest	4	5(b)	51210	05943	51814	06405	>500	None	N/A
30/07/2008	Brownhills Forest	4	6	52480	06919	51952	07669	None	None	N/A
31/07/2008	Glenmuck Craig/Kyle Forest	5	3(a)	52565	07601	52481	07554	72	None	N/A
31/07/208	Glenmuck Craig/Kyle Forest	5	3(b)	52481	07554	52557	07618	55	None	N/A
31/07/2008	Glenmuck Craig/Kyle Forest	5/2	4	52126	07883	52300	08166	103	None	N/A
31/07/2008	Kyle Forest	5	19	52183	0795	52443	07509	2590	None	N/A
31/07/2008	Kyle Forest	5	20	52443	07509	52099	07048	1100	None	N/A
31/07/2008	Kyle Forest	5	21	52099	07048	52098	07064	158	None	N/A
31/07/2008	Kyle Forest	5	22	52098	07064	51964	07262	471	None	N/A
31/07/2008	Kyle Forest	5	23	52062	07882	51554	07902	550	None	N/A
31/07/2008	Glenmuck Craig/Kyle Forest	9	1	50425	03080	50690	03024	169	None	N/A



und.

ough Sitka plantation. No otter or water vole sign found.

ater vole sign found.

ough Sitka plantation. Excellent habitat for otter. No otter or water vole sign

ound.

o otter or water vole sign found.

Notes
Many 'moused' cones
Younger trees at start of transect
Larch plantation Larch/Sitka interface at end of transect
Some 'moused' cones
Many 'moused' cones



25
y 'moused' cones
y 'moused' cones
single group of 100 cones.
w 'moused' cones
y 'moused' cones
cones at start of transect. Stoat in burrow at 58999 88000.
s Pine at start of transect. Transect ending in Larch
stage Sitka. Many 'moused' cones
w 'mourod' cones
y moused cones
stage sitka and some broad leaved trees
of Costs Dino and Sitka, Dolo stago
or scots Pine and Sitka. Pole stage.

Date	Site Name	Map No	Tran No	Start Easting	Start Northing	End Easting	End Northing	Total Cone Tally	'Squirreled' Cones	Grid Ref for 'Squirreled' cones	Notes
29/07/2008	Polmaddie/Kendoon	31	6	59721	87696	59670	87878	231	89	59720 87700, 59705 87706, 59698 87809, 59696 87830, 59670 87878	
29/07/2008	Polmaddie/Kendoon	31	7	59656	87908	59217	87582	110	55	59496 87849, 59414 87826, 59313 87776, 59296 87759	
30/07/2008	Corriedoo / Glenshimmeroch	33	2	64514	87427	64672	87362	61	None	N/A	Three 'moused' cones
30/07/2008	Corriedoo / Glenshimmeroch	33	3	64687	87388	64939	87429	83	None	N/A	Many 'moused' cones
30/07/2008	Corriedoo / Glenshimmeroch	33	4	64674	87369	64727	87279	178	None	N/A	Many 'moused' cones
30/07/2008	Corriedoo / Glenshimmeroch	33	5	64727	87279	64503	87138	81	None	N/A	Many 'moused' cones
30/07/2008	Corriedoo / Glenshimmeroch	33	6	64465	86832	64844	86963	80	None	N/A	Many 'moused' cones
30/07/2008	Corriedoo / Glenshimmeroch	33	7	65014	86914	65062	86927	78	None	N/A	Many 'moused' cones
30/07/2008	Glenshimmeroch	33	1	60797	88074	65607	87108	20	None	N/A	Many 'moused' cones. Young conifers
30/07/2008	Glenshimmeroch	33	2	65595	87076	65400	86698	50	None	N/A	Many 'moused' cones
30/07/2008	Glenshimmeroch	33	3	65401	86698	65506	87657	30	None	N/A	
30/07/2008	Glenshimmeroch	33	4	65548	87219	65580	87381	3	None	N/A	
30/07/2008	Glenshimmeroch	33	5	65388	87095	65375	87174	45	None	N/A	All 'moused' cones
31/07/2008	Corriedoo	36	2	68107	85311	67854	85599	>100	2	67950 85229 & 67937 85222	Area of larch
31/07/2008	Corriedoo	36	3	67852	85944	67759	85750	>100	None	N/A	Long strip of larch beside are of clear fe
30/07/2008	Corriedoo	36	14	67715	84654	67485	85071	1	None	N/A	
30/07/2008	Corriedoo	36/37	15	67729	84612	67918	84456	413	None	N/A	
30/07/2008	Corriedoo	36/37	16	68008	84535	68581	84549	24	None	N/A	
31/07/2008	Corriedoo	37	1	59286	89286	69152	84311	45	None	N/A	Transect along forest ride
31/07/2008	Corriedoo	37	2	68726	84432	68545	84769	37	None	N/A	Transect along edge of road
31/07/2008	Corriedoo	37	3	68613	84652	Lost Signal	Lost Signal	300	30	N/A	
31/07/2008	Corriedoo	37	4	68202	85543	688362	86053	4	4	68433 85797, 68424 8587, 68459 85881, 68459 85881	Sighting of red squirrel at 68248 85656. Disappeared up tree. Large are has been in blocks
30/07/2008	Corriedoo	37	7	68848	84329	68682	84252	16	None	N/A	
30/07/2008	Corriedoo	37	8	68685	84276	84386	68742	123	None	N/A	
30/07/2008	Corriedoo	37	9	68581	84549	68640	84323	0	None	N/A	
30/07/2008	Corriedoo	37	10	68640	84323	68275	84123	365	None	N/A	
30/07/2008	Corriedoo	37	11	38275	84123	68014	84521	105	None	N/A	
30/07/2008	Corriedoo	37	12	68013	84521	68514	84770	214	None	N/A	
30/07/2008	Corriedoo	37	13	68467	84822	67744	84626	90	None	N/A	
30/07/2008	Corriedoo / Glenshimmeroch	38	1	N/A	N/A	N/A	N/A	None	None	N/A	One red squirrel observed in area of ma survey area. Site at access via Corriedoo

Table C7.3 - Bat Activity Transect Survey Results

Survey Date	Site Name	Feature at Start Point	Start Time	End Time	Easting	Northing	Species ⁱ	Commuting Pass	Feeding Pass	Social Calls	Notes
23/07/2008	Pennyvennie	Pennyvennie Bridge	21:50	23:30	249916	606832	None	1	0	0	
23/07/2008	Pennyvennie	South of Bing	21:50	23:30	250051	606852	MB	1	0	0	
23/07/2008	Pennyvennie	North of Bing	21:50	23:30	250203	606924	PP	5	0	0	
23/07/2008	Pennyvennie	Open field	21:50	23:30	250321	606945	None	0	0	0	
23/07/2008	Pennyvennie	Group of trees	21:50	23:30	250398	606979	None	0	0	0	
23/07/2008	Pennyvennie	No feature	21:50	23:30	250468	607030	None	0	0	0	
23/07/2008	Pennyvennie	No feature	21:50	23:30	250536	607058	None	0	0	0	
23/07/2008	Pennyvennie	No feature	21:50	23:30	250621	607059	None	0	0	0	
23/07/2008	Pennyvennie	Group of trees	21:50	23:30	250700	607128	PP	5	0	0	
23/07/2008	Pennyvennie	Sheep crossing	21:50	23:30	250827	607192	PP	1	0	0	
23/07/2008	Pennyvennie	Waterfall	21:50	23:30	250935	607255	PP	2	0	0	
23/07/2008	Pennyvennie	Exposed rock	21:50	23:30	251000	607349	None	0	0	0	
23/07/2008	Pennyvennie	Field fence	21:50	23:30	251089	607442	None	0	0	0	



8 85656. On ground crossing track. has been clear felled recently. Some trees left

ea of mature poles stage plantation outside the orriedoo (Lochinvar Burn) road/Quarry Road

Survey Date	Site Name	Feature at Start Point	Start Time	End Time	Easting	Northing	Species ⁱ	Commuting Pass	Feeding Pass	Social Calls	Notes
22/07/2008	Kyle Forest track	Forest Road Gate	21:50	22:35	251750	608044	None	0	0	0	
22/07/2008	Kyle Forest track	Top of rise - Passing place	21:50	22:35	251927	607917	None	0	0	0	
22/07/2008	Kyle Forest track	Junction of access road	21:50	22:35	252188	607844	None	0	0	0	
22/07/2008	Kyle Forest track	Corner of tree block	21:50	22:35	251963	607680	None	0	0	0	
22/07/2008	Kyle Forest track	Bubbly Burn	21:50	22:35	251746	607503	None	0	0	0	
22/07/2008	Kyle Forest track	Next tree block on west side	21:50	22:35	251605	607318	None	0	0	0	
22/07/2008	Kyle Forest track	Stoney Burn	21:50	22:35	251388	607017	None	0	0	0	
22/07/2008	Kyle Forest track	End of road	21:50	22:35	251214	606901	None	0	0	0	
21/07/2008	Mossdale	Loch Doon bridge	21:45	23:45	249367	604052	None	0	0	0	
21/07/2008	Mossdale	Pole 33	21:45	23:45	249167	604353	None	0	0	0	
21/07/2008	Mossdale	At Kyle Forest Sign	21:45	23:45	248985	604600	None	0	0	0	
21/07/2008	Mossdale	Field	21:45	23:45	248983	604522	PP	1	0	0	
21/07/2008	Mossdale	Field	21:45	23:45	249105	604365	None	0	0	0	
21/07/2008	Mossdale	Field	21:45	23:45	249105	604257	Unk.	1	0	0	
21/07/2008	Mossdale	End of Field	21:45	23:45	249266	604084	PP	3	1	0	
21/07/2008	Mossdale	Mossdale Farm House	21:45	23:45	249341	604151	РР	7	0	0	
17/07/2008	Brownhills Forest	Start of track	21:50	23:20	251484	601144	None	0	0	0	
17/07/2008	Brownhills Forest	First post in field	21:50	23:20	251581	601163	None	0	0	0	
17/07/2008	Brownhills Forest	Post 62	21:50	23:20	251596	601077	None	0	0	0	
17/07/2008	Brownhills Forest	At height gates	21:50	23:20	251599	601292	None	0	0	0	
17/07/2008	Brownhills Forest	Bend in track	21:50	23:20	251839	601203	None	0	0	0	
17/07/2008	Brownhills Forest	By group of willows	21:50	23:20	251999	601346	None	0	0	0	
17/07/2008	Brownhills Forest	At burn	21:50	23:20	251977	601622	PP	22	0	0	
17/07/2008	Brownhills Forest	Willows at side of track	21:50	23:20	251963	601919	PP	2	0	0	
17/07/2008	Polnaskie Bridge	Corner of barbed & non-barbed fence	21:48	23:11	251299	601932	None	0	0	0	
17/07/2008	Polnaskie Bridge	Small young plantation	21:48	23:11	251321	601800	None	0	0	0	
17/07/2008	Polnaskie Bridge	Next to telegraph pole No 9	21:48	23:11	251372	601584	None	0	0	0	
17/07/2008	Polnaskie Bridge	Corner of plantation	21:48	23:11	251421	601335	None	0	0	0	
17/07/2008	Polnaskie Bridge	Corner of loch by plantation	21:48	23:11	251322	601189	None	0	0	0	
17/07/2008	Polnaskie Bridge	Lochside 40m from big bend	21:48	23:11	251340	601009	None	0	0	0	
17/07/2008	Polnaskie Bridge	Next to caravan in group of willows	21:48	23:11	251338	600897	None	0	0	0	
17/07/2008	Polnaskie Bridge	In big bend next to end of loch	21:48	23:11	251434	600705	None	0	0	0	
17/07/2008	Polnaskie Bridge	Single willow west of track	21:48	23:11	251459	600941	None	0	0	0	
17/07/2008	Polnaskie Bridge	Where track meets road	21:48	23:11	251488	601034	None	0	0	0	
17/07/2008	Polnaskie Bridge	Layby East of road	21:48	23:11	251449	601227	PP	1	0	0	
17/07/2008	Polnaskie Bridge	on road opposite pylon	21:48	23:11	251441	601602	None	0	0	0	
17/07/2008	Polnaskie Bridge	End of trees by bollard near stream	21:48	23:11	251438	601731	None	0	0	0	
17/07/2008	Polnaskie Bridge	South of entrance to layby	21:48	23:11	251386	601937	Pip. Sp.	1	0	0	
16/07/2008	Drumiohn	Drumiohn	21:45	23:45	252478	597735	None	0	0	0	
16/07/2008	Drumjohn	Rock	21:45	23:45	252312	597926	None	0	0	0	
16/07/2008	Drumjohn	Patches of small rocks	21:45	23:45	252183	598111	None	0	0	0	
16/07/2008	Drumjohn	Telegraph pole 27	21:45	23:45	252075	598313	None	0	0	0	
16/07/2008	Drumiohn	No feature	21:45	23:45	251922	598482	None	0	0	0	
16/07/2008	Drumiohn	Watercourse	21:45	23:45	251829	598669	None	0	0	0	
16/07/2008	Drumiohn	Gate at road	21:45	23:45	251993	598691	None	0	0	0	
16/07/2008	Drumiohn	By post	21:45	23:45	252100	598540	None	0	0	0	
16/07/2008	Drumjohn	When track meets road	21:45	23:45	252184	598278	None	0	0	0	
16/07/2008	Drumjohn	Willow to west	21:45	23:45	252270	598069	None	0	0	0	
16/07/2008	Drumjohn	Edge of woodland	21:45	23:45	252403	597847	PP	4	1	0	
16/07/2008	Drumjohn	At house gate	21:45	23:45	252503	597693	None	0	0	0	
16/07/2008	Drumjohn	Crossroads	21:45	23:45	252536	597563	None	0	0	0	
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Survey Date	Site Name	Feature at Start Point	Start Time	End Time	Easting	Northing	Species ⁱ	Commuting Pass	Feeding Pass	Social Calls	Notes
16/07/2008	Drumjohn	Edge of plantation	21:45	23:45	252306	597505	None	0	0	0	
15/07/2008	Willies cave	By bridge at road turning	21:51	23:00	255736	594426	PP	1	0	0	
15/07/2008	Willies cave	Open area between trees	21:51	23:00	255834	594490	PP	5	0	0	
15/07/2008	Willies cave	By large old oak opposite barn	21:51	23:00	255963	594603	PP	24	2	0	Mostly from S
15/07/2008	Willies cave	Field boundary corner	21:51	23:00	256017	594709	PP	8	3	0	
15/07/2008	Willies cave	By corner of small rectangular pen	21:51	23:00	256117	594963	PP	30	3	0	Commuting S
15/07/2008	Willies cave	By river opposite fence line	21:51	23:00	256132	595124	PP	2	0	0	
15/07/2008	Willies cave	Just south of sycamores by river	21:51	23:00	255971	594982	PP & MB	9	9	0	
15/07/2008	Willies cave	By river opposite barn	21:51	23:00	255907	594681	PP	12	4	0	
15/07/2008	Willies cave	Gate leading to old bridge	21:51	23:00	255710	594507	PP & MB	2	0	0	1 (PP) 1 (MB
15/07/2008	Willies cave	On road at bridge. East side	21:51	23:00	255710	594450	PP & MB	32	0	0	5 (PP) 27 (MB
15/07/2008	South of Carsphairn	Bridge at Carsphairn	21:45	23:30	256880	592973	PP	20	5	0	First noted 22
15/07/2008	South of Carsphairn	Field gate	21:45	23:30	256959	592780	PP	5	0	0	
15/07/2008	South of Carsphairn	Traffic sign	21:45	23:30	257105	592646	None	0	0	0	
17/07/2008	South of Carsphairn	Lee of hill	21:45	23:30	257344	592540	PP	20	1	0	One individua
17/07/2008	South of Carsphairn	Corner of field	21:45	23:30	257529	592484	None	0	0	0	
15/07/2008	South of Carsphairn	Riverisde	21:45	23:30	257547	592689	None	0	0	0	
19/07/2008	South of Carsphairn	Field	21:45	23:30	257302	592936	РР	10	1	0	
19/07/2008	South of Carsphairn	Gate	21:45	23:30	257236	592794	PP	15	1	0	
15/07/2008	South of Carsphairn	Riverside	21:45	23:30	257092	592760	РР	15	2	0	
21/07/2008	South of Carsphairn	Carnaval Drive	21:45	23:30	256823	592964	PP	1	0	0	
09/07/2008	Cummnock Knowes (a)	Lavby	21:30	23:30	257587	592448	None	0	0	0	Heavy Rain
09/07/2008	Cummnock Knowes (a)	Cummnock Knowes house	21:30	23:30	257788	592538	None	0	0	0	, Heavy Rain
09/07/2008	Cummnock Knowes (a)	Large patch of bracken	21:30	23:30	257666	592765	PP	1	0	0	Heavy Rain
09/07/2008	Cummnock Knowes (a)	River	21:30	23:30	257485	592775	None	0	0	0	Heavy Rain
09/07/2008	Cummnock Knowes (a)	Shingle bank	21:30	23:30	257337	592597	None	0	0	0	Heavy Rain
09/07/2008	Cummnock Knowes (a)	River	21:30	23:30	257132	592755	None	0	0	0	Heavy Rain
09/07/2008	Cummnock Knowes (a)	Road	21:30	23:30	257017	592715	None	0	0	0	Heavy Rain
09/07/2008	Cummnock Knowes (a)	Road	21:30	23:30	257433	592512	None	0	0	0	Heavy Rain
09/07/2008	Carminnow Hill	Centre of way leave	21:15	11:00	258474	590694	None	0	0	0	
09/07/2008	Carminnow Hill	First large area of bracken	21:15	11:00	785995	590670	None	0	0	0	
09/07/2008	Carminnow Hill	Forest ride	21:15	11:00	258663	590784	None	0	0	0	
09/07/2008	Carminnow Hill	Watch Tower	21:15	11:00	250711	590946	None	0	0	0	
09/07/2008	Carminnow Hill	No feature	21:15	11:00	205867	591075	None	0	0	0	
09/07/2008	Carminnow Hill	No feature	21:15	11:00	228628	591160	None	0	0	0	
09/07/2008	Carminnow Hill	By forest ride	21:15	11:00	258572	591231	None	0	0	0	
09/07/2008	Carminnow Hill	Fallen tree	21:15	11:00	258456	591305	None	0	0	0	
09/07/2008	Carminnow Hill	Watch tower	21:15	11:00	258338	591393	None	0	0	0	
09/07/2008	Carminnow Hill	Wayleave	21:15	11:00	258145	591385	None	0	0	0	
09/07/2008	Carminnow Hill	At wooden nale nylon	21:15	11:00	251814	591264	None	0	0	0	
22/07/2008	Polmaddy	By driveways to houses	21:13	22.17	259739	587939	None	0	0	0	
22/07/2008	Polmaddy	Bend in track	21:41	22:17	259417	587863	рр	10	8	0	
22/07/2008	Polmaddy	Edge of forest by sign with Polmaddie man	21:41	22:17	250212	587831		0	0	0	
22/07/2008	Polmaddy	Start of bracken along wall	21:41	22:17	259212	587970	DD	2	0	0	
22/07/2008	Polmaddy	Whore wall ands	21.41	22:17	259240	587570	DD	2	0	0	
08/07/2008	Dalshangan	Socond Lay By	21.41	22.17	259199	580110	Nono	4	0	0	
08/07/2009	Dalchangan	Mound in field	21.4J	23.30	255500	500100	None		0	0	
08/07/2000	Dalchangan	Half way down trees	21.43 21· <i>A</i> E	23.30	255120	500027	None	0	0	0	
08/07/2008		Where hurn turns into troop	21.45	23:30	200148	500702	None	0	0	0	
08/07/2008	Dalshangan		21:45	23:30	259244	588/93	inone	0	0	0	
08/07/2008	Daisnangan		21:45	23:30	259436	588638	PP	1	0	0	
08/07/2008	Jaisnangan	Across from caravans	21:45	23:30	259595	588481	44	2	0	0	



SW to NE along tree lin	ne
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SW to NE along tree line.

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2:06 in trees at edge (west) of bridge flying up and down the farm access road

ual 35 passes

Survey Date	Site Name	Feature at Start Point	Start Time	End Time	Easting	Northing	Species ⁱ	Commuting Pass	Feeding Pass	Social Calls	Notes
08/07/2008	Dalshangan	End of forest ride	21:45	23:30	259751	588112	None	0	0	0	
08/07/2008	Dalshangan	Edge of small plantation	21:45	23:30	259792	588140	PP	2	0	0	
08/07/2008	Dalshangan	First lay by	21:45	23:30	259783	588479	None	0	0	0	
08/07/2008	Dalshangan	Second lay by	21:45	23:30	259636	588734	PP	5	0	0	
03/07/2008	Deugh Water	Euroforest Sign	21:30	22:55	259954	588969	None	0	0	0	
03/07/2008	Deugh Water	Next to Alders	21:30	22:55	259922	588786	PP	1	0	0	
03/07/2008	Deugh Water	No features	21:30	22:55	260019	588630	PP	8	0	0	
03/07/2008	Deugh Water	Near end of conifers	21:30	22:55	260155	588479	PP	7	0	0	
03/07/2008	Deugh Water	No features	21:30	22:55	260207	588268	PP	7	2	0	
03/07/2008	Deugh Water	Half way from junction	21:30	22:55	260212	588067	PP	2	0	0	
03/07/2008	Deugh Water	Woodland data	21:30	22:55	260385	587747	PP	1	0	0	
03/07/2008	Deugh Water	No features	21:30	22:55	260497	587968	PP	3	0	0	
01/07/2008	Butterhole Bridge	Southside of Bridge	22:50	23:15	264713	588014	None	0	0	0	
01/07/2008	Butterhole Bridge	End of wall	22:50	23:15	264301	588076	None	0	0	0	
01/07/2008	Butterhole Bridge	Middle of long bend in river	22:50	23:15	264372	588172	None	0	0	0	
01/07/2008	Butterhole Bridge	Site of second tributary	22:50	23:15	264441	588242	None	0	0	0	
02/07/2008	Glenhoul Lodge to Kendoon	No feature	21:28	23:28	261251	587360	None	0	0	0	
02/07/2008	Glenhoul Lodge to Kendoon	Gateway	21:28	23:28	261177	587487	None	0	0	0	
02/07/2008	Glenhoul Lodge to Kendoon	Field Boundary	21:28	23:28	261103	587699	None	0	0	0	
02/07/2008	Glenhoul Lodge to Kendoon	Farm Gateway	21:28	23:28	260978	587838	None	0	0	0	
02/07/2008	Glenhoul Lodge to Kendoon	No feature	21:28	23:28	260919	588035	None	0	0	0	
02/07/2008	Glenhoul Lodge to Kendoon	No feature	21:28	23:28	260740	588111	None	0	0	0	
02/07/2008	Glenhoul Lodge to Kendoon	No feature	21:28	23:28	260600	587888	РР	3	5	0	
02/07/2008	Kendoon	CRL site compound gate	21:28	23:10	260600	587884	None	0	0	0	
02/07/2008	Kendoon	Kendoon substation at top of footbridge	21:28	23:10	260492	587660	None	0	0	0	
02/07/2008	Kendoon	End of garden walls going into open field	21:28	23:10	260488	587510	None	0	0	0	
02/07/2008	Kendoon	End of trees into open ground	21:28	23:10	260578	587219	None	0	0	0	
02/07/2008	Kendoon	At field gate in boundary wall	21:28	23:10	260755	586969	None	0	0	0	
02/07/2008	Kendoon	Watercourse	21:28	23:10	260943	587091	None	0	0	0	
02/07/2008	Kendoon	Second gate in wall	21:28	23:10	261061	587231	None	0	0	0	
02/07/2008	Kendoon	Large oak	21:28	23:10	260910	587358	PP	23	0	0	
02/07/2008	Kendoon	fence corner	21:28	23:10	260910	587475	РР	4	0	0	
02/07/2008	Kendoon	Farm gate	21:28	23:10	261064	587297	PP	4	1	0	
02/07/2008	Kendoon	Glenhoul	21:28	23:10	261252	587354	None	0	0	0	
26/06/2008	Glenshimmeroch (a)	Forestry gate	21:30	23:50	264944	586724	PP	4	4	1	
26/06/2008	Glenshimmeroch (a)	Y in road	21:30	23:50	265015	586951	None	0	0	0	
26/06/2008	Glenshimmeroch (a)	Layby of left Tree line on right	21:30	23:50	265191	587015	PP	1	0	0	
26/06/2008	Glenshimmeroch (a)	Water course crossing	21:30	23:50	265377	587057	None	0	0	0	
26/06/2008	Glenshimmeroch (a)	Layby on right. Ride on right	21:30	23:50	265514	587092	None	0	0	0	
26/06/2008	Glenshimmeroch (a)	Open fields. Tree line on right	21:30	23:50	265697	587310	None	0	0	0	
26/06/2008	Glenshimmeroch (a)	Wood hide tower and junction	21:30	23:50	265814	587458	None	0	0	0	
26/06/2008	Glenshimmeroch (a)	Y in road	21:30	23:50	265105	586951	None	0	0	0	
26/06/2008	Glenshimmeroch (a)	Bend in road to right	21:30	23:50	264873	587013	None	0	0	0	
26/06/2008	Glenshimmeroch (a)	Narrow ride in both directions	21:30	23:50	264750	587184	РР	1	0	0	
26/06/2008	Glenshimmeroch (a)	Pond on left	21:30	23:50	264696	587276	РР	13	3	0	
26/06/2008	Glenshimmeroch (a)	Bend to right end of wood	21:30	23:50	254685	587386	РР	1	0	0	

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Survey Date	Site Name	Feature at Start Point	Start Time	End Time	Easting	Northing	Species ⁱ	Commuting Pass	Feeding Pass	Social Calls	Notes
26/06/2008	Glenshimmeroch (a)	Fire beater on left & lone willow on left	21:30	23:50	264673	587592	None	0	0	0	
26/06/2008	Glenshimmeroch (a)	No features. Tree on right close	21:30	23:50	264685	587808	PP	1	1	0	
26/06/2008	Glenshimmeroch (a)	Small drainage ditch	21:30	23:50	264728	587948	None	0	0	0	
26/06/2008	Glenshimmeroch (a)	Ride on right. Bracken on left	21:30	23:50	264794	588023	PP	2	0	0	
25/06/2008	Shield Hill	Clump of trees	11:25	11:50	266738	586497	None	0	0	0	
25/06/2008	Shield Hill	Corner of dry stone wall	11:25	11:50	266683	586346	None	0	0	0	
25/06/2008	Shield Hill	End of dry stone wall	11:25	11:50	266763	586209	None	0	0	0	
25/06/2008	Shield Hill	No feature	11:25	11:50	266876	585999	PP	6	4	0	
23/07/2008	Corriedoo	By forest gate	21:40	21:55	268836	583710	None	0	0	0	
23/07/2008	Corriedoo	By alder tree stump on east of track	21:40	21:55	268867	583572	None	0	0	0	
23/07/2008	Corriedoo	Ride on edge of road & on bend	21:40	21:55	269046	583450	PP	5	2	0	
23/07/2008	Corriedoo	Close to bend	21:40	21:55	269091	583297	None	0	0	0	
23/07/2008	Corriedoo	On side of loch just before tree enclosure on both sides	21:40	21:55	269246	583222	РР	2	2	0	
23/07/2008	Corriedoo	End of track	21:40	21:55	269309	583310	PP	3	3	0	
23/07/2008	Corriedoo	Open section of loch	21:40	21:55	269303	583036	None	0	0	0	
23/07/2008	Corriedoo	End of walkable track	21:40	21:55	269512	583233	None	0	0	0	
16/07/2008	Brockloch	End of road to south of track	21:50	22:50	254599	596564	None	0	0	0	
16/07/2008	Brockloch	Next to small quarry to north of track	21:50	22:50	254402	596457	None	0	0	0	
16/07/2008	Brockloch	Corner wall of stone enclosure	21:50	22:50	254268	596465	None	0	0	0	
16/07/2008	Brockloch	Scattered trees meets other hide	21:50	22:50	254196	596615	None	0	0	0	
16/07/2008	Brockloch	Ride meets main track	21:50	22:50	254117	596537	None	0	0	0	
16/07/2008	Brockloch	Small wide track meets main track	21:50	22:50	253920	596665	None	0	0	0	
16/07/2008	Brockloch	Track crosses burn	21:50	22:50	253898	596754	None	0	0	0	Started raini
16/07/2008	Brockloch	Quarry next to main track	21:50	22:50	253614	596920	None	0	0	0	
16/07/2008	Brockloch	Main track meets main road	21:50	22:50	253310	597006	None	0	0	0	
21/07/2008	Glenshimmeroch (b)	Layby on s side of track	21:42	22:42	251668	602810	None	0	0	0	
21/07/2008	Glenshimmeroch (b)	Small passing place	21:42	22:42	251469	602807	None	0	0	0	
21/07/2008	Glenshimmeroch (b)	Pile of earth by side of road	21:42	22:42	251239	602755	None	0	0	0	
21/07/2008	Glenshimmeroch (b)	Borrow pit	21:42	22:42	251067	602873	None	0	0	0	
21/07/2008	Glenshimmeroch (b)	Watercourse	21:42	22:42	250910	602964	None	0	0	0	
21/07/2008	Glenshimmeroch (b)	Edge of plantation eastern edge before clearfell	21:42	22:42	250685	603017	None	0	0	0	
21/07/2008	Glenshimmeroch (b)	Edge of track by layby	21:42	22:42	250441	603075	None	0	0	0	Tawny owl h
09/07/2008	Carminnowhill	Parked in layby. Walked up to wayleave. Stand directly in centre	21:45	22:45	258474	590694	None	0	0	0	
09/07/2008	Carminnowhill	First/last clump of bracken in wayleave before main wayleave	21:51	22:51	258595	590670	None	0	0	0	
09/07/2008	Carminnowhill	Small forest ride off to right	21:57	22:57	258663	590784	None	0	0	0	
09/07/2008	Carminnowhill	At watch tower	22:03	23:03	258711	590946	None	0	0	0	
09/07/2008	Carminnowhill		22:09	23:09	258677	591075	None	0	0	0	
09/07/2008	Carminnowhill	2 tussocks of junc eff.	22:15	23:15	258628	591160	None	0	0	0	
09/07/2008	Carminnowhill	By forest ride	22:21	23:21	258872	591231	None	0	0	0	
09/07/2008	Carminnowhill	By fallen down tree	22:27	23:27	258745	591305	None	0	0	0	
09/07/2008	Carminnowhill	At watchtower	22:33	23:33	258338	591393	None	0	0	0	
09/07/2008	Carminnowhill	At ioin in wavleave forest ride	22:39	23:39	258145	591385	None	0	0	0	
09/07/2008	Carminnowhill	At wooden pole/pylon	22:45	23:45	259814	591264	None	0	0	0	
09/07/2008	Carminnowhill	Lavby on forest edge.	22:51	23:51	259233	509544	None	0	0	0	
09/07/2008	Carminnowhill	Stop at 'P' sign	22:57	23:57	259257	589296	None	0	0	0	
09/07/2008	Carminnowhill	No feature	23:03	00:03	259337	589225	рр	2	0	0	
25/06/2008	Shield Hill	Red entrance gate	22:15	23:18	269045	583996	рр	3	0	0	
25/06/2008	Shield Hill	Rocky lay by	22:15	23:18	268865	584248	РР	7	0	0	
25/06/2008	Shield Hill	Fire beaters in front of willows	22:15	23:18	268742	584384	PP	1	0	0	
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g 21:27
ard @ 21:50 from Point A 2-0.5km away

Survey Date	Site Name	Feature at Start Point	Start Time	End Time	Easting	Northing	Species ⁱ	Commuting Pass	Feeding Pass	Social Calls	Notes
25/06/2008	Shield Hill	Ole gateway. Fences to left & right	22:15	23:18	268585	584552	None	0	0	0	
25/06/2008	Shield Hill	Metal gate	22:15	23:18	268458	584826	None	0	0	0	
25/06/2008	Shield Hill	Bend in small layby on right	22:15	23:18	268437	585169	None	0	0	0	
25/06/2008	Shield Hill	Track splits in two	22:15	23:18	268169	585344	None	0	0	0	
25/06/2008	Shield Hill	Rowan, dead standing trunk	22:15	23:18	267856	585409	РР	5	1	0	
25/06/2008	Shield Hill	At plantation edge, clearfell	22:15	23:18	267884	585632	PP	9	1	0	
01/07/2008	Butterhole Bridge (b)	North of bridge. Left bank	23:25	23:45	264079	588011	None	0	0	0	
01/07/2008	Butterhole Bridge (b)	N/A	23:25	23:45	N/A	N/A	None	0	0	0	
01/07/2008	Butterhole Bridge (b)	No feature	23:25	23:45	263893	588010	PP	2	0	0	
01/07/2008	Butterhole Bridge (b)	No feature	23:25	23:45	263725	588044	РР	2	0	0	
01/07/2008	Butterhole Bridge (b)	Large rock in stream	23:25	23:45	263568	588118	РР	1	0	0	
01/07/2008	Butterhole Bridge (b)	At river. Brash fence across river	23:25	23:45	263481	588119	None	0	0	0	
08/07/2008	Hoghill	At corner of stone dyke. In field close to road.	21:45	22:45	259207	589598	None	0	0	0	
08/07/2008	Hoghill	Small stand of Scots Pine	21:45	22:45	258973	589506	None	0	0	0	
08/07/2008	Hoghill	Pile of stones by stone wall	21:45	22:45	258832	589462	None	0	0	0	
08/07/2008	Hoghill	Corner of wall	21:45	22:45	258695	589398	None	0	0	0	
08/07/2008	Hoghill		21:45	22:45	258693	589487	None	0	0	0	
08/07/2008	Hoghill	N/A	21:45	22:45	258569	589565	None	0	0	0	
08/07/2008	Hoghill	Forest ride at wall	21:45	22:45	258500	589676	None	0	0	0	
08/07/2008	Hoghill	Larch/Sitka section	21:45	22:45	258735	589837	РР	3	0	0	
08/07/2008	Hoghill	Clump of deciduous trees. Small. fallen trees	21:45	22:45	258443	589960	None	0	0	0	
08/07/2008	Hoghill	Small rowan. At side of wall	21:45	22:45	258559	590005	РР	1	0	0	
08/07/2008	Hoghill	By telegraph pole	21:45	22:45	258661	590050	None	0	0	0	
08/07/2008	Hoghill	Scots nine by hurn	21:45	22:45	258763	590087	рр	8	0	0	
08/07/2008	Hoghill		21:45	22:45	258828	590088	None	0	0	0	
08/07/2008	Hoghill	Large lone willow & small willow in forest on grassy verge	21:45	22:45	258926	590035	None	0	0	0	
08/07/2008	Hoghill	Willow by access point. Concrete slabs	21:45	22:45	259087	589943	None	0	0	0	
08/07/2008	Hoghill	Opposite south end of poly tunnel	21:45	22:45	259188	589820	PP	1	0	0	
08/07/2008	Hoghill	Northern edge of forest. Opposite house	21:45	22:45	259234	589705	РР	1	0	0	
03/07/2008	Black Water Bridge	Black Water Bridge	21:58	22:58	261648	588391	None	0	0	0	
03/07/2008	Black Water Bridge	Big Bock	21:58	22:58	261847	588400	None	0	0	0	
03/07/2008	Black Water Bridge	Bock in stream near Monkey flowers	21:58	22:58	262040	588421	None	0	0	0	
03/07/2008	Black Water Bridge	Rapids at top of slow bit	21:58	22:58	262236	588428	PP	1	0	0	
03/07/2008	Black Water Bridge	Corner above rapids	21:58	22:58	262310	588564	PP	0	15	0	2 x PP observed in
03/07/2008	Black Water Bridge	Willow tree	21:58	22:58	262504	588640	None	0	0	0	
03/07/2008	Black Water Bridge	End of trib @ Mosshead	21:58	22:58	262572	588664	PP	1	0	0	
01/07/2008	Butterbole Bridge Track	On track	21:50	22:38	263699	588466	None	0	0	0	
01/07/2008	Butterhole Bridge Track	Pole 7	21:55	22.48	263860	588340	None	0	0	0	
01/07/2008	Buttorholo Bridge Track	Pole 2	21.59	22.40	264012	588340	None	0	0	0	
01/07/2008	Butterhole Bridge Track		21.59	22.40	204012	588180	None	0	0	0	
01/07/2008	Butterhole Bridge Track	Prideo	21:59	22:48	264140	588073	none	2	0	0	
01/07/2008	Butternole Bridge Track	Bridge	21:59	22:48	264100	588813	PP	2	3	0	
09/08/2008			21:20	22:20	25/58/	592448	None	0	0	0	
09/08/2008	Cummnock Knowes (b)	Cummnoch Knowes House	21:20	22:20	257788	592538	None	0	0	0	
09/08/2008	Cummnock Knowes (b)	By river. Large area of bracken	21:20	22:20	257666	592765	РР	1	0	0	
09/08/2008	Cummnock Knowes (b)	River	21:20	22:20	257485	592775	None	0	0	0	Very heavy rain
09/08/2008	Cummnock Knowes (b)	Shingle bank	21:20	22:20	257337	592597	None	0	0	0	Very heavy rain
09/08/2008	Cummnock Knowes (b)	On road	21:20	22:20	297132	502756	None	0	0	0	Very heavy rain
22/07/2008	Polmaddy (b)	End of Bridge	21:41	22:17	259235	587910	None	0	0	0	
22/07/2008	Polmaddy (b)	Old ash tree and sign	21:41	22:17	259058	587874	PP	3	0	0	
22/07/2008	Polmaddy (b)	End of large boardwalk opp. trees	21:41	22:17	258913	587814	None	0	0	0	

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Survey Date	Site Name	Feature at Start Point	Start Time	End Time	Easting	Northing	Species ⁱ	Commuting Pass	Feeding Pass	Social Calls	Notes
22/07/2008	Polmaddy (b)	Path in layby	21:41	22:17	259222	587829	РР	1	0	0	
22/07/2008	Polmaddy (b)	Edge of B1 trees to north of track	21:41	22:17	259222	587641	PP	1	0	0	
22/07/2008	Polmaddy (b)	Where track widens	21:41	22:17	259134	587564	PP	1	0	0	
22/07/2008	Polmaddy (b)	By large tree by water	21:41	22:17	259169	587646	PP & MB	8	2	0	
22/07/2008	Polmaddy (b)	Open area at track	21:41	22:17	289387	587214	None	0	0	0	
22/07/2008	Polmaddy (b)	Fallen tree 104m from clearing	21:41	22:17	259509	587261	None	0	0	0	

i - MB - Daubenton's bat (Myotis daubentonii) / NN - Noctule bat (Nyctalus noctula) / PP - Common pipistrele (Pipistrellus pipistrellus) / PY - Soprano Pipistrelle (Pipistrellus pygmaeus) / Pip. Sp. - Pipistrellus species

Table C7.4 - Static Bat Detector Recording Results

Box number	Location	E	N	Date	Species recorded ⁱ	Feeding	Activity Level	Notes
1	Knockdollochan	267307	586018	25/06/2008	PP, PY, MB & possible NN	Yes	Moderate	Moderate activity from 23:21 to 01:03
2	Butterhole Bridge	263980	587944	01/07/2008	None	N/a	None	Only 2 recordings, last at 21:31 - equipment did not work
3	Mossdale Farm	249041	604592	31/07/2008	None	N/a	None	Only 1 recording - equipment did not work
4	Water of Ken, near Kendoon	260412	587503	02/07/2008	PP, PY, MB & possible NN	Yes	High	High activity - several passes every couple of minutes from 22:21 to 01:18
5	Blackwater tributary near B7000	261771	587659	03/07/2008	PP, possible NN	No	Very low	Very occasional passes - one pip at 23:42, one pip and tentative Noctule pass
6	Polmaddy	259172	587651	08/07/2008	РР	No	Very low	Very occasional passes - one pip at 22:13, two at 22:25. Pip species unknown
7	Dalshangan	259253	589497	08/07/2008	PP, & PY	Yes	Sporadic	Occasional passes from 23:04 to 03:05
8	Carminnow Hill	258997	590302	09/07/2008	None	N/a	None	Heavy rain throughout recording, recorded until 11pm
9	Layby near Polquhanity Burn	258486	590696	09/07/2008	None	N/a	None	Heavy rain throughout recording, recorded until 10:45pm
10	Near Brockloch Tower	254347	595869	10/07/2008	Pip. sp.	No	Very low	Occasional passes from 22:08 to 22:27. Pip species unknown
11	Green Well of Scotland	255824	594511	10/07/2008	PP & PY	Yes	High	Almost continuous pipistrelle passes from 21:57 to 22:38. Pip species not alw
12	Holm Hill	255204	595164	15/07/2008	None	N/a	None	Equipment working but no bats recorded
13	Dam near Carsphairn	256720	593520	15/07/2008	None	N/a	None	Only 2 recordings, last 21:41 - equipment failure
14	Burn off main road near Brockloch	253493	596621	16/07/2008	PP & MB	No	Very low	Very occasional passes from 22:24 to 02:26
15	Road past Lamford	252738	599075	16/07/2008	None	N/a	None	Only 2 recordings, last 21:57
16	Burn east of road near Glenmuck Bridge	251114	602147	17/07/2008	PP, MB	Yes	High	Frequent passes from 22:35 to 00:28, particularly pip and Daubenton's. Pip sp
17	Polnaskie Burn	251816	600539	17/07/2008	Pipistrelle	No	Very low	Two passes only, around 02:13. Pip species unknown
18	Forest edge near Mossdale	249041	604592	21/07/2008	PP, PY, MB & possible NN	Yes	Moderate	Occasional passes from 21:59 to 03:49, common pipistrelle becoming frequent
19	Polmaddy by water	259172	587651	21/07/2008	PP, PY, MB & possible NN	Yes	Continuous	Continuous activity, particularly from pipistrelle species and Daubenton's, fro
20	NW end of track in Kyle Forest- Parrie Burn	249650	605585	22/07/2008	РР	No	Very low	Very occasional passes from 22:18 to 23:58
21	SW end of track in Kyle Forest - Corbie Craig	249823	604717	22/07/2008	None	N/a	None	Put in position early and stopped recording at 19:08
22	North of road at top of line - opp Kyle Forest entrance	251701	608091	23/07/2008	MB, PP & possible NN	Yes	Very low	Very occasional passes, from 22:37 to 01:37.
23	Kendoon shaky bridge - repeat	260412	587503	29/07/2008	SY, MB, PP & possible NN	Yes	Continuous	Continuous activity, particularly from soprano pipistrelle, from 21:40 to 02:54
24	Holm Hill - Green well of Scotland - repeat	255824	594511	30/07/2008	None	N/a	None	Problem with equipment - only 1 recording
25	Opposite Brockloch sheepfold - repeat	253493	596621	30/07/2008	None	N/a	None	
26	Polnaskie Bridge - repeat	251816	600539	31/07/2008	None	N/a	None	
27	Bridge NX60929 88346	260929	588346	18/08/2008	PP, PY & MB	Yes	High	Many passes, in particular for Daubenton's, from 20:59 to 02:11
28	Track in Kendoon Forestry	260204	588377	18/08/2008	PP, PY & possible MB	Yes	Moderate	Fairly frequent and fairly evenly spaced passes from 20:45 to 02:05.
29	Corriedoo	268726	583736	26/06/2008	PP & PY	Yes	High	Many passes, mainly common pipistrelle, from 22:32 to 23:05

i - MB - Daubenton's bat (Myotis daubentonii) / NN - Noctule bat (Nyctalus noctula) / PP - Common pipistrelle (Pipistrellus pipistrellus) / PY - Soprano Pipistrelle (Pipistrellus pygmaeus) / Pip. Sp. - Pipistrellus species



At 00:20. Pip species unkno	wn

vays identifiable

pecies not known due to static (because of rain?) making interpretation difficult

ent from 03:51 to 05:16 om 22:18 to 03:23

C.8 Waterbody Ecological Condition Information

Table C8.1 - Relevant SEPA Waterbody Condition Data

Watercourse	ID No	River Basin District	Catchment	Location	Length	Typology	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
River Doon at Skeldon	10925	Scotland	River Doon	NS 47542 04347	6.36km	Mid-altitude, Medium, Siliceous	Diffuse pollution due to mixed farming Change in natural flow conditions due to production of renewable electricity	A1	Moderate
River Doon at Patna	10925	Scotland	River Doon	NS 47542 04347	6.36km	Mid-altitude, Medium, Siliceous	Diffuse pollution due to mixed farming Change in natural flow conditions due to production of renewable electricity	A1	Moderate
River Doon at Waterside	10925	Scotland	River Doon	NS 47542 04347	6.36km	Mid-altitude, Medium, Siliceous	Diffuse pollution due to mixed farming Change in natural flow conditions due to production of renewable electricity	A1	Moderate
River Doon u/s of Waterside	10925	Scotland	River Doon	NS 47542 04347	6.36km	Mid-altitude, Medium, Siliceous	Diffuse pollution due to mixed farming Change in natural flow conditions due to production of renewable electricity	A2	Moderate
Cummock Water	10443	Scotland	River Doon	NS 50680 07152	9.29km	Mid-altitude, Small, Calcareous	Abstraction due to mining and quarrying of coal Morphological alternations due to intensive forestry use, cultivation and planting of watercourse banks	A2	Bad
Muck Water	10444	Scotland	River Doon	NS 49178 04137	10.26km	Mid-altitude, Small, Siliceous	Morphological alternations due to impounding by weir or dam impeding fish passage Abstraction due to mining and quarrying of coal	A1	Bad
Dalcairnie Burn	10445	Scotland	River Doon	NS44612 03545	9.03km	Mid-Altitude, Medium, Siliceous	No pressures exist on this water body	A1	Good
Water of Deugh (u/s Carsphairn Lane)	10563	Solway Tweed	River Dee (Solway)	NS 56212 02782	24.40km	Mid-altitude, Small, Organic	Alterations caused by abstraction due to the production of renewable electrify Alternations in the natural flow conditions due to production of renew able electricity Morphological alterations due to the production of renewable electricity Morphological alternations due to the impending by weir or dam preventing the passage of fish. Morphological changes due to forestry especially along riparian edges	A1	Bad ecological potential
Water of Deugh (Carsphairn Lane to Water of Ken)	10562	Solway Tweed	River Dee (Solway)	NS 58485 92531	8.16km	Mid-altitude, Medium, Siliceous	Morphological alterations due to production of non-renewable electricity (e.g. by coal, gas, nuclear or pumped hydro). Impounding by weir or dam impeding fish passage	A2	Moderate ecological potential
Carsphairn Lane	10566	Solway Tweed	River Dee (Solway)	NS 52560 96696	10.68km	Mid-altitude, Small, Siliceous	Production of renewable electricity (NB nuclear and pumped hydro are not renewable forms of electricity generation) Impounding (weir / dam)	A2	Moderate
Garyhorn Burn	10567	Solway Tweed	River Dee (Solway)	NS 53018 93344	7.84km	Mid-altitude, Small, Siliceous	Morphological alterations due to barriers impeding fish passage	A2	Moderate
Polmaddy Burn	10568	Solway Tweed	River Dee (Solway)	NS 54775 89312	15.23km	Mid-Altitude, Small, Siliceous	Morphological alternations due to forestry Diffuse source pollution due to production of non-renewable electricity (e.g. by coal, gas, nuclear or pumped Hydro)	В	Poor
Water of Ken	10761	Solway Tweed	River Dee (Solway)	NS 63000 79619	9.62km	Mid-altitude, Medium, Siliceous	Morphological alterations due to production of renewable electricity Abstraction due to production of renewable electricity. Alternation of natural flow conditions due to production of renewable energy Alternations to compensation flows due to production of renewable electricity Morphological alternations due to mixed farming Alien Species - North American Signal crayfish (<i>Pacifastacus leniusculus</i>)	A2	Bad ecological potential
Water of Ken (u/s High Bridge of Ken)	10559	Solway Tweed	River Dee (Solway)	NS 64975 96336	20.38km	Mid-altitude, Small, Siliceous	Morphological alternations due to culverting impeding passage of fish	N/A	Moderate
Water of Ken (d/s Kendoon)	10558	Solway Tweed	River Dee (Solway)	NS 60623 86993	6.78km	Mid-altitude, Medium, Siliceous	Morphological alterations due to production of renewable electricity. Abstraction due to production of renewable electricity. Alternation natural flow conditions due to production of renewable energy. Alternations to compensation flows due to production of renewable electricity. Morphological alternations due to barriers impeding fish passage.	N/A	Bad
Black Water of Dee (Pullaugh Burn to Loch Ken)	10546	Solway Tweed	River Dee (Solway)	NS 62111 71129	8.16km	Mid-altitude, Medium, Siliceous	Production of renewable electricity (NB nuclear and pumped hydro are not renewable forms of electricity generation). Diffuse source pollution due to the production of non-renewable electricity (e.g. by coal, gas, nuclear or pumped hydro).	A1	Bad ecological potential
Margree/Garple Burn	10572	Solway Tweed	River Dee (Solway)	NX 67761 82523	15.18km	Mid-altitude, Small, Siliceous	Alien Species. American Signal crayfish (Pacifastacus leniusculus)	A2	Moderate
Castlefairn Water/ Blackmark Burn	10607	Solway Tweed	River Nith	NX 74021 86978	12.95km	Mid-altitude, Small, Siliceous	No pressure exists on this water body	A2	Good
p.88	1	1	1	I	I	1		1	1

Watercourse	ID No	River Basin District	Catchment	Location	Length	Typology	Pressures & Measures on water body	Classification as of (09/08/2009)	RBMP Classification as of (19/02/2010)
Black Burn/Shirmers Burn	10556	Solway Tweed	River Dee (Solway)	NX 68159 78123	16.56km	Lowland, Small, Siliceous	No pressures exist on this water body.	A1	Good
Parrie Burn (trib' of Muck Water)	10444	Solway Tweed	River Doon	NX 4978 04137	10.26km	Mid-altitude, Small, Siliceous	Morphological alternations due to impounding by weir or dam impeding fish passage Abstraction due to mining and quarrying of coal	A1	Bad
Mossdale Burn (trib' of Muck Water)	10444	Solway Tweed	River Doon	NX 4978 04137	10.26km	Mid-altitude, Small, Siliceous	Morphological alternations due to impounding by weir or dam impeding fish passage Abstraction due to mining and quarrying of coal	A1	Bad
Trough Burn (trib of Muck Water)	10444	Solway Tweed	River Doon	NX 4978 04137	10.26km	Mid-altitude, Small, Siliceous	Morphological alternations due to impounding by weir or dam impeding fish passage Abstraction due to mining and quarrying of coal	A1	Bad
Lambford Burn (trib' of Carsphairn Lane)	10566	Solway Tweed	River Dee (Solway)	NS 52560 96696	10.68km	Mid-altitude, Small, Siliceous	Morphological alternations due to impounding by weir or dam impeding fish passage Abstraction due to mining and quarrying of coal	A1	Bad
Burn north of Carsphairn (trib' of Carsphairn Lane)	10566	Solway Tweed	River Dee (Solway)	NS 52560 96696	10.68km	Mid-altitude, Small, Siliceous	Morphological alternations due to impounding by weir or dam impeding fish passage Abstraction due to mining and quarrying of coal	A1	Bad
Burn at Carsphairn (trib of Carssphairn Lane)	10566	Solway Tweed	River Dee (Solway)	NS 52560 96696	10.68km	Mid-altitude, Small, Siliceous	Morphological alternations due to impounding by weir or dam impeding fish passage Abstraction due to mining and quarrying of coal	A1	Bad
Burn at Carminnows (trib of Carsphairn Lane)	10566	Solway Tweed	River Dee (Solway)	NS 52560 96696	10.68km	Mid-altitude, Small, Siliceous	Morphological alternations due to impounding by weir or dam impeding fish passage Abstraction due to mining and quarrying of coal	A1	Bad
Burn at Black Water (trib of Water of Ken)	10761	Solway Tweed	River Dee (Solway)	NS 63000 79619	9.62km	Mid-altitude, Medium, Siliceous	Morphological alterations due to production of renewable electricity Abstraction due to production of renewable electricity. Alternation of natural flow conditions due to production of renewable energy Alternations to compensation flows due to production of renewable electricity Morphological alternations due to mixed farming Alien Species - North American Signal crayfish (<i>Pacifastacus leniusculus</i>)	A2	Bad ecological potential
Burns(s) at Mackliston Hill (trib' of Water of Ken)	10761	Solway Tweed	River Dee (Solway)	NS 63000 79619	9.62km	Mid-altitude, Medium, Siliceous	Morphological alterations due to production of renewable electricity Abstraction due to production of renewable electricity. Alternation of natural flow conditions due to production of renewable energy Alternations to compensation flows due to production of renewable electricity Morphological alternations due to mixed farming Alien Species - North American Signal crayfish (<i>Pacifastacus leniusculus</i>)	A2	Bad ecological potential
Black Water (near Butterhole Bridge)	10546	Solway Tweed	River Dee (Solway)	NS 62111 71129	8.16km	Mid-altitude, Medium, Siliceous	Production of renewable electricity (NB nuclear and pumped hydro are not renewable forms of electricity generation). Diffuse source pollution due to the production of non-renewable electricity (e.g. by coal, gas, nuclear or pumped hydro).	A1	Bad ecological potential
Burn (s) at Hogg Hill (trib' of the water of Ken)	10761	Solway Tweed	River Dee (Solway)	NS 63000 79619	9.62km	Mid-altitude, Medium, Siliceous	Morphological alterations due to production of renewable electricity Abstraction due to production of renewable electricity. Alternation of natural flow conditions due to production of renewable energy Alternations to compensation flows due to production of renewable electricity Morphological alternations due to mixed farming Alien Species - North American Signal crayfish (<i>Pacifastacus leniusculus</i>)	A2	Bad ecological potential
Linn Water (trib' of Cummock Water)	10443	Solway Tweed	River Doon	NX 50680 07152	9.29km	Mid-altitude, Small, Calcareous	Abstraction due to mining and quarrying of coal Morphological alternations due to intensive use of forestry, and riparian planting	N/A	Bad
Burn (s) at Knockdollachan (trib' of Graple Burn/ Margree Burn)	10572	Solway Tweed	River Dee (Solway)	NX 67761 82523	15.18km	Mid-altitude, Small, Siliceous	Alien Species. American Signal crayfish (Pacifastacus leniusculus)	A2	Moderate

Source: SEPA Draft River Basin Management Plans: available at http://gis.sepa.org.uk/rbmp/MapViewer.aspx





C.9	C	OHL a	HL and Access Track Watercourse Crossing Locations													Water			Watercourse
Table C9.1	- Acces	ss Track V	Vaterco	urse Crossings					Watercourse	Location No		Grid Ref		Tributary Name	Surface Water Body Name	Catchment Area	Main Adjacent Terrestrial Habitat Type	Type of crossing	Status as of (19/02/2010)
Location No		Grid Ref		Tributary Name	Surface Water Body Name	Water Catchment Area	Main Adjacent Terrestrial Habitat Type	Type of crossing	RBMP Status as of (19/02/2010)	21	NX	661	866	Burn at Hogg Hill	Water of ken	River Dee - Solway	Semi-improved grassland	Timber mat	Bad
1	NS	491	055	Parrie Burn	Muck Water	River Doon	Coniferous Forestry (pole stage)	Steel Plate Crossing	Bad	22	NX	663	864	Burn at Hogg Hill	Water of Ken	River Dee - Solway	Coniferous Forestry (pole stage)	Steel Plate Crossing	Bad
2	NS	490	053	Parrie Burn	Muck Water	River Doon	Coniferous Forestry (pole stage)	Timber mat	Bad	23	NX	669	859	Burn at Knochdollachan	Graple Burn/ Margree Burn	River Dee - Solway	Coniferous Forestry (pole stage)	Timber mat	Moderate
3	NS	490	052	Parrie Burn	Muck Water	River Doon	Coniferous Forestry (pole stage)	Timber mat	Bad	24	NX	672	857	Burn at Knochdollachan	Graple Burn/ Margree Burn	River Dee - Solway	Coniferous Forestry (pole stage)	Timber mat	Moderate
4	NS	492	044	Mossdale Burn	Muck Water	River Doon	Semi-improved grassland	Timber mat	Bad	25	NX	674	856	Burn at Knochdollachan	Graple Burn/ Margree Burn	River Dee - Solway	Coniferous Forestry (pole stage)	Timber mat	Moderate
5	NS	497	041	Mossdale Burn	Muck Water	River Doon	Semi-improved grassland	Existing crossing, may need upgrading	Bad	26	NX	676	853	Burn at Knochdollachan	Garple Burn/ Margree Burn	River Dee - Solway	Coniferous Forestry (pole stage)	Timber mat	Moderate
6	NS	499	043	Trough Burn	Muck Water	River Doon	Semi-improved grassland & Coniferous Forestry	Timber mat	Bad	Table C9.2	- Powe	erline Wa	Itercours	se Crossing Lo	cations				
7	NS	505	039	Trough Burn	Muck Water	River Doon	Semi-improved grassland & Coniferous Forestry	Timber mat	Bad	Location No		Grid Re	f	Tributary Name	Surface water Body Name	Water Catchmen Area	t Main Adjacent Terrestria Type	Wate I Habitat (19	rcourse RBMP Status as of /02/2010)*
8	NS	509	036	Trough Burn	Muck Water	River Doon	Coniferous Forestry (pole stage)	Timber mat	Bad	1	NS	52094	07826	Linn Water	Muck Water	River Doon	Coniferous forest (pole	e stage)	Bad
9	NX	522	989	Lambford Burn	Carsphairn Lane	River Dee - Solway	Semi-improved grassland	Timber mat	Moderate	2	NS	51782	07443	Bubbly	Muck Water	River Doon	Coniferous forest (pole	e stage)	Bad
10	NX	566	933	Burn north of Carsphairn	Carsphairn Lane	River Dee - Solway	Semi-improved grassland	Timber mat	Moderate	3	NS	51371	07015	Stony Burn	Muck Water	River Doon	Coniferous forest (pole	e stage)	Bad
11	NX	568	932	Burn at Carsphairn	Carsphairn lane	River Dee - Solway	Semi-improved grassland	Timber mat	Moderate		NC	40100	05407	Darry Rurp	Muck Water	River Doop	Coniference foreset (pole	(toro)	Pad
12	NX	579	917	Baurn at Bardenoch	Carsephairn Lane	River Dee - Solway	Semi-improved grassland & broad leaved trees	Timber mat	Moderate			49190	05245	Muck	Much Water	Diver Door		stage)	Dau
13	NX	584	906	Burn at Carminnows	Carsphairn Lane	River Dee - Solway	Coniferous Forestry (pole stage)	Timber mat	Moderate			49055	05345	tributary Muck	Muck water	River Doon		stage)	вао
14	NX	612	881	Burn at Black Water	Water of Ken	River Dee -	Semi-improved grassland	Timber mat	Bad	6	NS	49035	05279	Water tributary	Muck Water	River Doon	Coniferous forest (pole	e stage)	Bad
15	NX	616	880	Burn at Mackliston Hill	Water of Ken	River Dee -	Semi-improved grassland	Timber mat	Bad	7	NS	49661	04316	Mossdale Burn	Muck Water	River Doon	Semi-improved grass	sland	Bad
16	NX	623	881	Burn at Mackliston Hill	Water of Ken	River Dee - Solway	Semi-improved grassland	Timber mat	Bad	8	NS	49938	04292	Trough Burn tributary	Muck Water	River Doon	Semi-improved grass	sland	Bad
17	NX	626	882	Burn at Mackliston Hill	Water of Ken	River Dee - Solway	Semi-improved grassland	Timber mat	Bad	9	NS	50567	03899	Trough Burn	Muck Water	River Doon	Semi-improved grass	sland	Bad
18	NX	628	882	Burn at Mackliston Hill	Water of Ken	River Dee - Solway	Semi-improved grassland	Timber mat	Bad	10	NS	50713	03651	Trough Burn tributary	Muck Water	River Doon	Coniferous forest (pole	e stage)	Bad
19	NX	634	880	Burn at Mackliston Hill	Water of ken	River Dee - Solway	Semi-improved grassland	Timber mat	Bad	11	NS	51051	03205	Craig Burn	Muck Water	River Doon	Coniferous forest (pole	e stage)	Bad
20	NX	635	879	Black Water near Butterhole Bridge	Water of Ken	River Dee - Solway	Semi-improved grassland	Timber mat	Bad	12	NS	51111	03136	Craig Burn	Muck Water	River Doon	Coniferous forest (pole	e stage)	Bad

Location No		Grid Re	f	Tributary Name	Surface water Body Name	Water Catchment Area	Main Adjacent Terrestrial Habitat Type	Watercourse RBMP Status as of (19/02/2010)*	Location No		Grid Re	f	Tributary Name	Surface water Body Name	Water Catchment Area	Main Adjacent Terrestrial Habitat Type	Watercourse RBMP Status as of (19/02/2010)*
13	NS	51535	02598	Peat Burn tributary	Muck Water	River Dee	Coniferous forest (pole stage)	Bad	33	NX	56888	93211	North Liggat	Carsephairn Lane	River Dee	Semi-improved grassland	Moderate
14	NS	51558	02560	Peat Burn tributary	Muck Water	River Dee	Coniferous forest (pole stage)	Bad	34	NX	56931	93154	North Liggat	Carsephairn Lane	River Dee	Semi-improved grassland	Moderate
15	NS	51647	02423	Peat Burn	Muck Water	River Dee	Coniferous forest	Bad	35	NX	56997	93090	North Liggat	Carsephairn lane	River Dee	Semi-improved grassland	Moderate
16	NS	51759	01416	Small Burn	Muck Water	River Dee	Coniferous forest	Bad	36	NX	57192	92789	Water of Deugh -	Carsephairn lane	River Dee	Coniferous forest	Moderate
17	NS	51902	00253	Small Burn Bridge	Muck Water	River Dee	Semi-improved grassland	Bad	37	NX	57555	92284	Cumnock Knowes	Carsephairn Lane	River Dee	Semi-improved grassland	Moderate
18	NIX	52043	99774	North of Meadow head	Muck Water	River Dee	Semi-improved grassland	Bad	38	NX	57971	91783	Laird's Hill	Carsephairn lane	River Dee	Semi-improved grassland& Coniferous Forest	Moderate
19	NX	52211	99200	Meadow head Burn	Muck Water	River Dee	Semi-improved grassland	Bad	39	NX	58356	90876		Water of Ken	River Dee	Coniferous forest	Bad
20	NX	52224	99155		Muck Water	River Dee	Semi-improved grassland	Bad	40	NX	58593	90315		Water of Ken	River Dee	Semi-improved grassland	Bad
21	NX	52270	98921	Lamford Burn	Muck Water	River Dee	Semi-improved grassland	: Bad	41	NX	58723	90103		Water of Ken	River Dee	Coniferous forest	Bad
22	NX	52298	98766	Lamford Burn tributary	Muck Water	River Dee	Semi-improved grassland	Bad	42	NX	59033	89570		Water of Ken	River Dee	Semi-improved grassland	Bad
23	NX	52578	97972	Drumjohn	Carsphairn Lane	River Dee	Semi-improved grassland	Moderate	43	NX	59735	89247	Water of Deugh - Linnfraig	Water of Ken	River Dee	Coniferous forest & Broad leaved trees	Bad
24	NX	52680	97843	Drumjohn	Carsephairn Lane	River Dee	Semi-improved grassland	Moderate	44	NX	60612	88085	Water of Ken	Water of Ken	River Dee	Broad leaved trees	Bad
25	NX	53054	97408	Carsphairn Lane tributary	Carsephairn Lane	River Dee	Semi-improved grassland	Moderate	45	NX	61211	88123		Water of Ken	River Dee	Semi-improved grassland	Bad
26	NX	53738	96685	Carsphairn Lane tributary	Carsephairn lane	River Dee	Coniferous forest	Moderate	46	NX	61621	88030	White Hill	Water of Ken	River Dee	Semi-improved grassland	Bad
27	NX	54459	95941	Brockloch	Carsephairn lane	River Dee	Coniferous forest	Moderate	47	NX	62338	88189	Blackwater tributary	Water of Ken	River Dee	Semi-improved grassland	Bad
28	NX	54654	95743		Carsephairn Lane	River Dee	Semi-improved grassland & Coniferous Forest	Moderate	48	NX	62647	88221	Blackwater tributary	Water of Ken	River Dee	Semi-improved grassland	Bad
29	NX	55758	94596	Water of Deugh - Green Well	Carsephairn lane	River Dee	Semi-improved grassland & Broad leaved trees	Moderate	49	NX	62817	88231	Blackwater tributary	Water of Ken	River Dee	Semi-improved grassland	Bad
30	NX	56398	93744	Carsphairn	Carsephairn Lane	River Dee	Semi-improved grassland	Moderate	50	NX	63493	88013	Cullys Holm	Water of Ken	River Dee	Semi-improved grassland	Bad
31	NX	56721	93405	North Liggat - Dam	Carsephairn Lane	River Dee	Semi-improved grassland	Moderate	51	NX	63548	88002	Cullys Holm	Water of Ken	River Dee	Semi-improved grassland	Bad
32	NX	56814	93305	North Liggat - Plantation	Carsphairn Lane	River Dee	Semi-improved grassland	Moderate	52	NX	64288	87785	Butterhole Bridge	Water of Ken	River Dee	Semi-improved grassland	Bad
L	1		1	1	,	1			53	NX	64456	87603	Blackwater tributary	Water of Ken	River Dee	Semi-improved grassland	Bad





Location No		Grid Ref		Tributary Name	Surface water Body Name	Water Catchment Area	Main Adjacent Terrestrial Habitat Type	Watercourse RBMP Status as of (19/02/2010)*
54	NX	65385	87162		Water of Ken	River Dee	Coniferous forest	Bad
55	NX	65537	87093		Water of Ken	River Dee	Coniferous forest	Bad
56	NX	66280	86542	Hog Hill	Garple Burn & Margree Burn	River Dee	Semi-improved grassland	Moderate
57	NX	66323	86472	Hog Hill	Garple Burn & Margree Burn	River Dee	Coniferous forest	Moderate
58	NX	66986	85906	Kirk Rigg	Garple Burn & Margree Burn	River Dee	Coniferous forest	Moderate
59	NX	67306	85712		Garple Burn & Margree Burn	River Dee	Coniferous forest	Moderate
60	NX	67370	85671		Garple Burn & Margree Burn	River Dee	Coniferous forest	Moderate
61	NX	67413	85625		Garple Burn & Margree Burn	River Dee	Coniferous forest	Moderate
62	NX	67587	85391	Shield Willie Hill	Garple Burn & Margree Burn	River Dee	Coniferous forest	Moderate
63	NX	68044	84862	Shield Willie Hill	Garple Burn & Margree Burn	River Dee	Coniferous forest	Moderate
64	NX	68743	83803	Regland Burn	Garple Burn & Margree Burn	River Dee	Coniferous forest	Moderate

*Status refers to the nearest surface waterbody, i.e. within the same catchment as the watercourse that is crossed, as assessed in the SEPA River Basin Management Plan.Reference: SEPA

Draft River Basin Management Plans: available at http://gis.sepa.org.uk/rbmp/MapViewer.aspx

C.10

C.10.1

- hydrology.
- summarised within Chapter 8.

C.10.2

C.10.2.1 Substations

- substation.
- disturbance has not been estimated.

C.10.2.2 L7 Towers

Approach to the Habitat Loss and **Disturbance Calculations**

Introduction

1 Estimates of habitat loss and damage/disturbance (i.e. permanent loss and areas temporarily affected by construction works that would be subject to reinstatement and restoration) during the construction and operation of the project have been calculated based on Phase 1 habitat survey mapping and scheme layout design information provided in Chapter 5 - Project Description. Where possible, measurements based on engineering information provided have been used. Any assumptions made, for example due to the absence of detailed design information at this stage, is defined for each structure type below.

2 A brief discussion is also provided below of how the assumptions for buffer distances have been made in relation to the construction of permanent structures adversely affecting vegetation communities associated with ombrotrophic or minerotrophic peat around the perimeter of these works through localised perturbation of peat

3 Finally, tables at the end of this appendix provide a detailed breakdown of the calculations by Phase 1 habitat type and infrastructure element, which have been

Area Habitat Loss / Disturbance Area Assumptions for OHL Infrastructure

1 Two substations have been proposed as part of this project, at Blackcraig and Margree. The Blackcraig substation will be located within a former borrow pit and will be contained within a compound 69.1 x 31.5m that will have a 1.5m wide path around the perimeter (giving a total area of 2,487.45m²). The Margree substation will be located within an area of recently felled conifer plantation and will be contained within a compound 67.8 x 47.0m that will also have a 1.5m wide path around the perimeter (giving a total area of 3,540.00m²). These areas provide the estimate of total permanent loss as they can not be reinstated after construction.

2 A 10m wide strip around the perimeter path at each substation as been assumed to account for additional potential construction disturbance. This equates to an area of 2,532.00m² for the Blackcraig substation and 2,816.00m² for the Margree

3 As both substation sites are not located in areas with existing semi-natural vegetation sensitive to localised peat hydrology changes a zone of long-term peat hydrology

1 Steel lattice towers (L7 type) are proposed from Dalshangan to the substation at Miekle Hill. A working compound of 2,700m² (30 x 90m) is required for each L7 Tower

site during construction, this figure has been used to estimate the area of habitat potentially subject to construction damage and disturbance.

- 2 Each L7 Tower will have a concrete foundation. Exact foundation sizes have not yet been confirmed for all locations, these will be determined following detailed ground investigation proposed for each location prior to construction, but are assumed to be of the order of 25m² (i.e. 5 x 5m square) for turning towers and 16m² (i.e. 4 x 4m square) for suspension towers. Although reinstatement of vegetation within this area will occur it has been conservatively assumed, partly to address uncertainty of the restoration of habitats such as wet dwarf shrub heath and blanket vegetation communities, that there will be a permanent loss of habitat associated with this foundation area.
- 3 An area based on an assumed 10m wide buffer around the tower foundations has been used to determine the potential zone of hydrological disturbance beyond the area of permanent loss. This area is estimated as 600m² (i.e. 25 x 25m = 625m² - $25m^2$) for each angle tower and $560m^2$ for each line tower (i.e. $24 \times 24m = 576m^2$ - 16m²).

C.10.2.3 Wood Poles

- 1 Wood poles will be used to support the OHL from Dalshangan to Blackcraig. Most will be of the 'H' pole type, comprising two poles set 3m apart. 'H' poles have been assumed for all wood pole locations in this assessment. At each wood pole site an estimated temporary working area of 600m² (30 x 20m) will be required, this figure has been used to estimate the area of habitat potentially subject to construction damage and disturbance.
- 2 Permanent habitat loss, following site reinstatement, will be minimal for each pole site and has been conservatively estimated at not more than 6m² (i.e. total for both poles combined).
- 3 An additional 5m wide buffer, to account for potential long-term hydrological disturbance affecting vegetation communities associated with peat deposits, has been assumed for each H pole site. This gives an area of 156m² for each site. A smaller buffer zone is considered appropriate for the wood poles given the relatively lower excavation and foundation construction requirements in comparison to the L7 Towers.

C.10.2.4 Access Tracks

- 1 Each pole and tower site will require access from the public road network where existing suitable access is not available. The majority of proposed access tracks will be temporary. Some sections of permanent access track are proposed with areas of commercial conifer plantation (see Chapter 5 for further details). All tracks will have a maximum 5m running width. A 5m wide strip either side of this has been assumed for potential direct disturbance to habitats during construction (i.e. to account for track drainage, batters, embankments and cuttings) giving a 15m wide zone in total.
- 2 Within areas of mature semi-natural woodland and parkland the need for felling of mature trees to accommodate any new access tracks, or for the use/upgrading of existing access tracks, will be kept to the absolute minimum necessary. It is has been

3 Some long-term effects on areas of blanket bog vegetation are possible although such effects will be mitigated through micro-siting of access routes to avoid areas, where possible, of relatively greater sensitivity. It has been assumed that for areas with semi-natural vegetation supported by blanket peat greater than c. 0.5m deep there is the potential for long-term effects from compaction across the width of the track and the 5m wide construction disturbance zone either side of this (i.e. a 15m wide strip). Consequently the area estimate for construction disturbance is the same as for long-term potential effects on blanket bog vegetation from hydrological disturbance to blanket peat.

C.10.2.5 Pulling Compounds

1 The stringing of the OHL will require approximately 38 pulling compounds all of a standard size (2,689m²). All of compounds will be of a temporary nature and would be subject to necessary habitat reinstatement measures; there will be no permanent structures. It has been assumed that any potential long-term effects on vegetation communities supported by blanket peat, e.g. arising from ground compaction, would be very localised and contained within the area of the temporary compound.

C.10.2.6 Satellite Construction Compounds

1 Five temporary construction compounds are proposed at various locations along the OHL route during the construction period. These compounds will require areas varying from 3,739m² to 4,979m². A buffer zone of 10m wide has been assumed around each compound to account for construction-related habitat disturbance. For the temporary compounds proposed with areas of blanket peat, although more sensitive habitat will be avoided where possible through micro-siting, it has been assumed that full reinstatement of the previous hydrological regime will be difficult to achieve and that long-term effects on vegetation are possible within the boundary formed by the 10m wide construction disturbance buffer.

C.10.2.7 Underground Cable

1 An underground 33kV cable connecting the wind farm at Blackcraig Hill to Blackcraig substation would be buried within an existing forestry access track; it has therefore been assumed that there would be no disturbance or loss of any appreciable areas of vegetation of ecological interest from these works. A short section of underground cable is also proposed to link the wood pole OHL from Blackcraig Hill to Dalshangan across the A713 to the first steel lattice tower running from Dalshangan to Meikle Hill substation. This short section of underground cable passes through an area of relatively species-rich marshy grassland. It has been assumed in this assessment that following the ground disturbance required to trench this cable there will be restoration of the original soil profile and broadly similar hydrological regime to previous conditions. Therefore it should be possible to restore a similar suite of plant species in the medium to long-term than was present prior to the works. The short-

Area of Potential Hydrological Disturbance for C.10.3 **Blanket Peat Habitats**

- the excavated peat, where possible.



1 Various areas within the Study Area have been identified as blanket bog (upland ombrogenous blanket mire), with associated upland moorland habitats, such as dry modified bog, acid flush and transitional vegetation communities grading between these three types. Plant species associated with blanket bog and acid flush habitats are adapted to low nutrient, acidic and wet conditions, which are normally found in peatland sites. The maintenance of high water table is critical to supporting the suite of plant species associated with an unmodified active blanket bog (e.g. Sphagnum mosses). In extreme cases this may result in enough loss of vegetation cover and structure to cause the eventual erosion of exposed peat.

2 In order to asses the full potential of construction works in areas of blanket bog, it is necessary to assume a potential zone of hydrological influence so that area of vegetation is not directly impacted from the construction process, but potentially adversely affected , due to longer-term changes to natural hydrology can be estimated. The extent of this potential zone is likely to vary in response to different types of construction (e.g. floating tracks in comparison to excavated tracks with drainage ditches) and site-specific parameters, such as the saturated hydrological conductivity of the peat, peat depth and slope etc.

3 The Caithness and Sutherland Pentlands Management Strategy (2005) indicates that the zone is likely to be narrow and at less than 10m. This issue has recently been reviewed and discussed in relation to a new approach to modelling carbon losses from the literature of measured zones of hydrological influence in blanket bogs and provide a regression equation to enable estimates of the extent of drainage effects around an area of disturbance. In order to use this equation of the extent of drainage effects around an area of disturbance. In order to use this equation it is necessary to have estimates of the hydraulic conductivity of the peat at the site that is being considered. This information is not available for the Blackcraig & Margree Study Area. And is also likely to vary considerable within the site. Complicating the process of deriving an estimate of the combined potential zone of influence. Based on the case examples, information on peat hydrology impacts provided in Rani Nayak et al. (2008) a conservative potential zo9ne of hydrological influence as a result of the proposed construction works has been estimated as 10m on blanket bog vegetation communities (and other wet areas) and 5m for dry habitat types. This applies for the duration of the operational phase of the project and is therefore essentially a permanent impact. For floating tracks, this zone has been assumed as 2m. This potential zone is applied around the perimeter of all site infrastructures that is located in areas of blanket bog, taking into consideration the likely location of drainage ditches, cable trenches, and banked cut faces etc. This assumes best practice in peat removal and storage during construction and appropriate reinstatement of

C.10.3.1 Detailed Habitat Loss and Disturbance Tables

1 The following tables provide details of the calculations of Phase 1 habitat type loss and construction / operational disturbance for each set of infrastructure elements.

Table C10.1 - Total Areas of Phase 1 Habitat Types

Habitat Code	Phase 1 Habitat Type	Total Area (ha)	Total Area (m ²)
A111	Broadleaved woodland - semi-natural	48.78	487,800
A112	Broadleaved woodland - plantation	34.80	348,000
A121	Coniferous woodland - semi-natural	4.02	40,200
A122	Coniferous woodland - plantation	866.67	8,666,700
A131	Mixed woodland - semi-natural	4.56	45,600
A132	Mixed woodland - plantation	66.31	663,100
A31	Parkland/scattered trees - broadleaved	20.34	203,400
A32	Parkland/scattered trees - coniferous	0.34	3,400
A42	Recently felled coniferous woodland	183.01	1,830,100
B4	Improved grassland	118.53	1,185,300
B5	Marsh/Marshy Grassland	575.82	5,758,200
B6	Poor semi-improved grassland	0.98	9,800
B12	Acid grassland - Semi-Improved	327.9	3,279,000
B22	Neutral grassland - Semi-improved	124.14	1,241,400
C11	Continuous bracken	112.76	1,127,600
D2	Wet dwarf shrub heath	17.84	178,400
D6	Wet heath/acid grassland	17.94	179,400
E17	Wet modified bog	568.93	5,689,300
E161	Blanket Bog	17.41	174,100
J4	Bare ground	65.06	650,600

Table C10.2 - Substation Habitat Loss/Disturbance Estimates

Site	Phase I Habitat Type	Area of permanent loss (m²)	Area of construction disturbance (m ²)	Area of potential peat hydrology disturbance (m²)	Permanent loss as % of total habitat	Construction disturbance as % of total habitat	Peat hydrology disturbance as % of total habitat
Margree Substation	Coniferous woodland	3,540.00	2,816.00	n/a	0.040846%	0.032492%	n/a
Blackcraig Substation	Coniferous woodland	2,487.45	2,532.00	n/a	0.028701%	0.029215%	n/a

Table C10.3 - L7 Turning Towers Habitat Loss/Disturbance Estimates

Phase I Habitat Type	Number of Sites	Area of permanent loss (m²)	Area of construction disturbance (m ²)	Area of potential peat hydrology disturbance (m²)	Permanent loss as % of total habitat	Construction disturbance as % of total habitat	Peat hydrology disturbance as % of total habitat
Recently felled coniferous woodland	2	50	5,350	n/a	0.00273%	0.292334%	n/a
Coniferous woodland - plantation	13.5	337.5	36,450	n/a	0.003894%	0.420575%	n/a
Continuous bracken	1	25	2,675	n/a	0.002217%	0.23723%	n/a
Improved grassland	2.5	62.50	6,687.50	n/a	0.005273%	0.564203%	n/a
Marsh/ Marshy Grassland	4	100	10,700	2,400	0.001737%	0.185822%	0.04168%

Phase I Habitat Type	Number of Sites	Area of permanent loss (m²)	Area of construction disturbance (m ²)	Area of potential peat hydrology disturbance (m²)	Permanent loss as % of total habitat	Construction disturbance as % of total habitat	Peat hydrology disturbance as % of total habitat
Acid grassland - Semi-Improved	2.5	62.50	6,687.50	n/a	0.001906%	0.203949%	n/a
Wet modified bog	4.5	112.50	12,037.50	2,700	0.001977%	0.211581%	0.047458%

Table C10.4 - L7 Suspension Towers Habitat Loss/Disturbance Estimates

Phase I Habitat Type	Number of Sites	Area of permanent loss (m²)	Area of construction disturbance (m ²)	Area of potential peat hydrology disturbance (m²)	Permanent loss as % of total habitat	Construction disturbance as % of total habitat	Peat hydrology disturbance as % of total habitat
Recently felled coniferous woodland	5	125	13,375	n/a	0.00683%	0.73084%	n/a
Coniferous woodland - plantation	22.5	562.50	60,187.50	n/a	0.00649%	0.694468%	n/a
Mixed woodland - plantation	1	25	2,675	n/a	0.00377%	0.403408%	n/a
Continuous bracken	2	50	5,350	n/a	0.004434%	0.474459%	n/a
Improved grassland	2.5	62.50	6,687.50	n/a	0.005273%	0.564203%	n/a
Marsh/ Marshy Grassland	11.5	287.50	30,762.50	7,003.50	0.004993%	0.534238%	0.121627%
Acid grassland - Semi-Improved	6	150	16,050	n/a	0.004575%	0.489478%	n/a
Neutral grassland - Semi-improved	2	50	5,350	n/a	0.004028%	0.430965%	n/a
Wet modified bog	19.5	487.50	52,162.50	11,875.50	0.008569%	0.916853%	0.208734%

Table C10.5 - Wood pole Habitat Loss/Disturbance Estimates

Phase I Habitat Type	Number of Sites	Area of permanent loss (m²)	Area of construction disturbance (m ²)	Area of potential peat hydrology disturbance (m²)	Permanent loss as % of total habitat	Construction disturbance as % of total habitat	Peat hydrology disturbance as % of total habitat
Recently felled coniferous woodland	1	6	594	n/a	0.000328%	1.302632%	n/a
Broad leaved woodland - semi -natural	2	12	1,188	n/a	0.00246%	0.243542%	n/a
Coniferous woodland - semi-natural	1	6	594	n/a	0.014925%	1.477612%	n/a
Coniferous woodland - plantation	60	360	36,640	n/a	0.004154%	0.422768%	n/a
Mixed woodland - plantation	9.5	57	5,643	n/a	0.008596	0.851003%	n/a
Improved grassland	5.5	33	3,267	n/a	0.002784%	0.275626%	n/a
Marsh/ Marshy Grassland	38	228	22,572	4,953.24	0.00396%	0.391997%	0.086021%
Acid grassland - Semi-Improved	9.5	57	5,643	n/a	0.001738%	0.172095%	n/a
Neutral grassland - Semi-improved	1.5	186.16	713.84	n/a	0.014996%	0.057503%	n/a

Phase I Habitat Type	Number of Sites	Area of permanent loss (m²)	Area of construction disturbance (m ²)	Area of potential peat hydrology disturbance (m²)	Permanent loss as % of total habitat	Construction disturbance as % of total habitat	Peat hydrology disturbance as % of total habitat
Continuous bracken	12	18	7,182	n/a	0.001596%	0.636928%	n/a
Wet dwarf shrub heath	3.5	21	2,079	n/a	0.011771%	1.165359%	n/a
Wet heath/acid grassland	5.5	33	3,267	n/a	0.018395 %	1.82107 %	n/a
Wet modified bog	6.5	39	3,861	894.33	0.000685%	0.067864%	0.01572%

Table C10.6 - Temporary Access Track Habitat Loss/Disturbance Estimates (NB all proposed permanent tracks are located within areas of existing commercial conifer plantation)

Phase I Habitat Type	Potential area of long-term habitat loss (m²)	Area of construction disturbance (m ²)	Area of potential peat hydrology disturbance (m²)	Potential long- term loss as % of total habitat	Construction disturbance as % of total habitat	Peat hydrology disturbance as % of total habitat
Broadleaved woodland - semi- natural	1,306.40	1,306.40	n/a	0.267815%	0.267815%	n/a
Broadleaved woodland - plantation	2,000	2,000	n/a	0.574713%	0.574713%	n/a
Coniferous woodland - semi- natural	400	400	n/a	0.995025%	0.995025%	n/a
Coniferous woodland - plantation	208,700	208,700	n/a	2.408068%	2.408068%	n/a
Mixed woodland - semi-natural	400	400	n/a	0.877193%	0.877193%	n/a
Mixed woodland - plantation	23,500	23,500	n/a	3.54396%	3.54396%	n/a
Parkland/scattered trees - broadleaved	3,800	3,800	n/a	1.86824%	1.86824%	n/a
Parkland/scattered trees - coniferous	700	700	n/a	20.58824%	20.58824%	n/a
Recently-felled woodland - coniferous	n/a	58,100	n/a	n/a	3.17469%	n/a
Acid grassland - semi-improved	n/a	41,500	n/a	n/a	1.26563%	n/a
Neutral grassland - semi- improved	n/a	7,800	n/a	n/a	0.628323%	n/a
Improved grassland	n/a	35,600	n/a	n/a	3.003459%	n/a
Marsh/Marshy grassland	n/a	115,000	115,000	n/a	1.997152%	1.997152%
Poor semi-improved grassland	n/a	900	n/a	n/a	9.183673%	n/a
Bracken - continuous	n/a	26,400	n/a	n/a	2.341256%	n/a
Wet dwarf shrub heath	n/a	6,400	n/a	n/a	3.587444%	n/a
Wet heath / acid grassland	n/a	19,600	n/a	n/a	10.92531%	n/a
Blanket bog	n/a	5,000	5,000	n/a	2.871913%	2.871913%
Wet modified bog	n/a	66,600	66,600	n/a	1.170619%	1.170619%
Bare ground	n/a	106.400	n/a	n/a	16.35413%	n/a

Phase I Habitat Type	Number of Sites	Area of permanent loss (m²)	Area of construction disturbance (m ²)	Area of potential peat hydrology disturbance (m²)	Permanent loss as % of total habitat	Construction disturbance as % of total habitat	Peat hydrology disturbance as % of total habitat
Marsh/Marshy Grassland	6.5	n/a	35,080.50	45,415.5	n/a	0.609227%	0.78871%
Poor semi-improved grassland	1	n/a	5,397	n/a	n/a	55.07143%	n/a
Acid grassland - Semi- Improved	1.25	n/a	4047.75	n/a	n/a	0.123445%	n/a
Neutral grassland - Semi- improved	0.5	n/a	2698.50	n/a	n/a	0.217376%	n/a
Continuous bracken	4	n/a	21,588	n/a	n/a	1.914509%	n/a
Wet dwarf shrub heath	0.5	n/a	2698.50	n/a	n/a	1.512612%	n/a
Wet heath/acid grassland	0.5	n/a	2698.50	n/a	n/a	1.504181%	n/a
Wet modified bog	3.75	n/a	20,238.75	26,201.25	n/a	0.355734%	0.460536%

Table C10.8 - Satellite Construction Compounds Habitat Loss/Disturbance Estimates

Phase I Habitat Type	No. compounds	Area of permanent loss (m²)	Area of construction disturbance (m ²)	Area of potential peat hydrology disturbance (m²)	Permanent loss as % of total habitat	Construction disturbance as % of total habitat	Peat hydrology disturbance as % of total habitat
Coniferous woodland - plantation	1.5	n/a	16,572	20,360	n/a	0.191215%	0.234922%
Recently felled coniferous woodland	0.50	n/a	8,286	10,180	n/a	0.452762%	0.556254%
Acid grassland - semi-improved	0.50	n/a	6,544	8,185	n/a	0.199573%	0.249619%
Neutral grassland - semi- improved	0.50	n/a	8,288	10,180	n/a	0.667633%	0.820042%
Wet modified bog	2	n/a	21,382	26,560	n/a	0.375828%	0.466841%

C.11 Confidential Appendix of Sensitive Species Records

1 This Appendix is held by Scottish Natural Heritage due to its confidentiality.

Table C10.7 - Pulling Compounds Habitat Loss/Disturbance Estimates

Phase I Habitat Type	Number of Sites	Area of permanent loss (m²)	Area of construction disturbance (m²)	Area of potential peat hydrology disturbance (m²)	Permanent loss as % of total habitat	Construction disturbance as % of total habitat	Peat hydrology disturbance as % of total habitat
Scattered broadleaved trees	2	n/a	10,776	n/a	n/a	5.29795%	n/a
Recently felled coniferous woodland	3	n/a	16,191	n/a	n/a	0.884706%	n/a
Coniferous woodland - plantation	15.5	n/a	83,955	n/a	n/a	0.968708%	n/a











Ornithology

Blackcraig and Margree Windfarms Grid Connection **Technical Appendices**

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D.1 Further Description of Ornithological **Survey Methodologies**

D.1.1 Introduction

D.1.1.1 Background

- 1 This appendix sets out further details on the methods adopted for ornithological baseline study undertaken to inform the routeing study and development of the 'preferred' OHL route assessment of potential significant effects of the proposed route for the Blackcraig & Margree OHL EIA project.
- 2 A suite of ornithological surveys were completed to assess the use of all habitats within the OHL route corridor by breeding and non-breeding birds, with a particular focus on species of UK conservation concern and species / taxonomic groups that are potentially sensitive to OHL development (e.g. divers, grebes, herons, wildfowl, waders, raptors and black grouse). All surveys followed current guidance and methods and were agreed in advance specifically for this project in consultation with SNH.
- The survey methods applied to the study were designed for the collection of 3 appropriate data to inform the assessment of the following potentially significant effects of the proposed OHL on sensitive ornithological receptors.
 - · Potential disturbance to wintering and breeding birds leading to displacement from favoured habitats during construction resulting in temporarily reduced fitness / increased mortality;
 - Potential for the long-term loss of and reduction in habitat quality;
 - Potential for bird collision and electrocution mortality;
 - Potential for long-term displacement of birds from favoured habitats due to the presence of the new OHL and/or associated wayleave management requirements;
 - Potential cumulative effects with other existing development and / or proposed development.

D.1.1.2 **Available Guidance**

1 The approach taken for this study (i.e. the scope of proposed surveys and the methods) draws on a range of guidance from a number of sources, including available published scientific literature and guidance produced by the energy industry, government / statutory nature conservation organisations. There is currently no broadly adopted source of guidance for ecological baseline survey and assessment of overhead power lines in Scotland. However, there is a considerable amount of information in the scientific literature (albeit much of it in 'grey literature') from the UK and abroad, considering, for example, the impacts of overhead power lines on birds. There are also several sources specifically dealing with power lines, bird interactions, approaches to mitigating impacts through routeing and adapting existing power lines to reduce potential impacts (e.g. APLIC 1994; Ferrer & Janss 1999; Haas et al. 2005). Methodological approaches to ecological baseline data gathering to inform EIA of other linear development projects are also well established (e.g. trunk roads, buried pipelines). There is also guidance on survey methods for the impact assessment of other types of development that may result in similar impacts (e.g. windfarms and bird collision risk). The following are the key references that have been used in compiling the proposed survey methods (further specific guidance is referred to in each of the following sections):

- Guidelines for Ecological Impact Assessment in the United Kingdom (version 7; Institute of Ecology and Environmental Management 2006);
- · Environmental Assessment Handbook: Guidance on the Environmental Impact Assessment Process (SNH 2005);
- Protecting Birds from Powerlines (Haas et al. 2005);
- Birds and Powerlines: Collision, Electrocution and Breeding (Ferrer & Janss eds. 1999);
- Mitigating Bird Collisions with Power Lines: The State of the Art in 1994 (Avian Power Line Interaction Committee 1994):
- · Assessing Significance of Impacts from Onshore Windfarms on Birds outwith Designated Areas (SNH 2006);
- Survey Methods for use in assessing the Impacts of Onshore Windfarms on Bird Communities (SNH 2005);
- Bat Surveys Good Practice Guidelines (Bat Conservation Trust 2007); and
- European Protected Species, Development Sites and the Planning System: Interim guidance for local authorities on licensing arrangements (Scottish Government 2001, updated 2006).

D.1.1.3 Study Programme

- 1 In October 2007, prior to the emergence of a preferred route corridor, MBEC commenced bird flight activity surveys from selected vantage points within the routeing Study Area (see Figure 9.02-9.04). In December 2007, a desk study was completed, collating available information from a number of consultees on potential key ornithological and ecological constraints. A preliminary ecological survey of the route, to further determine potential routeing constraints, was conducted in January 2008 (due to access restrictions this preliminary survey had to be undertaken without access beyond public roads and paths).
- 2 Flight activity surveys (completed to that date) and available ecological and ornithological information from consultation and desk study was used to assist with the selection of the preferred route. Further bird surveys were undertaken on the preferred and proposed route corridor, between April-July 2008 (see below for exceptions), in order to inform the EIA of the proposed route.
- 3 Spring / summer bird flight activity surveys were completed by the end of summer 2008. Due to the timing of access permission being granted, some of the ornithological

surveys (e.g. moorland breeding birds and breeding raptor and owl surveys) occurred outside the optimal temporal range. Consequently, these surveys were repeated in spring / summer 2009 (see below for further details).

D.1.1.4 Desk Study

- Study Area requested:
- Scottish Ornithologists' Club (Ayrshire and D&G local recorder);
- Dumfries & Galloway Biological Records Centre;
- Dumfries & Galloway Forestry Commission;
- East Ayrshire Council Biodiversity Officer;
- Scottish Natural Heritage; and

D.1.1.5 D.1.1.5.1 Species

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4 Flight activity surveys for the preferred route continued into autumn 2008 (an important survey period for migratory geese and swans) and winter 2008/09, in order to provide sufficient data to inform detailed route design, assessment of significant effects and development of any required mitigation (e.g. use of bird flight diverters to increase visibility to birds of the OHL and thereby reduce collision risk).

1 A preliminary desk study was completed at the outset of the routeing constraints study based on information provided for the route option Study Area by SNH and the RSPB. A more detailed desk study, to collate and review available ecological data from a wide range of organisations, was also carried out once the preferred route had been identified. The route option area (see Figure 9.01) was used for the desk study. The following organisations were contacted and ornithological data for the

- Ayrshire Biological Records Centre;
- Dumfries & Galloway Council Biodiversity Officer;
- Royal Society for the Protection of Birds;

• South Strathclyde and Dumfries and Galloway Raptor Study Groups.

Study Area General Ornithological Interest

1 Bird species of conservation concern that were known or considered likely to be present in the area and that have relatively greater sensitivity to overhead power line development, are listed in Table 1 below. This list of species is based on an understanding of the habitat types present, from initial site surveys, prior experience of the area, winter flight activity surveys, counts at waterbodies, consultation with local ornithologists and with the RSPB.

Table D1.1 - Bird Species (breeding, passage or wintering) of Conservation Concern, and Sensitive to Overhead Power Line Development, Potentially Present in the Study Area

Common Name	Latin Name	Sch. 1 ⁱ	Ann. 1 ⁱⁱ	UK BAP ⁱⁱⁱ	BoCC ^{iv}
Whooper swan	Cygnus cygnus	x	x		amber
Bean goose	Anser fabalis				amber
Pink-footed goose	Anser brachyrhynchus				amber
Greenland white-fronted goose	Anser albifrons albifronis		x	x	red
Greylag goose	Anser anser				amber
Wigeon	Anas penelope				amber
Teal	Anas crecca				amber
Pintail	Anas acuta				amber
Shoveler	Anas clypeata				amber
Goldeneye	Bucephala clangula				amber
Red kite	Milvus milvus	x	x		amber
Hen harrier	Circus cyaneus	x	x		red
Goshawk	Accipiter gentilis	x			
Osprey	Pandion haliaetus	x	x		amber
Common kestrel	Falco tinnunculus				amber
Merlin	Falco columbarius	x	x		amber
Peregrine falcon	Falco peregrinus	x	x		
Black grouse	Tetrao tetrix			x	red
Oystercatcher	Haematopus ostralegus				amber
Lapwing	Vanellus vanellus			x	red
Common snipe	Gallinago gallinago				amber
Woodcock	Scolopax rusticola				amber
Curlew	Numenius arquata			x	amber
Common redshank	Tringa totanus				amber
Black-headed gull	Larus ridibundus				amber
Common gull	Larus canus				amber
Barn owl	Tyto alba	x			amber
Short-eared owl	Asio flammeus		x		amber
Nightjar	Caprimulgus europaeus		x	x	red

i. Species listed on Schedule 1 to the Wildlife and Countryside Act 1981 (as amended). ii. Species listed on Annex 1 of the Council Directive 79/409/EEC on the conservation of wild birds.iii. Priority species in the UK Biodiversity Action Plan.iv. UK Birds of Conservation Concern status (Eaton et al. 2009).

2 Species identified as being of particular concern for this project, given the locations and habitat types present, were species of conservation status and species with a high risk of collision with overhead lines (particularly whooper swan, Greenland white-fronted goose and greylag goose). Greenland white-fronted goose and greylag goose are qualifying species for the Loch Ken and River Dee Marshes Special Protection Area (SPA), see below, which lies to the south of the proposed power line route. This region of south-west Scotland holds nationally important populations of black grouse (also considered to be at a relativity high risk of collision with overhead wires) and red kite. Black grouse has undergone marked population declines and range contraction over recent decades. As a consequence it has been placed on the

UK Red list as a species of conservation concern and is a national Biodiversity Action Plan species.

D.1.1.5.2 **Designated Sites**

- 1 Based on the findings of a preliminary desk study, the emerging proposed route does not pass through any statutory sites designated for nature conservation interest (e.g. SPA, SAC, SSSI, NNR). There are a number of areas of woodland that are included within the Ancient Woodland Inventory that are within the route survey corridor (see Figures 8.02-8.05). The potential for non-statutory sites designated for nature conservation value to be affected by the proposed overhead line will be explored in consultation with the appropriate organisations as part of the detailed desk study.
- 2 Approximately 7km to the south-west of the emerging proposed route is the Loch Ken and River Dee Marshes SPA and Ramsar Site. The site qualifies for designation under the EC Birds Directive due to providing wintering habitat for internationally important numbers of Greenland white-fronted and greylag goose.
- 3 The Loch Ken and River Dee Marshes also support important assemblages of breeding and wintering waterbirds, including common tern (Sterna hirundo) and kingfisher (Alcedo atthis), both Annex 1 species; wigeon (Anas penelope); teal (Anas crecca); mallard (Anas platyrhynchos); shoveler (Anas clypeata); tufted duck (Aythya fuligula); goosander (Mergus merganser); water rail (Rallus aquaticus); coot (Fulica atra); oystercatcher (Haematopus ostralegus); lapwing (Vanellus vanellus); redshank (Tringa tetanus); curlew (Numenius arquata); and black-headed gull (Larus ridibundus). In addition to the wintering geese, the following species of wintering wildfowl are notable: whooper swan; bean goose (Anser fabalis); wigeon; teal; pintail (Anas acuta); goldeneye (Bucephala clangula); and smew (Mergus albellus).

D.1.1.6 Survey Areas

- 1 The bird survey areas, based on the preferred/proposed OHL, route corridor were defined as follows:
 - A 1km wide corridor (centred on the preferred route) for breeding bird surveys (i.e. 500m either side of the emerging preferred route);
 - 2-4km wide corridor for breeding Schedule 1 raptor surveys (i.e. up to 2km either side of the preferred route, depending on species);
 - 3km wide corridor for the black grouse lek survey (i.e. 1.5km either side of the preferred route); and
 - c. 2km wide corridor for bird flight activity surveys (i.e. c. 1km either side of the preferred route).
- 2 Systematic assessment of feeding and roosting activity by wildfowl (i.e. geese and swans, in particular) was undertaken during the winter and passage periods within a c. 4km wide corridor (depending on the relative importance of the site).
- The corridor widths were chosen to reflect the sensitivity of different bird species to 3 disturbance and, in part, to allow for potential deviations of the proposed preferred route and to minimise the risk of gaps in survey data (e.g. if the route alignment moved beyond a narrower survey area).

- substation, north to Dalmellington.
- species (e.g. geese and swans).

D.1.1.7 Summary of Field Surveys

- - preferred OHL route corridor.

4 The flight activity survey was designed to include sampling of bird flight activity associated with the existing transmission line (the 'N-route') from Kendoon

5 A bird carcass search study was also undertaken along suitable sections of the existing N-route line between Kendoon and Dalmellington, during the autumn winter 2008/09. The sections of existing line where selected on the basis of relatively high levels of bird flight activity indicated by previous flight activity surveys. Flight activity surveys continued throughout the bird carcass search study. The intention was to use these data to derive estimates of location specific collision rates for target

1 The following is a summary of the surveys that were carried out. Further detail on methods is provided in Section 2 of this appendix:

• Autumn / winter assessment of flight activity within the route option Study Area: watches from 23 vantage points (VPs) (see Figure 9.02-9.04) from October 2007 to February 2008, from VPs covering open / unforested habitats within the routeing corridor; 3-hour observation bouts completed approximately three times per month at varying times during daylight hours.

 Flight Activity Surveys from strategically located vantage points from April 2008 - March 2009, with particular focus on species or groups of species potentially sensitive to OHL development. Particular focus was given to assessing flight activity by raptors and wildfowl of conservation concern within the proposed/

· Counts of waterbirds at lochs located in the general area of the proposed OHL were completed approximately once per month during the periods December 2007 to April 2008 and September 2008 to April 2009. Lochs that were counted included: Bogton Loch; Burnton Loch; Carsfad Loch; Earlston Loch; Kendoon Loch; Knockman Loch; Lochinvar Reservoir; Loch Brack; Loch Doon; Loch Howie; Loch Muck; Loch Skae; Regland Loch; and Wee Berbeth Loch.

 Moorland Breeding Bird Survey, following an adapted version of the Brown and Shepherd (1993) method for censuring upland breeding wader populations, was completed during the period April - June 2009, focusing on moorland breeding waders and passerines within all unenclosed areas of open moorland within the 1km survey corridor. Due to timing of access permission being granted, the 2008 survey occurred outside the optimal temporal range (i.e. it commenced in June 2008) and therefore a full survey was completed in April 2009 - June 2009.

 Lowland Breeding Wader Survey following the O'Brien and Smith (1992) method for censusing lowland breeding wader populations was completed during April - June 2009. This involved a survey of lowland enclosed fields within the route corridor. Due to timing of access permission being granted, the 2008 survey occurred outside the optimal temporal range (i.e. it commenced in June 2008) and therefore a full survey was completed in April 2009 - June 2009.

· Breeding bird survey of field margins, hedges and shelterbelts following an adapted version of the BTO UK Breeding Bird Survey Method, was conducted between April and June 2008. Due to timing of access permission being granted, the 2008 survey occurred outside the optimal temporal range (i.e. it commenced in June 2008) and therefore a full survey was completed in April 2009 - June 2009.

- Woodland Breeding Bird Survey, involving walked transects and timed point counts within larger areas of commercial conifer plantation and semi-natural woodland, was completed between April and June 2008. Access permissions to most woodland area within the survey corridor was in place prior to April 2008 allowing an almost complete survey to be completed. Additional woodland breeding bird surveys were completed between April and June 2009 due to changes in the proposed route subsequent to the 2008 surveys and to also include some area of woodland where access permission was not in placed during the 2008 survey period.
- Specific species surveys not encompassed by the moorland, lowland and woodland surveys in 2008 and 2009, included black grouse lek surveys of all suitable habitats to within 1.5km either side of the preferred route corridor (between April and May 2008) and nightjar surveys of all suitable habitat to within 500m either side of the preferred route corridor (in late May 2008 and May - July 2009). Also, where desk study information and flight activity surveys indicated that there was the potential for communal raptor winter roosting sites (i.e. red kite and hen harrier, in particular) to be present in the vicinity of the proposed route corridor, additional monitoring was required to assess the potential risk to birds using these sites.
- Breeding raptor surveys (focusing on birds of prey listed on Schedule 1 of the Wildlife and Countryside Act 1981 and/or Annex 1 of the EC birds Directive) of suitable habitats up to 2km from the preferred/proposed OHL route were carried out in 2008 and 2009. These surveys were based on species specific methods described in Gilbert et al. 1998 and Hardey et al. 2006. The breeding raptor survey in 2008 was, due to limited land access permission, confined to the core survey area (i.e. 1km corridor). A full breeding raptor survey within the 4km wide survey corridor was carried completed from March - July 2009.
- Breeding woodland owl surveys were conducted in all suitable habitats within a 2km wide corridor centred on the preferred / proposed OHL route. Surveying in 2008 was confined to the core survey area (i.e. 1km corridor). Survey visits were undertaken between late May and early August 2008 (between dusk and midnight) to record breeding activity. A full survey was completed from March -July 2009.

Further detail on survey Methods D.1.2

D.1.2.1 Flight Activity Surveys

D.1.2.1.1 Flight Activity Survey Method

- 1 The aim of the bird flight activity surveys was to systematically record the use of the preferred/proposed OHL route corridor by key sensitive species / taxonomic groups (e.g. divers, grebes, herons, ducks, geese, swans, waders, raptors and black grouse) and the proportion of time that they spend flying at different elevations relative to the position of the existing and proposed OHLs. The data was used to determine important flight corridors and areas of relatively high activity, in order to inform an estimate of the potential collision risk, including electrocution risk, displacement and disturbance impacts and to inform the overhead grid connection outline and detailed route selection process.
- 2 The field survey methods were based on the standard methodology used for assessment of bird collision risk for onshore windfarm proposals (SNH 2005). This approach has been used due to the methodology being well-established for windfarm proposals and being readily transferable to the Blackcraig & Margree OHL project by adjusting the flight height bands.
- 3 During flight activity surveys observers gave specific attention to more sensitive species. These were divided in two groups:
 - Target Species / Groups red kite, hen harrier, goshawk, golden eagle, osprey, merlin, peregrine falcon, wildfowl (i.e. whooper swan, greylag goose, pink-footed goose, Greenland white-fronted goose), waders (e.g. golden plover), barn owl, short-eared owl and black grouse: and
 - · Secondary Species / Groups All other raptors not listed above (excluding buzzard), cormorant, grebes, divers, all other waders and wildfowl.
- 4 Time budget information on bird flight activity was collected during watches from VPs. VP locations were selected to ensure good visual coverage of the survey corridor.
- 5 VP watches were undertaken between 09.00 and 20.00 hrs (winter / passage period surveys included dawn and dusk watches, as well) by a single observer in conditions of good ground visibility (>3km) and when cloud base was at least 500m higher than the most elevated ground observed. Evenly spaced watches were carried out from each VP, through each month within the survey period.
- 6 During each VP watch the area in view was scanned constantly until a target or secondary species was detected in flight (target species were followed in preference to secondary species). Once detected, the bird was followed until it ceased flying or was lost to view. The route flown by the bird was plotted in the field onto 1:10 000 scale maps, indicating the direction of flight. The birds' elevation above the ground / tree canopy was estimated and placed in three height bands at the point of detection and at 15 second intervals thereafter.
- 7 Flight height categories were recorded for every bird observed, corresponding to flights below, within and above the potential conductors and earth-wire heights. This proposal consists of two main OHL designs carrying 132kV circuits:

- limited locations.
- therefore classified as follows:
- sits within this band);
- High (H) = 30–100m; and
- Very high (VH) = >100m.

- flight activity surveys.



• 12 (six pairs) conductors and a single top earthwire supported on L7H steel lattice towers from Dalshangan to Meikle Hill substation; and

• 3 separate phase conductors in a flat formation with an earthwire carried underneath the phase conductors supported on heavy duty wood pole from Blackcraig and Margree windfarm substations to Dalshangan.

8 The L7H Towers will support six sets of paired conductors attached at c. 15.5m, 20.1m and 24.9m above ground level with the earth wire at up to c. 29.5m. For the heavy duty wood pole overhead line, the conductors will typically be attached at 14m above ground level. The statutory minimum ground clearance for a 132 kV OHL is 6.7m. It has therefore been assumed that the conductors on the L7H Tower section of the OHL could range in height above ground level from 6.7 to 24.9m with the earth wire at a top height of 29.5m. The proposed wood pole OHL wires are assumed to range between 6.7 to 14m in potential height above ground level (the earth wire is slung below the conductors on the wood pole OHL). In both cases (i.e. L7H Tower and wood pole) there is the potential for the highest point to be exceeded in some

9 Based on these parameters the height bands used in flight activity surveys were

• Low (L) = <5m (below the minimum 132 kV ground clearance threshold);

• Medium (M1) = 5-20m (the max vertical range in line position for the wood pole

• Medium (M2) = 20-30m (up to the maximum height of the L7H Towers);

10 More than one height category could be recorded for each bird observed. The results of the flight activity surveys were used to calculate an estimate of bird collision risk.

11 The locations of any raptor display flights (e.g. goshawk, peregrine, short-eared owl, hen harrier) were recorded, so that the areas covered by the birds could be mapped, and the variation in flying height during display behaviour noted.

12 In order to reduce the potential for observer effect, surveyors observed from as discrete a position as possible (i.e. avoiding exposed hill tops). In addition, reaction by birds in flight to observer presence was noted and data subsequent to the behavioral reaction was discounted. Where possible, the VPs were chosen to have overlapping areas of view, to enable these areas to be covered from an adjacent VP.

13 All observers were instructed to complete, in advance of formal recording, an on-site exercise in estimating flight heights to improve the accuracy and consistency of the

D.1.2.1.2 October 2007 – Early April 2008

1 Regular, timed watches were undertaken from 23 VPs (vantage points) strategically located within the OHL route option Study Area to quantify flight activity by key species and to identify the location of any regularly used 'flight-corridors', concentrations of birds or the presence of particularly sensitive species during the winter period. The VP locations were selected to provide an overview of the majority of the route option Study Area. Three timed watches per month were undertaken at each VP. One 3-hour dawn or dusk watch and one 3-hour day-time watch were completed each month. For each VP, a minimum of 36 hours of watches were completed during the survey period. The approximate National Grid References for each VP are given in Table 2 below.

Table D1.2 - Location of VPs for Flight Activity Surveys Completed from October 2007 - Early April 2008.

VP No.	VP Name	National Grid Reference		
1	Black Mark Burn	NX	70312	85201
2	Corriedo Forest	NX	68829	83717
3	Milnmark	NX	66569	82187
4	Holy Linn	NX	65240	81319
5	Mulloch Hill	NX	63140	80656
6	Waterside Hill	NX	60973	81839
7	Polharrow Bridge	NX	60060	84109
8	Earlstoun Loch	NX	61910	82718
9	The Cleugh	NX	61373	86908
10	Glenhoul	NX	61469	87982
11	Sheil Hill	NX	61842	89284
12	Dalshangan	NX	59326	89042
13	Carminnows	NX	59151	92126
14	Bardennoch Hill	NX	56737	91830
15	Holme Hill	NX	55246	95344
16	Lamford Hill	NX	53496	98053
17	Dodds Hill	NX	53747	99201
18	Eriff	NX	51722	99900
19	Glenmuck	NS	50648	02498
20	Craigengillen	NS	48289	02732
21	Bogton Loch	NS	46433	05696
22	River Doon	NS	45704	06064
23	Clawfin	NS	50481	07343

D.1.2.1.3 Flight Activity Surveys: April 2008 - August 2008

1 Flight activity surveys were undertaken from 21 VPs during this period. The VP locations were chosen so that all of the emerging preferred route corridor was visible to within a minimum of c. 2km from all VP locations combined. Two - three watches were carried out at each VP per month. Watches were rotated so that they included the following daytime periods: Dawn (sunrise -1hr to sunrise +3hrs); Morning (sunrise +3hrs to sunrise +7hrs); Afternoon (sunrise +7hrs to sunrise +11hrs); and Dusk (sunset -3hrs to sunset +1hr). For each VP, a minimum of 36 hours of total observation time was completed during the survey period. The approximate National Grid References for each VP are given in Table 3.

Table D1.3 - Location of VPs for Summer Flight Activity Survey (April 2008 – August 2008)

VP No.	VP Name	Nat	ional Grid Re	eference
10	Glenhoul	NX	63871	87653
12	Dalshangan	NX	59326	89042
14	Bardennoch Hill	NX	56737	91830
15	Holme Hill	NX	55246	95344
16	Lamford Hill	NX	53496	98053
18	Eriff	NX	51722	99900
24	Meikle Hill	NS	52652	07782
25	Clawfin Bridge	NS	50841	07445
26	Bellsbank	NS	48627	05135
27	Glenmuck Craig	NS	50275	03541
28	Troston Knowe	NS	50684	01753
29	North Liggat	NX	57128	93124
31	Dundeugh	NX	60120	87430
32	Glenhoul Lodge	NX	61240	87370
33	Arndarroch	NX	61780	88970
35	Craigencorr Hill	NX	64490	87400
36	Glenshimmeroch Hill	NX	65551	87551
37	Hog Hill	NX	66787	86480
38	Shield Willie Hill	NX	68630	85670
39	Wallace's Rig	NX	68961	84760
40	Knockman Hill	NX	67691	83699

D.1.2.1.4 Flight Activity Surveys: September 2008 - March 2009

1 Flight activity surveys continued during the autumn of 2008 and winter 2008/09 using the same VPs as had been adopted for the April to August 2008 survey period. A minimum of 36 hours of observations were completed at each VP during this period, following a similar approach to varying the watch bout relative to daylight hours as was adopted for the previous survey periods.

D.1.2.1.5 Overview of Collision Estimation Methods

- 1 The following provides a summary of the approach used to derive estimates of annual collision mortality for relevant bird species. The calculation of estimates of collision rates is essentially a three-stage process, summarised as follows:
 - Rates of flights by birds through the space which is occupied by the power line (i.e. the collision risk zone; accounting for margins of error in recording bird flight lines) is estimated from observation (i.e. the number of 'transits' through this space, or degree of 'exposure' to collision risk);
 - · Estimates of the annual 'residence period', during which the species of interest is present within the area and potentially exposed to the collision risk, are made. This estimate may also be adjusted to account for periods of increased vulnerability (e.g. estimated proportion of the residence period when poor weather is predicted, or for some species with clear patterns of daily flight activity the period of vulnerability may not be throughout daylight hours); and

- route corridor as outlined above.

D.1.2.2 **Moorland Breeding Bird Survey**

- poor (<300m).
- that is:
- Nests, eggs or young were located;
- Adults repeatedly alarm called;
- Birds were seen carrying food to nest or young;

• The proportion of those flights through the collision risk zone which will result in a collision is determined either by a mathematical model of the power line array, which takes into account relevant bird biometrics, and / or the application of an appropriate avoidance rate (i.e. 1 - the collision rate) derived from studies of bird collision risk for similar power lines (or site-specific carcass retrieval surveys) and similar species, available in the scientific literature.

2 Estimations of bird transit rates through the collision risk zone were derived from timed watches from strategic vantage points located along the proposed power line

3 In addition, an assessment of the overall electrocution risk for target species, secondary species and species thought to be vulnerable to electrocution, based on what is known from the current literature, was undertaken. The risk assessment takes into account a number of factors including:

 Size of species - larger perching species are more prone to electrocution, as they potentially have the capacity to bridge two conductors; and

 Behaviour – use of overhead grid connection infrastructure as hunting posts and nest locations increases the potential risk of electrocution.

1 An estimation of the number of breeding pairs of moorland birds was derived using a version of the Brown and Shepherd (1993) 'constant search method' for censusing upland breeding wader populations. All moorland and semi-open habitat within the area was surveyed following this methodology.

Three visits were carried out between April and June 2009, at least 4 weeks apart. Fieldwork was conducted between 06.30-18.00 and was not undertaken in high winds (greater than Beaufort force 5), in persistent rain / snow or when visibility was

3 The survey included all bird species (with the exception of meadow pipit, where numbers were particularly high). The open areas of the survey area (i.e. outside of the forestry) were covered by a defined walked route to ensure that all ground was visible, pausing at appropriate vantage points (approximately every 100m) to visually scan and listen. Rivers, streams and ponds were visited and carefully checked. All open areas and forest edges were approached to within 100m. In order to achieve a level of survey effort that was consistent and compatible with other, similar surveys, approximately 20-25 minutes was spent covering each open area of 500 x 500m.

4 Emphasis was placed on mapping the locations of birds exhibiting breeding behaviour,

- Birds were observed displaying or singing;

- Distraction displays were seen; and
- Territorial disputes were seen.
- 5 Distance to the registration, the location of birds exhibiting any of these behaviours, or the location of any nests or eggs encountered, were estimated and marked on a 1:10 000 scale map of the site. The sex of the birds or the presence of pairs was noted, where possible.
- 6 Following completion of the survey, data was compiled onto a map showing the location and density of breeding territories or breeding pairs estimated within the open areas. Numbers/pairs of territories are determined by comparing the three visit maps. Between visits breeding records or territories in open habitats were considered to be separate from each other if they were more than 1000m apart for waders (with the exception of snipe where 500m is applied), and 200m for skylark and other passerines. The central location of each territory/breeding location, within and between visits, was plotted on a final map for presentation.
- 7 Records of non-breeding species were made, including flying birds (a note of the species, height and direction of flight was made).

D.1.2.3 Lowland Breeding Wader Survey

- 1 In areas of lowland enclosed farmland, an estimation of the number of breeding pairs of birds was derived using a version of the O'Brien and Smith (Gilbert et al. 1998) survey method for lowland waders. All enclosed fields within the Study Area were surveyed.
- 2 Two visits were undertaken (May to June), at least one week apart. Surveys were not undertaken in unsuitable weather conditions (i.e. cold, wet and / or wind speed greater than Beaufort force 3). Surveys were carried out between dawn and 12.00 BST.
- 3 All fields within the survey area were numbered. Each field was walked so that the area was observed from a distance of at least 100m. Registrations of waders (and all other birds) were recorded on a 1:10 000 scale map using standard Common Birds Census recording codes and symbols (Marchant 1983). Each recorded bird was allocated to the field in which it was observed.
- 4 The mapped results of the two visits were combined. The total number of pairs and their exact location (where possible) were recorded for each field and plotted on a 1:10 000 scale map of the Study Area.

D.1.2.4 Breeding Bird Survey of Field Margins, Hedges and Shelterbelts

1 This survey was adapted from the BTO Breeding Bird Survey Method. Two visits were undertaken. The first visit was carried out between early April and mid-May 2009 (early transect count) and the second visit (late transect count) at least four weeks after the first visit. The walked transect route was to within 100m of all ground in the survey area of each enclosed field. The route was walked at a slow pace, pausing at intervals to listen for song and to observe bird behaviour. Registrations were recorded on a 1:10 000 scale map using standard Common Birds Census recording codes and symbols (Marchant 1983).

2 The mapped results of the two visits were combined. The total number of pairs and their exact location (where possible) were recorded for each field and plotted on a 1:10 000 scale map of the Study Area.

D.1.2.5 Woodland Breeding Bird Survey

- 1 Isolated trees, scrub-patches, hedgerows and copses were surveyed as part of the open upland survey (see above). In addition, dominant forestry rides and forest edges were also surveyed for breeding birds, following a similar approach as was adopted for the open areas.
- 2 Woodland / forest breeding birds were surveyed as follows: a map was compiled showing all woodland / forest areas on the site and was clearly labelled according to dominant forest type, classified as (1) coniferous; (2) broadleaved; and (3) conifer / broadleaf mix. Forest growth stages were classified as (1) establishment; (2) developing pre-thicket; (3) thicket, pole & high forest; (4) clear-fell and (5) prethicket restock.
- 3 Growth stage categories were defined as:
 - Establishment Newly established forest plantations, fenced less than three years previously. Characterised by prolific herb layer. Planted trees <1m tall;
 - Developing pre-thicket First-rotation forest plantations (excluding new forest) before canopy closure. Usually <10 years old. Characterised by prolific herb layer with varying shrub layer development. Trees generally >1m tall; much open space between lines of planting;
 - Thicket, pole or high forest Closed-canopy forest plantations. Usually >10 years old. Characterised by absence of herb or shrub layer, except in rides between stands of trees and in small patches of unplanted ground or failed crop;
 - · Clear-fell Harvested plantation not yet restocked with trees. Characterised by limited development of herb and shrub layer and brash and tree root-plates from the previous crop; and
 - · Restock Second-rotation forest plantations before canopy closure. Characterised by varying herb and shrub layer development and brash and tree root-plates from the previous crop. Much open space between lines of planting.
- 4 Woodlands were surveyed by the point count method (early morning) and by walked transects (between 08.30 and 18.00 hrs).

D.1.2.5.1 Point Counts

1 Two visits were undertaken for each forest type and growth stage (visit dates as for the survey of open upland), each involving a minimum of five point counts. Additional point counts were undertaken in large forest areas. This was defined following preparatory site visits and a review of forestry maps.

- were noted.

D.1.2.5.2

survey methodology above.

D.1.2.6 **Breeding Raptor Surveys**



2 Fieldwork was undertaken between sunrise and sunrise + five hours. Points were located roughly equidistant across blocks being surveyed, ensuring that the forest edge as well as the centre was sampled. Counts lasted exactly five minutes and a single recording form was completed for each point count.

3 Birds were only considered to be present within breeding territories if any of the following are observed: song / courtship / display, bird engaged in territorial behaviour / territorial dispute, nest-building (including excavating nest-hole), adult visiting probable nest-site, location of nest or newly fledged young, agitated behaviour of adult bird (e.g. repetitive alarm-calling, distraction display) indicating nearby presence of nest or young, bird carrying food to nearby nest or young, and / or bird removing faecal sac from nearby nest.

4 Approximate distances (to the nearest 10m) were recorded for cuckoo and song thrush. This was due to the fact that for both species breeding territory locations could be fairly accurately pinpointed. For all other species, total numbers of territories and individuals encountered within the given distance bands were recorded. In addition, raptor nesting sites and number of territories identified during the woodland survey

5 Recorded 'flyovers' related species that may have been breeding in forestry on the site and only to birds audible, or visible to the naked eye.. Flyovers did not include any birds landing or taking off and flying away (these were recorded as territories / individuals; source: Natural Research Ltd.).

Walked Transects

1 The routes of the walked transects were determined by the locations of the point counts; each forest transect consisted of the route walked between the two nearest point counts. All breeding bird registrations were recorded on a 1:10 000 scale map using standard Common Birds Census recording codes and symbols (Marchant 1983). Birds were considered present in breeding territories as outlined in the point count

1 Surveys to determine the presence and status of raptor species (focusing on species listed on Schedule 1 to the Wildlife and Countryside Act 1981) were carried out. Species-specific survey methods followed those described in Gilbert et al. (1998) and Hardey et al. (2006). Raptor surveys concentrated on areas of suitable breeding / foraging habitat (see Table 4, below) up to 2km from the proposed preferred route taking into consideration historical data (e.g. known historical nest sites, breeding territories) provided by the local Raptor Study Group. Data from the flight activity surveys was also used to inform where survey effort was focused.

2 Table 4 summarises the optimum survey periods for various phases of the breeding season for each Schedule 1 raptor species potentially breeding within the survey corridor (adapted from Hardey et al. 2006). Up to four visits to breeding locations were proposed. If it was established that there was no evidence of occupancy / breeding activity during visits 1 and 2, then follow-up visits were not undertaken. Where visit periods overlapped, and species were found to have similar habitat requirements, then fieldworkers concurrently looked for evidence of all species potentially present within the search area. Surveys generally required a mixture of walked transects, through suitable breeding habitat, searching for evidence of breeding activity / occupancy coupled with periodic watches over areas of suitable habitat from carefully located VPs (generally not the same VPs adopted for the flight activity survey) in appropriate weather conditions (i.e. avoiding periods of poor visibility, heavy rain and high winds). Table 5 provides further detail on species specific methods and criteria for recording breeding activity.

3 The potential to disturb Schedule 1 species and their nest sites/dependant young was carefully considered for all survey visits and the risk of disturbance kept to the minimum necessary to complete the survey. The survey method, or the data required for the EIA, did not require surveyors to approach active nest sites for any species. If disturbance to a nest site / breeding birds or their chicks was considered to be likely, then this survey was carried out by a suitably licensed fieldworker.

Table D1.4 - Indicative raptor species survey visit schedule and breeding habitat preferences (source: Hardey et al. 2006)

Species	Visit 1	Visit 2	Visit 3	Visit 4	Breeding habitat
Red kite	March - early April	Late April - mid-May	Late May - late June	July and August	Both mature conifer and broad-leaved forests are used in Scotland. Usually areas of well- wooded farmland are preferred.
Hen harrier	March - mid- April	Mid-April - late May	Late May - late June	Late June - late August	Moorland (below c. 600m) with abundance of old, deep heather; also heather in young conifer plantations.
Goshawk	March - April	Late April - May	June - early July	Late June - early August	Mature forests with high density of mature trees (height > 20m) and well developed canopy cover.
Merlin	Late March - April	Early May - early June	Mid - late June	July - early August	May nest on ground in heather, rocky outcrop or in old crow's nest. If nesting in coniferous plantation, open moorland will be close by.
Peregrine	March - early April	Late March - early May	Late May - mid June	Mid-June - early July	Usually prefer undisturbed cliffs and crags; alternative sites include quarries, nests on the ground, open-cast coal workings and mine excavations, low rocks on the top of moorland hills.
Barn owl	November - January	April - June	May - June	July - August	A variety of open farmland habitats and young conifer plantations. Majority of nest sites located below 150m elevation.
Short- eared owl	Early March - mid-April	Mid-April - May	June	July	Extensive area of open ground with an adequate density of small mammal prey - e.g. heather moorland, rough grassland, young forestry plantations, bogs, sand dunes and salt marshes.

Table D1.5 - Breeding raptor survey methods to establish occupancy and potential breeding locations, visits undertaken in March - May (source: Hardey et al. 2006, Gilbert et al. 1998)

Species	Summary of Technique	Time of day	Survey effort (March - May)	Crite
Red kite	Watches from VPs overlooking suitable breeding habitat from distance.	0700 - 1900 BST	Up to 5 visits, 3hr watches, evenly spread through period.	Aggression to crows, buzzards of A calling adult kite Circling by an adult kite over sat level) 'Curl' flights, where hunting fen Courtship flights A kite diving into a wood of flyir circling flight often with 'cork-so Agitated, wing-flicking display Carrying food, but only to a like Adult leaving nest site Adult carrying nesting material High perching by a single adult,
Hen harrier	Walked route (route will be mapped) and selected VPs	0700 - 1900 BST	2 visits, 3-4 weeks apart. All areas of suitable habitat to within 250m, VP watches overlooking suitable breeding habitat for 2-3hrs to locate display, food carrying, hunting.	Possible: A single bird seen in breeding se Probable: A pair seen in breeding season in A bird or pair apparently holdin Courtship/display/agitated beha Bird(s) nest building Birds(s) visiting probable nest si Proven: Food pass between 2 adults Adult carrying prey Used nest or eggshells found Nest with eggs Nest with young Recently fledged young
Goshawk	Watches from VPs overlooking suitable breeding habitat from distance.	Early morning in fine weather	5 visits, 3hr watch, evenly spread through period	Occupancy: High circling display/sky-dance f woodland Plucking sites with more than o Moulted flight feathers and dov Breeding: Carrying food, but only to a like Adult leaving nest site Adult carrying nesting material
Merlin	Walked route (route will be mapped) and selected VPs. All fence-lines, isolated posts, stone dykes, hummocks, boulders, stream banks, crags in suitable breeding habitat checked for faecal splash, pellets, pluckings, mounted feathers	0700 - 1900 BST, warm sunny days	2 visits, 3-4 weeks apart. All areas of suitable habitat to within 250m of all potential nesting habitat, forest rides within 100m of the plantation edge, VPs 2-3hrs to locate display, food carrying, hunting, aggression to corvids/ other raptors etc.	Possible: A single bird seen in breeding se Probable: A pair seen in breeding season i A bird or pair apparently holdin Courtship/display/agitated beha Bird(s) nest building Birds(s) visiting probable nest si Proven: Adult repeatedly carrying prey t Used nest or eggshells found Nest with eggs Nest with young Recently fledged young
Peregrine	Watches from VPs overlooking suitable breeding habitat from distance.	0700 - 1900 BST, warm sunny days	2 visits 3-4 weeks apart, 3hr watch at each location.	Occupancy: Display/courtship flights by an a Food passes between male and Agitated behaviour, Fresh prey remains, pellets, spla Moulted flight feathers and dow Breeding: Carrying food, but only to a like Adult leaving nest site Adult carrying nesting material

Criteria for occupancy / breeding

s, buzzards or another kite

kite over same area of wood for more than 2 minutes (at low

e hunting female returns to circle above nest every 4-15 minutes

wood of flying within a wood below canopy, typically performs a with 'cork-screw' dive into nest ing display

only to a likely nest site

single adult, particularly on top of conifer or dead tree

n breeding season in possible breeding habitat

ding season in possible breeding habitat rently holding a territory agitated behaviour

bable nest site

y/sky-dance flights over canopy by an adult(s) over same area of

more than one fresh prey item hers and down

only to a likely nest site site ing material

n breeding season in possible breeding habitat

ding season in possible breeding habitat rently holding a territory agitated behaviour

bable nest site

arrying prey to a specific location ells found

lights by an adult(s) en male and female

, pellets, splash hers and down

only to a likely nest site site ing material
Species	Summary of Technique	Time of day	Survey effort (March - May)	Criteria for occupancy / breeding
Barn owl	All	potential nest sites recorde	d during raptor preliminary\reconnaissance surveys	and visited outside of nesting period to check for evidence of breeding.
Short-eared owl	Walked route (route will be mapped) and selected VPs. All isolated prominent features (e.g. knolls, boulders etc.) in suitable breeding habitat checked for pellets, pluckings, mounted feathers	0700 - 1900 BST, warm sunny days	2 visits, 3-4 weeks apart. All areas of suitable habitat to within 250m of all potential nesting habitat, VPs 2-3hrs to locate display, food carrying, hunting, aggression to corvids/other raptors etc.	Possible territory: Bird(s) seen in breeding season in possible breeding habitat Bird(s) mobbing corvids/ other raptors over an area Confirmed territory: Courtship/display/agitated behaviour Bird(s) repeatedly carrying prey to a specific location Active nest located

4 At the end of the survey all breeding records were collated and assigned an appropriate category (e.g. probable, possible, confirmed, failed, successful) and mapped as accurately as possible (following methods as set out in Gilbert et al. 1998). Standard Common Birds Census recording codes and symbols were used (Marchant 1983).

D.1.2.7 Forest Owl Surveys

- 1 The determination of the occupation of suitable breeding habitat by forest owl species was undertaken between March and April 2009.
- 2 Long-eared owl surveys were carried out in suitable habitat between dusk and c. midnight. As males may be silent for most of the year, the survey was conducted between February and late April, when territorial males are most vocal.
- 3 Tawny owl territories were located by visiting suitable habitat in winter and early spring and listening for calls. Visits were shortly after sunset on dry still nights (e.g. in March).
- ⁴ For long-eared owl and tawny owl, fledged young were located by listening for their begging calls, during dusk to c. midnight survey visits from June to July. Play-back of recorded calls was also used to aid forest owl and nightjar and surveys.

D.1.2.8 Nightjar Survey

A survey of nightjar breeding activity was completed in areas of suitable habitat over two repeat visits in June and July (separated by at least two weeks). All suitable forest habitats (e.g. clearfell and restock plantation) were surveyed at dusk. The position of churring males was marked on a map, using a code for each bird as described in Gilbert et al. (1998). A second visit was made to confirm the number of churring males. If churring was heard from two locations up to 30 seconds apart, this was recorded as two separate males, if the two were >400m apart. Survey data from the two visits was combined to report the total number of separate churring males on the site.

D.1.2.9 Black Grouse Surveys

CAPITA LOVEJOY

In order to supplement observations of black grouse made during the Breeding Bird Survey (and casual records during watches of bird flight activity), dawn visits were undertaken in calm weather in April - mid-May 2008 and 2009, with the specific aim of listening for lekking grouse in suitable habitat (within 1.5km of the preferred/ proposed route corridor).

- 2 The survey followed the methods as described in Gilbert et al. (1998). The assessment was concentrated in areas identified during establishment of the breeding bird survey that appeared to be suitable for lekking grouse. Areas that were identified as historical lekking sites from previous records (e.g. RSPB) and reliable anecdotal evidence were also a focus of the survey effort.
- 3 A reconnaissance survey was completed in suitable weather conditions (i.e. calm conditions) of all areas of suitable habitat, to listen and watch for lekking activity. The number of dawn visits depended on the number of leks found. Once lekking activity had been recorded and the location of the lek established, a follow-up dawn count (within three days of the lek being located) was carried out. To avoid disturbing birds as they arrived, surveyors were in position at least an hour before sunrise. The maximum number of males attending the lek was counted in the period between one hour before and one hour after dawn. All males (not just those displaying) and females were counted. Lekking areas that were >200m apart were considered as separate leks.

D.1.3 References

- APLIC (Avian Powerline Interaction Committee) (1994) Mitigating Bird Collisions with powerlines: the state of the art in 1994. Edison electric Institute, Washington, DC
- Brown, A.F. and Shepherd, K.B. (1993). A method for censusing upland breeding waders. Bird Study. 40: 189-195.
- Ferrer M. Janss F.E. (1999). Birds and Power lines. Quercus Publishers.
- Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods. Royal Society for the Protection of Birds, Sandy, Bedfordshire.
- Hardey, J., Crick, H.Q.P., Wernham, C.V., Riley, H.T., Etheridge, B. and Thompson, D.B.A. (2006). *Raptors: a Field Guide to Survey and Monitoring*. The Stationary Office, Edinburgh.
- Haas, D., Nipkow, M., Fielder, G., Schneider, R, Haas, W., Schürenberg B. (2005). Protecting birds from powerlines. Nature and environment, No. 140. Council of Europe
- Marchant, J.H. (1983) Common Birds Census Instructions. British Trust for Ornithology, Tring





SNH (2005). Survey Methods for Use in Assessing the Impacts of Onshore Windfarms on Bird Communities, SNH (2005).

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D.2 Results of the Ornithological Desk Study

D.2.1 Introduction

1 This appendix details the results of an ornithological desk study undertaken for the Blackcraig & Margree windfarms OHL EIA project that was completed between 2008 and 2009 and relates only to non-sensitive records, i.e. it excludes breeding records of species listed on Schedule 1 of the Wildlife and Countryside Act (1981 as amended). Such sensitive records are provided in a separate Confidential Ornithological Appendix.

D.2.1.1 Geese & Swans

Table D2.1 - Royal Society for the Protection of Birds (RSPB) Records 2009, relating toa Study Area associated with Section 4 of the proposed OHL

Species	Site Name	Ref No	Site Grid Ref	Avian Presence	Avian Count Min	Count Unit Abbr	Breed Status Code	Breed Status Abbr	Start Date	End Date
Barnacle Goose	Ken-Dee Marshes	RSPB 1	NX637763	Y	0	INDIV	U	UNK	19970301	19970331
(Branta leucopsis)	Ken-Dee Marshes	RSPB 2	NX637763	Y	0	INDIV	U	UNK	19971101	19971130
	Ken-Dee Marshes	RSPB 3	NX637763	Y	2	INDIV	U	UNK	19991101	19991130
	Ken-Dee Marshes	RSPB 4	NX637763	Y	1	INDIV	U	UNK	20001001	20001031
	Ken-Dee Marshes	RSPB 5	NX637763	Y	3	INDIV	U	UNK	20001201	20001231
	Ken-Dee Marshes	RSPB 6	NX637763	Y	6	INDIV	U	UNK	20010201	20010228
	Ken-Dee Marshes	RSPB 7	NX637763	Y	3	INDIV	U	UNK	20011101	20011130
Greenland White-Fronted Goose	Ken-Dee Marshes	RSPB 8	NX637763	Y	0	INDIV	U	UNK	19970301	19970331
(Anser albifrons flavirostris)	Ken-Dee Marshes	RSPB 9	NX637763	Y	0	INDIV	U	UNK	19971001	19971031
	Ken-Dee Marshes	RSPB 10	NX637763	Y	0	INDIV	U	UNK	19971101	19971130
	Ken-Dee Marshes	RSPB 11	NX637763	Y	0	INDIV	U	UNK	19980201	19980228
	Ken-Dee Marshes	RSPB 12	NX637763	Y	0	INDIV	U	UNK	19980301	19980331
	Ken-Dee Marshes	RSPB 13	NX637763	Y	230	INDIV	U	UNK	19981001	19981031
	Ken-Dee Marshes	RSPB 14	NX637763	Y	309	INDIV	U	UNK	19981101	19981130
	Ken-Dee Marshes	RSPB 15	NX637763	Y	335	INDIV	U	UNK	19981201	19981231
	Ken-Dee Marshes	RSPB 16	NX637763	Y	257	INDIV	U	UNK	19990101	19990131
	Ken-Dee Marshes	RSPB 17	NX637763	Y	225	INDIV	U	UNK	19991001	19991031
	Ken-Dee Marshes	RSPB 18	NX637763	Y	250	INDIV	U	UNK	19991101	19991130
	Ken-Dee Marshes	RSPB 19	NX637763	Y	304	INDIV	U	UNK	20000101	20000131
	Ken-Dee Marshes	RSPB 20	NX637763	Y	261	INDIV	U	UNK	20000201	20000229
	Ken-Dee Marshes	RSPB 21	NX637763	Y	284	INDIV	U	UNK	20000301	20000331
	Ken-Dee Marshes	RSPB 22	NX637763	Y	210	INDIV	U	UNK	20001001	20001031
	Ken-Dee Marshes	RSPB 23	NX637763	Y	208	INDIV	U	UNK	20001201	20001231
	Ken-Dee Marshes	RSPB 24	NX637763	Y	300	INDIV	U	UNK	20010201	20010228
	Ken-Dee Marshes	RSPB 25	NX637763	Y	150	INDIV	U	UNK	20011101	20011130
	Ken-Dee Marshes	RSPB 26	NX637763	Y	265	INDIV	U	UNK	20011201	20011231
	Ken-Dee Marshes	RSPB 27	NX637763	Y	250	INDIV	U	UNK	20020201	20020228
Greylag goose	Ken-Dee Marshes	RSPB 28	NX714684	Y	1194	INDIV	w	WINT	20010101	20061231
(Anser anser)	Ken-Dee Marshes	RSPB 29	NX637763	Y	0	INDIV	U	UNK	19970301	19970331
	Ken-Dee Marshes	RSPB 30	NX637763	Y	0	INDIV	U	UNK	19970401	19970430
	Ken-Dee Marshes	RSPB 31	NX637763	Y	0	INDIV	U	UNK	19971001	19971031
	Ken-Dee Marshes	RSPB 32	NX637763	Y	0	INDIV	U	UNK	19971101	19971130
	Ken-Dee Marshes	RSPB 33	NX637763	Y	0	INDIV	U	UNK	19980301	19980331
	Ken-Dee Marshes	RSPB 34	NX637763	Y	58	INDIV	U	UNK	19981001	19981031

Species	Site Name	Ref No	Site Grid Ref	Avian Presence	Avian Count Min	Count Unit Abbr	Breed Status Code	Breed Status Abbr	Start Date	End Date
	Ken-Dee Marshes	RSPB 35	NX637763	Y	250	INDIV	U	UNK	19981101	19981130
	Ken-Dee Marshes	RSPB 36	NX637763	Y	130	INDIV	U	UNK	19981201	19981231
	Ken-Dee Marshes	RSPB 37	NX637763	Y	1	INDIV	U	UNK	19990401	19990430
	Ken-Dee Marshes	RSPB 38	NX637763	Y	55	INDIV	U	UNK	19990501	19990531
	Ken-Dee Marshes	RSPB 39	NX637763	Y	20	INDIV	U	UNK	19991101	19991130
	Ken-Dee Marshes	RSPB 40	NX637763	Y	1	INDIV	U	UNK	20000401	20000430
	Ken-Dee Marshes	RSPB 41	NX637763	Y	73	INDIV	U	UNK	20001001	20001031
	Ken-Dee Marshes	RSPB 42	NX637763	Y	698	INDIV	U	UNK	20001201	20001231
	Ken-Dee Marshes	RSPB 43	NX637763	Y	12	INDIV	U	UNK	20010201	20010228
	Ken-Dee Marshes	RSPB 44	NX637763	Y	50	INDIV	U	UNK	20011001	20011031
	Ken-Dee Marshes	RSPB 45	NX637763	Y	180	INDIV	U	UNK	20011101	20011130
Pink-footed goose	Ken-Dee Marshes	RSPB 46	NX637763	Y	0	INDIV	U	UNK	19970301	19970331
(Anser brachyrhynchus)	Ken-Dee Marshes	RSPB 47	NX637763	Y	50	INDIV	U	UNK	19990101	19990131
	Ken-Dee Marshes	RSPB 48	NX637763	Y	1	INDIV	U	UNK	20001201	20001231
Whooper swan	Ken-Dee Marshes	RSPB 49	NX637763	Y	0	INDIV	U	UNK	19971201	19971231
(Cygnus cygnus)	Ken-Dee Marshes	RSPB 50	NX637763	Y	1	INDIV	U	UNK	19980501	19980531
	Ken-Dee Marshes	RSPB 51	NX637763	Y	2	INDIV	U	UNK	19981001	19981031
	Ken-Dee Marshes	RSPB 52	NX637763	Y	1	INDIV	U	UNK	20000301	20000331
	Ken-Dee Marshes	RSPB 53	NX637763	Y	1	INDIV	U	UNK	20000401	20000430

Table D2.2 - NBN Gateway Information 2009

Section 1 of the Project Study Area

Species	Ref No	Square	Location	Record	Grid Ref	Date recorded	Sensitivity
	NBN WGS 1	NS41	Unknown	BTO First/second Atlas of Breeding Birds (1968-1984)	Unknown	1968-1984	Unknown
Mute swan (Cygnus olor)	NBN WGS 2	NS40	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Groules space (Amor anor)	NBN WGS 3	NS41	Unknown	BTO First/second Atlas of Breeding Birds (1968-1984)	Unknown	1968-1984	Unknown
Greyiag goose (Anser diser)	NBN WGS 4	NS41	Unknown	BTO First/second Atlas of Breeding Birds (1981-1984) & East Ayrshire Species Database	Unknown	1981-1984	Unknown
Pink-footed goose (Anser brachyrhynchus)	NBN WGS 5	NS41	Unknown	BTO First/second Atlas of Breeding Birds (1968-1984)	Unknown	1968-1984	Unknown
Whooper swan (Cygnus cygnus)	NBN WGS 6	NS41	Unknown	BTO First/second Atlas of Breeding Birds (1968-1984)	Unknown	1968-1984	Unknown
	NBN WGS 7	NS40	Unknown	BTO First Atlas of Breeding Birds (1981-1984)	Unknown	1981-1984	Unknown

Section 2 of the Project Study Area

Species	Ref No	Square	Location	Record	Grid Ref	Date recorded	Sensitivity
Whooper swan (Cygnus cygnus)	NBN WGS 8	N\$50	Unknown	BTO First Atlas of Breeding Birds (1981-1984)	Unknown	1981-1984	Unknown

Section 3 of the Project Study Area

Species	Ref No	Square	Location	Record	Grid Ref	Date recorded	Sensitivity
Greylag goose (Anser anser)	NBN WGS 9	NX59	Unknown	BTO Second Atlas of Breeding Birds (1988-1991)	Unknown	1988-1991	Unknown

Section 4 of the Project Study Area

Species	Species Ref No Square Location		Record	Grid Ref	Date recorded	Sensitivity	
Greylag goose (Anser anser)	NBN WGS 10	NX68	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Mute swan (Cygnus olor)	NBN WGS 11	NX68	Unknown	BTO Second Atlas of Breeding Birds (1981-1991) & First Atlas of Wintering Birds in Britain (1981-1984)	Unknown	1981-1991	Unknown
Whooper swan (Cygnus cygnus)	NBN WGS 12	NS68	Unknown	BTO First Atlas of Wintering Birds in Britain 1981-1984	Unknown	1981-1984	Unknown

Table D2.3 - Scottish Ornithological Club Records, 2009

Species	Ref No	Pair(s)	Date	Grid Ref	Source	Project Section
Whooper swan (Cygnus cygnus)	SOC 9	2	28/03/2006	NX692858	SOC	4



Table D2.4 - SWS Renewables Connection Project ES, SP Transmission, August 2008

Species	Ref No	Breeding	Unconfirmed Breeding	Present	Location	Within 2km Study Area	Number	Project Section
Greylag Goose	SWS 1			Flightline	NS 457 067	Yes	1	1
(Anser anser)	SWS 2			Flightline	NS 458 066	Yes	1	1
	SWS 3			Flightline	NS 458 062	Yes	1	1
	SWS 4			Flightline	NS 462 061	Yes	1	1
	SWS 5			Flightline	NS 465 066	Yes	1	1
	SWS 6			Flightline	NS 471 077	Yes	1	1

D.2.2 Divers, Grebes, Ducks, Waders & other Water Birds

Table D2.5 - RSPBRecords 2009, relating to a Study Area associated with Section 4 of the proposed OHL

Species	Site Name	Ref No	Site Grid Ref	Avian Presence	Avian Count Min	Count Unit Abbr	Breed Status Code	Breed Status Abbr	Start Date	End Date
Pochard	Ken-Dee Marshes	RSPBN 54	NX637763	Y	0	INDIV	U	UNK	19970301	19970331
(Aythya farina)	Ken-Dee Marshes	RSPBN 55	NX637763	Y	0	INDIV	U	UNK	19971101	19971130
	Ken-Dee Marshes	RSPBN 56	NX637763	Y	16	INDIV	U	UNK	19981201	19981231
	Ken-Dee Marshes	RSPBN 57	NX637763	Y	2	INDIV	U	UNK	19990301	19990331
	Ken-Dee Marshes	RSPBN 58	NX637763	Y	18	INDIV	U	UNK	20000101	20000131
Shellduck	Ken-Dee Marshes	RSPBN 59	NX637763	Y	0	INDIV	U	UNK	19970601	19970630
(Tadorna tadorna)	Ken-Dee Marshes	RSPBN 60	NX637763	Y	0	INDIV	U	UNK	19980301	19980331
	Ken-Dee Marshes	RSPBN 61	NX637763	Y	2	INDIV	U	UNK	19990501	19990531
Shoveler	Ken-Dee Marshes	RSPBN 62	NX637763	Y	0	INDIV	U	UNK	19970301	19970331
(Anas clypeata)	Ken-Dee Marshes	RSPBN 63	NX637763	Y	0	INDIV	U	UNK	19970401	19970430
	Ken-Dee Marshes	RSPBN 64	NX637763	Y	0	INDIV	U	UNK	19970501	19970531
	Ken-Dee Marshes	RSPBN 65	NX637763	Y	0	INDIV	U	UNK	19970601	19970630
	Ken-Dee Marshes	RSPBN 66	NX637763	Y	1	INDIV	U	UNK	19980501	19980531
	Ken-Dee Marshes	RSPBN 67	NX637763	Y	4	INDIV	U	UNK	19990401	19990430
	Ken-Dee Marshes	RSPBN 68	NX637763	Y	1	INDIV	U	UNK	19990501	19990531
	Ken-Dee Marshes	RSPBN 69	NX637763	Y	3	INDIV	U	UNK	20000401	20000430
	Ken-Dee Marshes	RSPBN 70	NX637763	Y	6	INDIV	U	UNK	20011101	20011130
	Ken-Dee Marshes	RSPBN 71	NX637763	Y	5	INDIV	U	UNK	20020201	20020228
Teal	Ken-Dee Marshes	RSPBN 72	NX637763	Y	0	INDIV	U	UNK	19970301	19970331
(Anas castenea)	Ken-Dee Marshes	RSPBN 73	NX637763	Y	0	INDIV	U	UNK	19970401	19970430
	Ken-Dee Marshes	RSPBN 74	NX637763	Y	0	INDIV	U	UNK	19970601	19970630
	Ken-Dee Marshes	RSPBN 75	NX637763	Y	0	INDIV	U	UNK	19970701	19970731
	Ken-Dee Marshes	RSPBN 76	NX637763	Y	0	INDIV	U	UNK	19970801	19970831
	Ken-Dee Marshes	RSPBN 77	NX637763	Y	0	INDIV	U	UNK	19970901	19970930
	Ken-Dee Marshes	RSPBN 78	NX637763	Y	0	INDIV	U	UNK	19971001	19971031
	Ken-Dee Marshes	RSPBN 79	NX637763	Y	0	INDIV	U	UNK	19971101	19971130
	Ken-Dee Marshes	RSPBN 80	NX637763	Y	0	INDIV	U	UNK	19971201	19971231
	Ken-Dee Marshes	RSPBN 81	NX637763	Y	0	INDIV	U	UNK	19980101	19980131
	Ken-Dee Marshes	RSPBN 82	NX637763	Y	0	INDIV	U	UNK	19980201	19980228
	Ken-Dee Marshes	RSPBN 83	NX637763	Y	0	INDIV	U	UNK	19980301	19980331
	Ken-Dee Marshes	RSPBN 84	NX637763	Y	1	INDIV	U	UNK	19980501	19980531
	Ken-Dee Marshes	RSPBN 85	NX637763	Y	2	INDIV	U	UNK	19980601	19980630
	Ken-Dee Marshes	RSPBN 86	NX637763	Y	60	INDIV	U	UNK	19981001	19981031
	Ken-Dee Marshes	RSPBN 87	NX637763	Y	87	INDIV	U	UNK	19981101	19981130
	Ken-Dee Marshes	RSPBN 88	NX637763	Y	12	INDIV	U	UNK	19981201	19981231
	Ken-Dee Marshes	RSPBN 89	NX637763	Y	26	INDIV	U	UNK	19990101	19990131
	Ken-Dee Marshes	RSPBN 90	NX637763	Y	20	INDIV	U	UNK	19990301	19990331
	Ken-Dee Marshes	RSPBN 91	NX637763	Y	10	INDIV	U	UNK	19990401	19990430

Species	Site Name	Ref No	Site Grid Ref	Avian Presence	Avian Count Min	Count Unit Abbr	Breed Status Code	Breed Status Abbr	Start Date	End Date
	Ken-Dee Marshes	RSPBN 92	NX637763	Y	3	INDIV	U	UNK	19990501	19990531
	Ken-Dee Marshes	RSPBN 93	NX637763	Y	1	INDIV	U	UNK	19990601	19990630
	Ken-Dee Marshes	RSPBN 94	NX637763	Y	4	INDIV	U	UNK	19990801	19990831
	Ken-Dee Marshes	RSPBN 95	NX637763	Y	220	INDIV	U	UNK	19991001	19991031
	Ken-Dee Marshes	RSPBN 96	NX637763	Y	13	INDIV	U	UNK	19991101	19991130
	Ken-Dee Marshes	RSPBN 97	NX637763	Y	0	INDIV	U	UNK	20000201	20000229
	Ken-Dee Marshes	RSPBN 98	NX637763	Y	48	INDIV	U	UNK	20000301	20000331
	Ken-Dee Marshes	RSPBN 99	NX637763	Y	36	INDIV	U	UNK	20000401	20000430
	Ken-Dee Marshes	RSPBN 100	NX637763	Y	3	INDIV	U	UNK	20000601	20000630
	Ken-Dee Marshes	RSPBN 101	NX637763	Y	85	INDIV	U	UNK	20000901	20000930
	Ken-Dee Marshes	RSPBN 102	NX637763	Y	24	INDIV	U	UNK	20001001	20001031
	Ken-Dee Marshes	RSPBN 103	NX637763	Y	10	INDIV	U	UNK	20010801	20010831
	Ken-Dee Marshes	RSPBN 104	NX637763	Y	210	INDIV	U	UNK	20011001	20011031
	Ken-Dee Marshes	RSPBN 105	NX637763	Y	190	INDIV	U	UNK	20011101	20011130
	Ken-Dee Marshes	RSPBN 106	NX637763	Y	20	INDIV	U	UNK	20020201	20020228
Pintail	Ken-Dee Marshes	RSPBN 107	NX637763	Y	0	INDIV	U	UNK	19970301	19970331
(Anas acuta)	Ken-Dee Marshes	RSPBN 108	NX637763	Y	0	INDIV	U	UNK	19970401	19970430
	Ken-Dee Marshes	RSPBN 109	NX637763	Y	0	INDIV	U	UNK	19980301	19980331
	Ken-Dee Marshes	RSPBN 110	NX637763	Y	8	INDIV	U	UNK	19990301	19990331
	Ken-Dee Marshes	RSPBN 111	NX637763	Y	2	INDIV	U	UNK	20000301	20000331
	Ken-Dee Marshes	RSPBN 112	NX637763	Y	30	INDIV	U	UNK	20010201	20010228
	Ken-Dee Marshes	RSPBN 113	NX637763	Y	3	INDIV	U	UNK	20011101	20011130
	Ken-Dee Marshes	RSPBN 114	NX637763	Y	6	INDIV	U	UNK	20020201	20020228

Table D2.6 - RSPB Misc Records, 1997

Species	Ref No	Site name	Site Grid Ref	Avian Count	Continuita	Breed Status	Start Date	End Date
Curlew	RSPB BK 3	Dalwhat	NX702811	1	PAIR	PROBB	10/04/1997	10/04/1997
(Numenius aquarta)	RSPB BK 4	Cock Rig	NX640873	1	PAIR	PROBB	05/05/1997	05/05/1997
	RSPB BK 5	Lochwhinnie Knowe	NX654894	1	PAIR	PROBB	05/05/1997	05/05/1997
	RSPB BK 6	Lochwhinnie Knowe	NX668894	1	PAIR	PROBB	05/05/1997	05/05/1997
	RSPB BK 7	N/A	NX677898	1	PAIR	PROBB	05/05/1997	05/05/1997
	RSPB BK 8	Bonfire Hill	NX680904	1	PAIR	PROBB	05/05/1997	05/05/1997
	RSPB BK 9	Bonfire Hill	NX682909	1	PAIR	PROBB	05/05/1997	05/05/1997
	RSPB BK 10	Fingland Hill	NX672909	1	PAIR	PROBB	05/05/1997	05/05/1997
	RSPB BK 11	Bennan	NX658905	1	PAIR	PROBB	05/05/1997	05/05/1997
	RSPB BK 12	Glenshimmeroch	NX653866	1	CALL	PROBB	05/05/1997	05/05/1997
Snipe	RSPB BK 13	Dalwhat	NX705805	1	CALL	PROBB	10/04/1997	10/04/1997
(Gallinago gallinago)	RSPB BK 14	Rig of Mire	NX642875	1	CALL	PROBB	05/05/1997	05/05/1997
Oystercatcher (Heamatopus ostrlegus)	RSPB BK 15	Auchenshinnoch Bridge	NX656891	1	PAIR	PROBB	05/05/1997	05/05/1997
Lapwing (Vallenus vallenus)	RSPB BK 16	Auchenshinnoch	NX663898	1	PAIR	PROBB	01/05/1997	01/05/1997

Table D2.7 - RSPB, Upland Grazing Survey, 1999

Species	Ref NO	Site Name	Site Grid Ref	Avian Count	Continuita	Breed Status	Start Date	End Date
Curlew (Numenius aquarta)	RSPB UP 1	N/A	NX69	2	PAIR	PROBB	17/04/1999	19/06/1999
	RSPB UP 2	N/A	NX68	2	PAIR	PROBB	17/04/1999	19/06/1999
	RSPB UP 3	N/A	NX59	0	PAIR	PROBB	17/04/2000	19/06/2000
	RSPB UP 4	N/A	NX59	2	PAIR	PROBB	17/04/2000	19/06/2000
	RSPB UP 5	N/A	NX78	0	PAIR	PROBB	17/04/2000	19/06/2000
	RSPB UP 6	N/A	NS40	0	PAIR	PROBB	17/04/2000	19/06/2000
Common snipe (Gallinago gallinago)	RSPB UP 7	N/A	NX69	0	PAIR	PROBB	17/04/1999	19/06/19999
	RSPB UP 8	N/A	NX68	1	PAIR	PROBB	17/04/1999	19/06/19999





Species	Ref NO	Site Name	Site Grid Ref	Avian Count	Continuita	Breed Status	Start Date	End Date
	RSPB UP 9	N/A	NX59	0	PAIR	PROBB	17/04/2000	19/06/2000
	RSPB UP 10	N/A	NX78	1	PAIR	PROBB	17/04/2000	19/06/2000
	RSPB UP 11	N/A	NS40	1	PAIR	PROBB	17/04/2000	19/06/2000
Lapwing (Vallenus vallenus)	RSPB 12	N/A	NX68	1	PAIR	PROBB	17/04/1999	19/06/1999

Table D2.8 - Scottish Ornithological Club Records, 2009

Species	Ref No	Pair(s)	Date	Grid Ref	Source	Section
Teal (Anas castanea)	SOC 10	5	13/02/2007	NX6985	SOC	4
Little grebe (Tachybaptus ruficollis)	SOC 11	2	13/06/2005	NX6786	soc	4

Table D2.9 - NBN Gateway Information 2009

Section 1 of the Project Study Area

Species	Ref No	Square	Location	Record	Grid Ref	Date recorded	Sensitivity
Mallard (Anas platyrhnchos)	NBN WDWB 1	NS41	Unknown	BTO First/second Altas of Breeding Birds (1968-1984)	Unknown	1968-1984	Unknown
	NBN WDWB 2	NS40	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-19891	Unknown
Tufted Duck (Aythya fuligula)	NBN WDWB 5	NS41	Unknown	BTO First/second Altas of Breeding Birds (1968-1984)	Unknown	1968-1984	Unknown

Section 3 of the Project Study Area

Species	Ref No	Square	Location	Record	Grid Ref	Date recorded	Sensitivity
Mallard (Anas platyrhynchos)	NBN WDWB 3	N\$59	Unknown	BTO First/second Atlas of Breeding Birds (1981-1991)	Unknown	1968-1991	Unknown

Section 4 of the Project Study Area

Species	Ref No	Square	Location	Record	Grid Ref	Date recorded	Sensitivity
Mallard (Anas platyrhynchos)	NBN WDWB 4	NS68	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Tufted Duck (Aythya fuligula)	NBN WDWB 6	NS68	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Teal (Anas castanae)	NBN WDWB 7	NS68	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown

Table D2.10 - Margree Windfarm, ES, North British Wind Power, ARCUS, August 2006

Species	Ref No	Breeding	Unconfirmed Breeding	Present	Location	Within 2km Study Area	Number	Project Section
Goldeneye (Bucephala clangula)	M42			x	Regland VP	Yes	1	4
Teal (Anas castanea)	M43			x	Glenshimmeroch	Yes	2	4
Common Snipe (Gallinago gallinago)	M44			x	Whitecairn Hill	Yes	1	4
Curlew (Numenius arquata)	N45			x	Glenshimmeroch VP	Yes	1	4
	M46			x	Glenshimmeroch VP	Yes	1	4

Table D2.11 - Blackcraig Hill Windfarm, Scottish & Southern Energy, September 2005

Species	Ref No	Breeding	Unconfirmed Breeding	Present	Location	Within 2km Study Area	Number	Project Section
Snipe (Gallinago gallinago)	BCH 1			Х	NX 68500 81750	Yes	1	4
	BCH 2			Х	NX 69250 81100	Yes	1	4

Table D2.12 - Kyle Windfarm, AMEC, October 2003

Species	Ref No	Breeding	Unconfirmed Breeding	Present	Location	Within 2km Study Area	Number	Project Section
Goldeneye (Bucephala clangula)	SK 1			x	Corbie Craig Res	x	3	2
Mallard (Anas platyrhynchos)	SK 2	x		x	Corbie Craig Res	x	2	2
	SK 3			x	Mossdale Burn	x	2	2
	SK 4			x	Corbie Craig Res	x	Reg sightings	2
	SK 5			x	Benbrack	x	flight record	2
Teal (Anas crecca)	SK 6			x	Corbie Craig Res	x	4	2
Curlew (Numenius arquata)	SK 7	x		x	Windy Standard Hill	x	N/A	2
	SK 8			x	NS484062	х	breeding pair	2

Species	Ref No	Breeding	Unconfirmed Breeding	Present	Location	Within 2km Study Area	Number	Project Section
	SK 9			x	Little Eriff	x	flight activity peak of breeding pairs	2
	SK 10			х	NS510012	x	breeding pair	3
	SK 11			x	NS513011	x	breeding pair	3
	SK 12			x	NX519996	x	breeding pair	3
Lapwing (Vanellus vanellus)	SK 13			х	Doon valley	x	occasional records	2
Oystercatcher (Haematopus ostralegus)	SK 14	x		х	Windy Standard Hill	x		2
	SK 15			x	Windy Standard Hill	x	small numbers	2

Table D2.13 - SWS Renewables Connection Project ES, SP Transmission, August 2008

Species	Ref No	Breeding	Unconfirmed Breeding	Present	Location	Within 2km Study Area	Number	Project Section
Lapwing (Vanellus vanellus)	SWS 7			Flightline	NS 444 068	Yes	1	1
	SWS 8			Flightline	NS 475 079	Yes	1	1
	SWS 9			Flightline	NS 472 079	Yes	1	1
	SWS 10			Flightline	NS 469 060	Yes	1	1
Curlew x 20 (Numensis borealis)	SWS 11			Flightline	NS 448 069	Yes	1	1

D.2.3 All other Bird Species

Table D2.14 - RSPB Misc Bird Records

Species	Ref No	Site name	Site Grid Ref	Avian Count	Continuita	Breed Status	Start Date	End Date
Whinchat (Saxicola ruberta)	RSPB BK 17	Clay Hills	NX717802	1	CALL	PROBB	10/04/1997	10/04/1997
Red Grouse (Lagopus lagopus)	RSBP BK 18	Glen of Dalwaht	NX700815	5	INDIV	PROBB	10/04/1997	10/04/1997
	RSPB BK 19	Blackcraig Hill	NX703820	1	PAIR	PROBB	10/04/1997	10/04/1997
	RSPB BK 20	Blackcraig Hill	NX708822	2	PAIR	PROBB	10/04/1997	10/04/1997
	RSPB BK 21	Dodd of Troquhain	NX692815	1	PAIR	PROBB	10/04/1997	10/04/1997
	RSPB BK 22	Blackcraig Hill	NX78	1	PAIR	PROBB	17/04/2000	06/06/2000
	RSPB BK 23	Glenmount	NS40	2	PAIR	PROBB	17/04/2000	06/06/2000

Table D2.15 - RSPB Upland Grazing Study

Species	Ref No	Site name	Site Grid Ref	Avian Count	Continuita	Breed Status	Start Date	End Date
Wheatear (oneanthe oneanthe)	RSPB UP 13	Auchenshinnoch Hill	NX69	0	PAIR	PROBB	17/04/1999	19/06/1999
	RSPB UP 14	Mackliston Hill	NX68	2	PAIR	PROBB	17/04/1999	19/06/1999
	RSPB UP 15	Knockwhirn	NX59	0	PAIR	PROBB	17/04/2000	19/06/2000
	RSPB UP 16	Willieanna	NX59	0	PAIR	PROBB	17/04/2000	19/06/2000
	RSPB UP 17	Cairnsmore	NX69	2	PAIR	PROBB	17/04/2000	19/06/2000
	RSPB UP 18	Blackcraig Hill	NX78	2	PAIR	PROBB	17/04/2000	19/06/2000
	RSPB UP 19	Glenmount	NS40	2	PAIR	PROBB	17/04/2000	19/06/2000
Whinchat (Saxicola ruberta)	RSPB UP 20	Mackliston Hill	NX68	1	PAIR	PROBB	17/04/1999	19/06/2000
	RSPB UP 21	Knockwhirn	NX59	1	PAIR	PROBB	17/04/2000	19/06/2000
	RSPB UP 22	Willieanna	NX59	1	PAIR	PROBB	17/04/2000	19/06/2000
	RSPB UP 23	Blackcraig Hill	NX78	8	PAIR	PROBB	17/04/2000	19/06/2000
	RSPB UP 24	Glenmount	NS40	3	PAIR	PROBB	17/04/2000	19/06/2000
Stonechat (Saxicola torquata)	RSPB 25	Mackliston Hill	NX68	0	PAIR	Unknown	17/04/1999	19/06/1999
	RSPB 26	Blackcraig Hill	NX78	2	PAIR	Unknown	17/04/200	19/06/2000
	RSPB 27	Willieanna	NX59	0	PAIR	Unknown	17/04/200	19/06/2000
Skylark (Alauda arvensis)	RSPB 28	N/A	NX69	140	INDIV	PROBB	01/05/1999	01/05/1999
	RSPB 29	N/A	NX68	25	INDIV	PROBB	01/05/1999	01/05/1999
	RSPB 30	N/A	NX59	91	INDIV	PROBB	01/05/2000	01/05/2000
	RSPB 31	N/A	NX59	80	INDIV	PROBB	01/05/2000	01/05/2000
	RSPB 32	N/A	NS40	80	INDIV	PROBB	01/05/2000	01/05/2000





Species	Ref No	Site name	Site Grid Ref	Avian Count	Continuita	Breed Status	Start Date	End Date
Meadow Pipit (Cuculus canorus)	RSPB 33	N/A	NX69	175	INDIV	PROBB	01/05/1999	01/05/1999
	RSPB 34	N/A	NX68	185	INDIV	PROBB	01/05/1999	01/05/1999
	RSPB 35	N/A	NX59	137	INDIV	PROBB	01/05/2000	01/05/2000
	RSPB 36	N/A	NX59	126	INDIV	PROBB	01/05/2000	01/05/2000
	RSPB 37	N/A	NX78	76	INDIV	PROBB	01/05/2000	01/05/2000
	RSPB 38	N/A	NS40	86	INDIV	PROBB	01/05/2000	01/05/2000
Red Grouse (Lagupus lagupus)	RSPB 39	Blackcraig Hill	NX78	1	PAIR	PROBB	17/04/2000	06/06/2000
	RSPB 40	Glenmount	NS40	2	PAIR	PROBB	17/04/2000	06/06/2000

Table D2.16 - Scottish Ornithological Club Records, 2009

Species	Ref No	Pair(s)	Date	Grid Ref	Source	Project Section
Little grebe (Tachybaptus ruficollis)	SOC 13	2	13/06/2005	NX6786	SOC	4
Woodcock (Scolopax minor)	SOC 14	1	16/02/2007	NX6786	SOC	4
	SOC 15	3	13/03/2007	NX6786	SOC	4
	SOC 16	1	16/12/2005	NX6786	SOC	4
Skylark (Alauda arvensis)	SOC 17	2	03/02/2007	NX6786	SOC	4
	SOC 18	1	12/03/2007	NX6786	SOC	4
Tree Pipit (Anthus trivialis)	SOC 19	2	01/04/2007	NX6786	SOC	4
Grey Wagtail (Motacilla cinerea)	SOC 20	1	17/06/2007	NX6786	SOC	4
	SOC 21	1	12/03/2007	NX6786	SOC	4
	SOC 22	2	08/04/2007	NX6786	SOC	4
Grasshopper Warbler (Locustella naevia)	SOC 23	1	03/07/2007	NX6786	SOC	4
Great Grey Shrike (Lanius excubitor)	SOC 24	2	29/01/2007	NX6786	SOC	4
Raven (Corvus corax)	SOC 25	11	13/02/2007	NX6786	SOC	4
	SOC 26	4	15/03/2007	NX6786	SOC	4
	SOC 27	1	31/03/2007	NS5201	SOC	3
Siskin (Carduelis spinus)	SOC 28	8	17/06/2007	NX6786	SOC	4
	SOC 29	4	02/03/2007	NX6786	SOC	4
	SOC 30	2	01/04/2007	NX6786	SOC	4
Lesser Redpoll (Carduelis cabaret)	SOC 31	1	17/06/2007	NX6786	SOC	4
Bullfinch (Pyrrhula pyrrhula)	SOC 32	9	02/03/2007	NX6786	SOC	4
	SOC 33	20	25/10/2005	NX6786	SOC	4
	SOC 34	10	10/11/2005	NX6786	SOC	4
Reed Bunting (Emberiza schoeniclus)	SOC 35	3	03/02/2007	NX6786	SOC	4
	SOC 36	2	08/03/2007	NX6786	SOC	4
	SOC 37	1	13/03/2007	NX6786	SOC	4

Table D2.17 - NBN gateway UK, [Accessed 2009]

Section 1 of the Project Study Area

Species	Square	Ref No	Location	Record	Grid Ref	Date recorded	Sensitivity
Grey Heron (Ardea cinerea)	NS41	NBN AOS 1	Unknown	BTO First/second Altas of Breeding Birds (1968-1984)	Unknown	1968-1984	Unknown
Ringed Plover (Charadrius hiaticula)	NS41	NBN AOS 2	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Cuckoo (Charadrius hiaticula)	NS41	NBN AOS 3	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Common Sanpiper (Actitis hypoleucos)	NS40	NBN AOS 4	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Wood Pigeon (Columba palumbus)	NS40	NBN AOS 5	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Common Swift (Apus apus)	NS41	NBN AOS 6	Unknown	BTO First/second Altas of Breeding Birds (1968-1984)	Unknown	1968-1984	Unknown
	NS41	NBN AOS 7	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Great Spotted Woodpecker (Dendrocopos major)	NS41	NBN AOS 8	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
	NS40	NBN AOS 9	Unknown	BTO First/second Altas of Breeding Birds (1968-1984)	Unknown	1968-1984	Unknown

Species	Square	Ref No	Location	Record	Grid Ref	Date recorded	Sensitivity
Skylark (Alauda arvensis)	NS41	NBN AOS 10	Unknown	BTO First/second Altas of Breeding Birds (1968-1984) & east Ayrshire Species Database	Unknown	1968-1984	Unknown
Tree pipit (Anthus trivialis)	NS41	NBN AOS 11	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
	NS40	NBN AOS 12	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Meadow Pipit (Anthus pratensis)	NS41	NBN AOS 13	Unknown	BTO First/second Altas of Breeding Birds (1968-1981)	Unknown	1968-1984	Unknown
	NS40	NBN AOS 14	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Jackdaw (Corvus monedula)	NS41	NBN AOS 15	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
	NS40	NBN AOS 16	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Carrion Crow (Corvus corone corone)	NS41	NBN AOS 17	Unknown	BTO First/second Altas of Breeding Birds (1968-1984)	Unknown	1968-1984	Unknown
	NS40	NBN AOS 18	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Raven (Corvus corax)	NS41	NBN AOS 19	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
	NS40	NBN AOS 20	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Dipper (Cinclus cinclus)	NS41	NBN AOS 21	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
	NS40	NBN AOS 22	Unknown	BTO First/second Altas of Breeding Birds (1968-1991) & East Ayrshire Species Database	Unknown	1968-1991	Unknown
Sedge warbler (Acrocephalus schoenobaenus)	NS41	NBN AOS 23	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
	N\$40	NBN AOS 24	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Common Tree Creeper (Certhia familiaris)	NS41	NBN AOS 25	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
	NS40	NBN AOS 26	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Goldfinch (Carduelis carduelis)	NS41	NBN AOS 27	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
	NS40	NBN AOS 28	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Greenfinch (Carduelis chloris)	NS41	NBN AOS 29	Unknown	BTO First/second Altas of Breeding Birds (1968-1984)	Unknown	1968-1984	Unknown
	NS40	NBN AOS 30	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Siskin (Carduelis spinus)	NS41	NBN AOS 31	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
	NS40	NBN AOS 32	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Reed Bunting (Emberiza schoeniclus)	NS41	NBN AOS 33	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
	NS40	NBN AOS 34	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Common Kingfisher (Alcedo atthis)	NS41	NBN AOS 35	Unknown	BTO First/second Altas of Breeding Birds (1968-1984)	Unknown	1968-1984	Unknown
House Martin (Delichon urbica)	NS40	NBN AOS 36	Unknown	BTO First/second Altas of Breeding Birds (1968-1991) & east Ayshire Species database	Unknown	1968-1991	Unknown
Long-Tailed Tit (Aegithalos caudatus)	NS40	NBN AOS 40	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown

Section 2 of the Project Study Area

Species	Square	Ref No	Location	Record	Grid Ref	Date recorded	Sensitivity
Grey Heron (Ardea cinerea)	NS50	NBN AOS 41	Unknown	BTO First/second Atlas of Breeding Birds (1981-1991)	Unknown	1981-1991	Unknown
Red grouse (Lagopus lagopus)	NS50	NBN AOS 52	Unknown	BTO First Atlas of Breeding Birds (1968-1972) & BTO First Atlas of wintering Birds (1981-1984)	Unknown	1968-1984	Unknown
Black-headed Gull (Larus ridibundus)	NS50	NBN AOS 53	Unknown	BTO First Atlas of Breeding Birds (1968-1972)	Unknown	1968-1972	Unknown
Cuckoo (Charadrius hiaticula)	NS50	NBN AOS 54	Unknown	BTO First Atlas of Breeding Birds (1968-1972)	Unknown	1968-1972	Unknown
Swallow (Hirundo rustica)	NS50	NBN AOS 55	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Wood Pigeon (Columba palumbus)	NS50	NBN AOS 56	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Meadow Pipit (Anthus pratensis)	NS50	NBN AOS 57	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Jackdaw (Corvus monedula)	NS50	NBN AOS 58	Unknown	BTO First Atlas of Breeding Birds (1981-19984)	Unknown	1981-1984	Unknown
Carrion Crow (Corvus corone corone)	NS50	NBN AOS 59	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Raven (Corvus corax)	NS50	NBN AOS 60	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Dipper (Cinclus cinclus)	NS50	NBN AOS 61	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Sedge warbler (Acrocephalus schoenobaenus)	NS50	NBN AOS 62	Unknown	BTO First Altas of Breeding Birds (1968-1972)	Unknown	1968-1972	Unknown
Great Tit (Parus major)	N\$50	NBN AOS 63	Unknown	BTO Second Altas of Breeding Birds (1988-1991)	Unknown	1988-1991	Unknown
House sparrow (Passer domesticus)	N\$50	NBN AOS 64	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Chaffinch (Fringilla coelebs)	N\$50	NBN AOS 65	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Goldfinch (Carduelis carduelis)	N\$50	NBN AOS 66	Unknown	BTO First Altas of Breeding Birds (1981-1984)	Unknown	1968-1991	Unknown
Greenffinch (Carduelis chloris)	NS50	NBN AOS 67	Unknown	BTO First Altas of Breeding Birds (1981-1984)	Unknown	1968-1991	Unknown
Siskin (Carduelis spinus)	NS50	NBN AOS 68	Unknown	BTO First Altas of Breeding Birds (1968-1972)	Unknown	1968-1972	Unknown
Reed Bunting (Emberiza schoeniclus)	NS50	NBN AOS 69	Unknown	BTO First Altas of Breeding Birds (1968-1972)	Unknown	1968-1972	Unknown
House Martin (Delichon urbica)	NS50	NBN AOS 70	Unknown	BTO First Atlas of Breeding Birds (1968-1972)	Unknown	1968-1972	Unknown
Long-Tailed Tit (Aegithalos caudatus)	NS40	NBN AOS 71	Unknown	BTO First/second Altas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown





Section 3 of the Project Study Area

Species	Square	Ref No	Location	Record	Grid Ref	Date recorded	Sensitivity
Grey Heron (Ardea cinerea)	NS59	NBN AOS 72	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Red grouse (Lagopus lagopus)	NS59	NBN AOS 73	Unknown	BTO First second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Common Gull (Larus canus)	NS59	NBN AOS 74	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Wood pigeon (Columba palumbus)	NS59	NBN AOS 75	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Cuckoo (Cuculus canorus)	NS59	NBN AOS 76	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Common Swift (Apus apus)	NS59	NBN AOS 77	Unknown	BTO Second Atlas of Breeding Birds (1988-1991)	Unknown	1988-1991	Unknown
Great Spotted Woodpecker (Dendrocopos major)	NS59	NBN AOS 78	Unknown	BTO First Atlas of Breeding Birds (1968-1972)	Unknown	1968-1972	Unknown
Swallow (Hirundo rustica)	NS59	NBN AOS 79	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
House martin (Delichon urbica)	N\$59	NBN AOS 80	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Skylark (Alauda arvensis)	NS59	NBN AOS 81	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Tree pipit (Anthus trivialis)	NS59	NBN AOS 82	Unknown	BTO First Altas of Breeding Birds (1968-1972)	Unknown	1968-1972	Unknown
	N\$59	NBN AOS 83	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Jackdaw (Corvus monedula)	NS59	NBN AOS 84	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Raven (Corvus corax)	NS59	NBN AOS 85	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Carrion crow (Corvus corone)	NS59	NBN AOS 86	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Dipper (Cinclus cinclus)	N\$59	NBN AOS 87	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Sedge warbler (Acrocephalus schoenobaenus)	N\$59	NBN AOS 88	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Robin (Erithacus rubecula)	NS59	NBN AOS 89	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Long-tailed tit (Aegithalos caudatus)	NS59	NBN AOS 90	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Common tree creeper (Certhia familiaris)	N\$59	NBN AOS 91	Unknown	BTO First Atlas of Breeding Birds (1968-19972)	Unknown	1968-1972	Unknown
Chaffinch (Fringilla coelebs)	N\$59	NBN AOS 92	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Greenfinch (Carduelis chloris)	NS59	NBN AOS 93	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Siskin (Carduelis spinus)	NS59	NBN AOS 94	Unknown	BTO Second Atlas of Breeding Birds (1988-1991)	Unknown	1988-1991	Unknown
Reed Bunting (Emberiza schoeniclus)	NS59	NBN AOS 95	Unknown	BTO Second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown

Section 4 of the Project Study Area

Species	Square	Ref No	Location	Record	Grid Ref	Date recorded	Sensitivity
Grey Heron (Ardea cinerea)	NS68	NBN AOS 96	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Common sandpiper (Actitis hypoleucos)	NS68	NBN AOS 97	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Wood pigeon (Columba palumbus)	NS68	NBN AOS 98	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Cuckoo (Cuculus canorus)	NS68	NBN AOS 99	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Common Swift (Apus apus)	NS68	NBN AOS 100	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Common kingfisher(Alcedo atthis)	NS68	NBN AOS 101	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Greater Spotted woodpecker (Dendrocopos major)	NS68	NBN AOS 102	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
House martin (Delichon urbica)	NS68	NBN AOS 103	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Skylark (Alauda arvensis)	NS68	NBN AOS 104	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Tree pipit (Anthus trivialis)	NS68	NBN AOS 105	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Meadow pipit (Anthus pratensis)	NS68	NBN AOS 106	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Jackdaw (Corvus monedula)	NS68	NBN AOS 107	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Raven (Corvus corax)	NS68	NBN AOS 108	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Carrion crow (Corvus corone)	NS68	NBN AOS 109	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Sedge warbler (Acrocephalus schoenobaenus)	NS68	NBN AOS 110	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Robin (Erithacus rubecula)	NS68	NBN AOS 111	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Long-tailed tit (Aegithalos caudatus)	NS68	NBN AOS 112	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Common tree creeper (Certhia familiaris)	NS68	NBN AOS 113	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Goldfinch (Carduelis carduelis)	NS68	NBN AOS 114	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Greenfinch (Carduelis chloris)	NS68	NBN AOS 115	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Siskin (Carduelis spinus)	NS68	NBN AOS 116	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown
Reed Bunting (Emberiza schoeniclus)	NS68	NBN AOS 117	Unknown	BTO First/second Atlas of Breeding Birds (1968-1991)	Unknown	1968-1991	Unknown

Table D2.18- Margree Windfarm, ES, North British Wind Power, ARCUS, August 2006

Blackbird	Ref No	Breeding	Unconfirmed Breeding	Present	Location	Within 2km Study Area	Number	Project Section
Blackbird (Turdus merula)	M1	x			Whitecairn	Yes	3	4
	M2			x	Margree VP	Yes	1	4
	M3			x	Glenshimmeroch VP	Yes	1	4
Blue tit (Parus caeruleus)	M3			x	Glenshimmeroch VP	Yes	3	4
	M4			x	Regland VP	Yes	1	4
Bullfinch (Pyrrhula pyrrhula)	M5			x	Glenshimmeroch	Yes	1	4
	M6			x	Glenshimmeroch	Yes	1	4
	M7			x	Glenshimmeroch	Yes	4	4
	M8			x	Glenshimmeroch	Yes	18	4
	M9			x	Glenshimmeroch	Yes	9	4
Black -headed Gull (Larus ridibundus)	M10			x	Glenshimmeroch VP	Yes	3	4
	M11			x	Glenshimmeroch VP	Yes	1	4
Common Gull (Larus canus)	M12			x	Glenshimmeroch VP	Yes	2	4
	M13			x	Glenshimmeroch VP	Yes	1	4
	M14			x	Glenshimmeroch VP	Yes	1	4
Cuckoo (Cuculus canorus)	M15				Whitecairn Hill	Yes	22	4
Carrion Crow (Corvus corone)	M16			x	Glenshimmeroch VP	Yes	N/A	4
	M17			x	Glenshimmeroch VP	Yes	5	4
	M18			x	Margree VP	Yes	2	4
	M19			x	Glenshimmeroch VP	Yes	1	4
	M20			x	Glenshimmeroch VP	Yes	2	4
	M21			x	Glenshimmeroch VP	Yes	6	4
	M22			x	Margree VP	Yes	2	4
	M23			x	Glenshimmeroch VP	Yes	3	4
	M24			x	Glenshimmeroch VP	Yes	7	4
	M25			x	Glenshimmeroch VP	Yes	3	4
	M26			x	Margree VP	Yes	1	4
	M27			x	Margree VP	Yes	1	4
	M28			x	Glenshimmeroch VP	Yes	12	4
	M29			x	Hogg Hill	Yes	1	4
	M30			x	Glenshimmeroch VP	Yes	6	4
	M31			x	Glenshimmeroch VP	Yes	12	4
	M32			x	Glenshimmeroch VP	Yes	3	4
	M33			x	Glenshimmeroch VP	Yes	5	4
	M34			x	Glenshimmeroch VP	Yes	5	4
	M35			x	Glenshimmeroch VP	Yes	2	4
Chaffinch (Fringilla coelebs)	M36			x	Regland VP	Yes	N/A	4
	M37			x	Glenshimmeroch VP	Yes	3	4
	M38			x	Margree VP	Yes	4	4
	M39			x	Glenshimmeroch VP	Yes	3	4
	M40			x	Margree VP	Yes	16	4
	M41			x	Glenshimmeroch VP	Yes	1	4
	M42			x	Margree VP	Yes	15	4
	M43			x	Glenshimmeroch VP	Yes	2	4
	M44			x	Glenshimmeroch VP	Yes	1	4
	M45			x	Glenshimmeroch VP	Yes	9	4
	M46			x	Hogg Hill	Yes	2	4
	M47			x	Glenshimmeroch VP	Yes	7	4
	M48			x	Glenshimmeroch VP	Yes	5	4
	M49			X	Regland VP	Yes	5	4





Blackbird	Ref No	Breeding	Unconfirmed Breeding	Present	Location	Within 2km Study Area	Number	Project Section
	M50			х	Regland VP	Yes	4	4
	M51			х	Glenshimmeroch VP	Yes	1	4
	M52			х	Regland VP	Yes	3	4
	M53			х	Glenshimmeroch VP	Yes	3	4
	M54			х	Glenshimmeroch VP	Yes	5	4
	M55			х	Glenshimmeroch VP	Yes	3	4
	M56			х	Regland VP	Yes	6	4
	M57			х	Margree VP	Yes	9	4
	M58			х	Glenshimmeroch VP	Yes	1	4
	M59			х	Glenshimmeroch VP	Yes	1	4
	M60			х	Glenshimmeroch VP	Yes	1	4
	M61			х	Glenshimmeroch VP	Yes	6	4
	M62			х	Glenshimmeroch VP	Yes	2	4
	M63			х	Glenshimmeroch VP	Yes	4	4
	M64			х	Glenshimmeroch VP	Yes	3	4
	M65			х	Glenshimmeroch VP	Yes	1	4
Cormorant (Phalacrocorax carbo)	M66			х	Regland VP	Yes	1	4
	M67			х	Glenshimmeroch VP	Yes	2	4
Coal tit (Parus ater)	M68	Х			Whitecairn Hill	Yes	3	4
	M69			х	Glenshimmeroch VP	Yes	2	4
	M70			х	Margree VP	Yes	3	4
	M71			х	Glenshimmeroch VP	Yes	2	4
Fieldfare (Turdus pilaris)	M72			х	Glenshimmeroch	Yes	13	4
	M73			х	Regland VP	Yes	20	4
	M74			х	Hogg Hill	Yes	1	4
	M75			х	Margree VP	Yes	1	4
	M76			х	Glenshimmeroch VP	Yes	50	4
Goldcrest (Regulus regulus)	M77	Х			Whiteciarn Hill	Yes	17	4
	M78			х	Regland VP	Yes	1	4
	M79			х	Regland VP	Yes	3	4
	M80			х	Regland VP	Yes	1	4
	M81			х	Regland VP	Yes	2	4
	M82			х	Regland VP	Yes	1	4
	M83			х	Glenshimmeroch VP	Yes	1	4
	M84			х	Glenshimmeroch VP	Yes	1	4
Great Backed-backed Gull (Larus marinus)	M85			Х	Glenshimmeroch VP	Yes	1	4
Grey heron (Ardea cinerea)	M86			Х	Margree VP	Yes	1	4
	M87			X	Margree VP	Yes	1	4
	M88			Х	Margree VP	Yes	18	4
	M89			х	Glenshimmeroch VP	Yes	1	4
	M90			Х	Regland VP	Yes	2	4
	M91			х	Regland VP	Yes	1	4
	M92			X	Glenshimmeroch VP	Yes	1	4
	M93			x	Glenshimmeroch VP	Yes	1	4
	M94			х	Margree VP	Yes	1	4
Grey Wagtail (Motacilla cinerea)	M100			x	Regland VP	Yes	2	4
	M101			х	Glenshimmeroch VP	Yes	1	4
Great tit (Parus major)	M102	x		x	Whitecairn Hill	Yes	1	4
	M103			х	Margree VP	Yes	1	4
	M104			х	Hogg Hill	Yes	1	4

Blackbird	Ref No	Breeding	Unconfirmed Breeding	Present	Location	Within 2km Study Area	Number	Project Section
	M105			x	Hogg Hill	Yes	1	4
	M106			x	Margree VP	Yes	1	4
House martin (Delichon urbicum)	M107			x	Glenshimmeroch VP	Yes	2	4
Jay (Garrulus glandarius)	M108			x	Margree VP	Yes	3	4
	M108			x	Glenshimmeroch VP	Yes	1	4
Lesser Redpoll (Carduelis cabaret)	N109			x	Margree VP	Yes	3	4
	N110			x	Glenshimmeroch VP	Yes	1	4
	N111			x	Glenshimmeroch VP	Yes	1	4
	N112			x	Regland VP	Yes	1	4
	N113			x	Glenshimmeroch VP	Yes	1	4
Linnet (Carduelis cannabina)	M114			x	Glenshimmeroch	Yes	1	4
Whitethroat (Sylvia carruca)	M115	Х			Whitecairn Hill	Yes	1	4

Table D2.19 - Kyle Windfarm ES, AMEC, October 2003

Species	Ref No	Breeding	Unconfirmed Breeding	Present	Location	Within 2km Study Area	Number	Project Section
Bullfinch (Pyrrhula pyrrhula)	SK 16	x		x	South Kyle	x	1pr	2
	SK 17			x	Nith Lodge area	x	several birds	2
Buzzard (Buteo buteo)	SK 18				Benbeoch	x	reg sightings	2
	SK 19				Brown Hill	x	reg sightings	2
	SK 20				Mossdale	x	reg sightings	2
Common Crossbill (Loxia curvirostra)	SK 21	x		x	North Kyle	x		2
	SK 22	x		x	South Kyle	x		2
	SK 23			x	Mossdale Burn	x	flight record: 4 birds	2
	SK 24			x	Upper Mossdale valley	x	flight record: 5 birds	2
	SK 25			x	NS529067	x	small party in flight	2
Common Gull (Larus canus)	SK 26				NS498069	x	small breeding colony	2
Common Kestrel (Falco tinnunculus)	SK 27	x		x	North Kyle	x	1pr	2
	SK 28			x	nr Benbeoch	x	Family groups observed	2
	SK 29			x	Mossdale Burn	x	Family groups observed	2
Common Redstart (Phoenicurus phoenicurus)	SK 30			x	Sloanston Glen	x	1pr	2
Common Sandpiper (Actitis hypoleucos)	SK 31			x	Clawfin valley	x	1 bird heard	2
	SK 32			x	NS498067	x	2003 breeding record	2
Common Snipe (Gallinago gallinago)	SK 33	x		x	Windy Standard Hill	x		2
	SK 34	x		x	North Kyle	x	1pr	2
	SK 35			x	NX5399	x	1 bird	2
Cormorant (Phalacrocorax carbo)	SK 36			x	N Kyle - flight	x	1	2
	SK 37			x	nr Bryan's Heights	x	1	2
	SK 38			x	Little Eriff	x	2	3
	SK 39			x	Sunkhead Moss	x	1	3
Cuckoo (Cuculus canorus)	SK 40	x		x	North Kyle	x	2prs	2
	SK 41	x		x	South Kyle	x	3prs	2
	SK 42			x	Mossdale Burn	x	regularly heard	2
	SK 43			x	NS5105	x	heard on several occasions 2003/4	2
Dipper (Cinclus cinclus)	SK 44			x	site	x	9prs	2
Fieldfare (Turdus pilaris)	SK 45				NS4904	x	flock of 18	2
Grasshopper Warbler (Locustella naevia)	SK 46	x			North Kyle	x	1pr	2
	SK 47	x			South Kyle	x	1pr	2
	SK 48				Mossdale Burn valley	x	frequent records	2
Grey Heron (Ardea cinerea)	SK 49			x	Corbie Craig Res	x	1	2
	SK 50				nr Beoch Lane	x	single bird	2





Species	Ref No	Breeding	Unconfirmed Breeding	Present	Location	Within 2km Study Area	Number	Project Section
	SK 51				Linn Water	x	single bird	2
	SK 52				Nith Lodge area	x	reg flights	2
	SK 53				Brvan's Heights	x	reg flights	2
Grev Wagtail (Motacilla cinerea)	SK 54	x			North Kyle	x	1pr	2
	SK 55	x			South Kyle	x	8prs	2
	SK 56				site	x	20prs	2
Herring Gull (Larus argentatus)	SK 50			x	opencast areas	x	regular sightings	2
lav (Garrulus glandarius)	SK 58			x	NS526076	x	1 hird	2
	SK 50			x	Linner Mossdale vallev	x	3 hirds	2
	SK 60			x	Windy Standard	x	3 birds	2
Lesser Black-Backed Gull (Larus fuscus)	SK 60			x	Mossdale Craig	x	1 hird	2
Lesser Bednoll (Carduelis cabaret)	SK 62	x		x	North Kyle	x	1 bird	2
	SK 62	×		×	South Kyle	×	fors	2
	SK 64	×		×	North Kyle	×	31prs	2
	SK 65	×		× *	South Kyle	×	133nrs	2
Mictle Thrush (Turdus vissiverus)	SK 65	× ×		×	North Kyle	^ 	105015	2
	SK 67	X		X	South Kulo	X	1pi	2
	SK 67	X		X	South Kyle	X	3prs 2 birds	2
Deven (Community)	SK 68			X	nr Wossdale	X	3 Dirds	2
Kaven (Corvus corax)	SK 69			X	Nith Lodge area	X	Ipr	2
	SK 70			X	Mossdale	X	frequent records	2
	SK 71			X	Brownnills	X	trequent records	2
	SK 72			X	Mossdale Craig	X	1pr with fledged young	2
Red Grouse (Lagopus lagopus)	SK 73	X			North Kyle	X	2prs	2
	SK 74	X			South Kyle	X	/prs	2
	SK 75				Windy Standard	X	sighting	2
Redwing (lurdus iliacus)	SK 76				NS492043	X	flock of 26	2
Reed Bunting (Emberiza schoeniclus)	SK 77	X		X	North Kyle	X	3prs	2
	SK 72	X		X	South Kyle	X	1pr	2
	SK 73			X	NS491074	X	flock: 28 birds	2
	SK 74			X	NS490073	X	flock: 7 birds	2
	SK 75			X	NS515007	X	breeding record	3
	SK 76			X	NX5499	X	Singing male	3
Skylark (Alauda arvensis)	SK 77	x		X	North Kyle	X	33prs	2
	SK 78	X		X	South Kyle	X	46prs	2
Song Thrush (Turdus philomelos)	SK 80	X		X	North Kyle	X	6prs	2
	SK 81	x		X	South Kyle	X	42prs	2
Sparrowhawk (Accipiter nisus)	SK 82			X	NS518053	X	flight record: 1 female	2
	SK 83			X	N\$540075	X	flight record: 1 female	2
	SK 84			X	N\$5107	X	flight record: 1 female	2
Spotted Flycatcher (Muscicapa striata)	SK 85	x		X	South Kyle	X	1pr	2
	SK 86			X	Mossdale Farm	X	1 bird	2
	SK 87			X	Bellsbank House Hotel	X	1 bird	2
Stonechat (Saxicola torquata)	SK 88	x		x	North Kyle	x	3prs	2
	SK 89	x		x	South Kyle	x	3prs	2
	SK 90			x	NS490043	x	1 male bird	3
	SK 91			x	NX5299	x	2 juveniles	3
Tawny Owl (Strix aluca)	SK 92			x	Mossdale Burn	x	3 imm birds	2
Treecreeper (Certhia familiaris)	SK 93	x			North Kyle	x	2prs	2
	SK 94	x			South Kyle	x	12prs	2
	SK 95				Snabb	x	common	2
Woodcock (Scolopax rusticola)	SK 96	x			South Kyle	x	1pr	2

Table D2.20 - BTO UK Wetland Bird Survey - Bogton Loch Waterbody Counts 2002-2007

Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 607	Sep-02	Mute Swan	Cygnus olor	MS	1
BO 608	Oct-02	Mute Swan	Cygnus olor	MS	2
BO 609	Nov-02	Mute Swan	Cygnus olor	MS	4
BO 610	Dec-02	Mute Swan	Cygnus olor	MS	5
BO 611	Jan-03	Mute Swan	Cygnus olor	MS	2
BO 612	Feb-03	Mute Swan	Cygnus olor	MS	0
BO 613	Mar-03	Mute Swan	Cygnus olor	MS	2
BO 614	Sep-03	Mute Swan	Cygnus olor	MS	2
BO 615	Oct-03	Mute Swan	Cygnus olor	MS	1
BO 616	Nov-03	Mute Swan	Cygnus olor	MS	3
BO 617	Dec-03	Mute Swan	Cygnus olor	MS	4
BO 618	Jan-04	Mute Swan	Cygnus olor	MS	4
BQ 619	Feb-04	Mute Swan	Cygnus olor	MS	4
BQ 620	Mar-04	Mute Swan	Cygnus olor	MS	0
BO 621	Apr-04	Mute Swan	Cygnus olor	MS	0
BO 622	Sep-04	Mute Swan	Cygnus olor	MS	1
BO 623	Oct-04	Mute Swan	Cygnus olor	MS	2
BO 624	Nov-04	Mute Swan	Cygnus olor	MS	2
BO 625	Dec-04	Mute Swan	Cygnus olor	MS	2
BO 625	lan-05	Mute Swan	Cygnus olor	MS	0
BO 627	Feb-05	Mute Swan	Cygnus olor	MS	0
BO 628	Mar-05	Mute Swan	Cygnus olor	MS	3
RO 629		Mute Swan	Cygnus olor	MS	2
BO 630	Nov-05	Mute Swan	Cygnus olor	MS	3
BO 631	Dec-05	Mute Swan	Cygnus olor	MS	2
BO 632	lan-06	Mute Swan	Cygnus olor	MS	2
BO 633	Feb-06	Mute Swan	Cygnus olor	MS	2
BO 634	Mar-06	Mute Swan	Cygnus olor	MS	0
BO 635	Oct-06	Mute Swan	Cygnus olor	MS	1
BQ 636	Nov-06	Mute Swan	Cygnus olor	MS	3
BO 637	Dec-06	Mute Swan	Cygnus olor	MS	0
BO 638	Jan-07	Mute Swan	Cygnus olor	MS	3
BO 639	Feb-07	Mute Swan	Cygnus olor	MS	0
BO 640	Mar-07	Mute Swan	Cygnus olor	MS	0
BO 641	Apr-07	Mute Swan	Cygnus olor	MS	0
BO 1076	Sep-02	Whooper Swan	Cvgnus cvgnus	WS	0
BO 1077	Oct-02	Whooper Swan	Cygnus cygnus	WS	5
BO 1078	Nov-02	Whooper Swan	Cvgnus cvgnus	WS	5
BO 1079	Dec-02	Whooper Swan	Cvgnus cvgnus	WS	9
BO 1080	Jan-03	Whooper Swan	Cygnus cygnus	WS	34
BO 1081	Feb-03	Whooper Swan	Cygnus cygnus	WS	13
BO 1082	Mar-03	Whooper Swan	Cygnus cygnus	WS	5
BO 1083	Sep-03	Whooper Swan	Cygnus cygnus	WS	0
BO 1084	Oct-03	Whooper Swan	Cygnus cygnus	WS	2
BO 1085	Nov-03	Whooper Swan	Cygnus cygnus	WS	2
BO 1086	Dec-03	Whooper Swan	Cygnus cygnus	WS	0
BO 1087	Jan-04	Whooper Swan	Cygnus cygnus	WS	4
BO 1088	Feb-04	Whooper Swan	Cygnus cygnus	WS	4
BO 1089	Mar-04	Whooper Swan	Cygnus cygnus	WS	0
BO 1090	Apr-04	Whooper Swan	Cygnus cygnus	WS	0
BO 1091	Sep-04	Whooper Swan	Cygnus cygnus	WS	0
BO 1092	Oct-04	Whooper Swan	Cygnus cygnus	WS	1
BO 1093	Nov-04	Whooper Swan	Cygnus cygnus	WS	1
BO 1094	Dec-04	Whooper Swan	Cygnus cygnus	WS	1
BO 1095	Jan-05	Whooper Swan	Cygnus cygnus	WS	19



Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 1096	Feb-05	Whooper Swan	Cygnus cygnus	WS	19
BO 1097	Mar-05	Whooper Swan	Cygnus cygnus	WS	6
BO 1098	Oct-05	Whooper Swan	Cygnus cygnus	WS	0
BO 1099	Nov-05	Whooper Swan	Cygnus cygnus	WS	7
BO 1100	Dec-05	Whooper Swan	Cygnus cygnus	WS	7
BO 1101	Jan-06	Whooper Swan	Cygnus cygnus	WS	7
BO 1102	Feb-06	Whooper Swan	Cygnus cygnus	WS	0
BO 1103	Mar-06	Whooper Swan	Cygnus cygnus	WS	5
BO 1104	Oct-06	Whooper Swan	Cygnus cygnus	WS	0
BO 1105	Nov-06	Whooper Swan	Cygnus cygnus	WS	1
BO 1106	Dec-06	Whooper Swan	Cygnus cygnus	WS	13
BO 1107	Jan-07	Whooper Swan	Cygnus cygnus	WS	4
BO 1108	Feb-07	Whooper Swan	Cygnus cygnus	WS	0
BO 1109	Mar-07	Whooper Swan	Cygnus cygnus	WS	0
BO 1110	Apr-07	Whooper Swan	Cygnus cygnus	WS	0
BO 705	Sep-02	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 706	Oct-02	Pink-footed Goose	Anser brachvrhvnchus	PG	0
BO 707	Nov-02	Pink-footed Goose	Anser brachyrhynchus	PG	0
BQ 708	Dec-02	Pink-footed Goose	Anser brachynynchus	PG	0
BO 709	lan-03	Pink-footed Goose	Anser brachynynchus	PG	0
BO 705	Eeb-03	Pink-footed Goose	Anser brachymynchus	PG	0
PO 711	Mar 02	Pink footed Goose	Anser brachymynchus	PG	0
BO 711	Ivial-05	Plink-tooted Goose	Anser brachymynchus		0
BO 712	Sep-03	Pink-footed Goose	Anser brachymynchus	PG	0
BO 713	0000	Pink-footed Goose	Anser brachymynchus	PG	0
BO /14	Nov-03	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 715	Dec-03	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 716	Jan-04	Pink-tooted Goose	Anser brachyrhynchus	PG	0
BO 717	Feb-04	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 718	Mar-04	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 719	Apr-04	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 720	Sep-04	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 721	Oct-04	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 722	Nov-04	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 723	Dec-04	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 724	Jan-05	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 725	Feb-05	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 726	Mar-05	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 727	Oct-05	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 728	Nov-05	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 729	Dec-05	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 730	Jan-06	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 731	Feb-06	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 732	Mar-06	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 733	Oct-06	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 734	Nov-06	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 735	Dec-06	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 736	lan-07	Pink-footed Goose	Anser brachyrhynchus	PG	0
BO 737	Feh-07	Pink-footed Goose	Anser brachyrhynchus	PG	0
RO 738	Mar-07	Pink-footed Goose	Anser brachyrhynchus	PG	0
PO 720		Dink footed Goose	Anser brachurhunchus		0
DO 733	Apr-07	Groopland White fronted Cases			0
BU 042	5ep-02	Greenland White front of Course			0
BU 643	UCt-02	Greenland White-fronted Goose		NW	0
BO 644	Nov-02	Greenland White-tronted Goose	Anser albitrons flavirostris	NW	0
BO 645	Dec-02	Greenland White-fronted Goose	Anser albitrons flavirostris	NW	0
BO 646	Jan-03	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 647	Feb-03	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0

Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 648	Mar-03	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 649	Sep-03	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 650	Oct-03	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 651	Nov-03	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 652	Dec-03	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 653	Jan-04	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 654	Feb-04	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 655	Mar-04	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 656	Apr-04	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 657	Sep-04	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 658	Oct-04	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 659	Nov-04	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 660	Dec-04	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 661	Jan-05	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 662	Feb-05	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 663	Mar-05	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 664	Oct-05	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 665	Nov-05	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 666	Dec-05	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 667	Jan-06	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 668	Feb-06	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BQ 669	Mar-06	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BQ 670	Oct-06	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BQ 671	Nov-06	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BQ 672	Dec-06	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BQ 673	lan-07	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 674	Feb-07	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BQ 675	Mar-07	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 676	Apr-07	Greenland White-fronted Goose	Anser albifrons flavirostris	NW	0
BO 371	Sen-02	Grevlag Goose (Icelandic population)	Anser anser		0
BO 372	Oct-02	Greylag Goose (Icelandic population)	Anser anser	,	0
BO 373	Nov-02	Greylag Goose (Icelandic population)	Anser anser	,	0
BO 374	Dec-02	Greylag Goose (Icelandic population)	Anser anser		0
BQ 375	lan-03	Greylag Goose (Icelandic population)	Anser anser		0
BQ 376	Feb-03	Greylag Goose (Icelandic population)	Anser anser		0
BO 377	Mar-03	Greylag Goose (Icelandic population)	Anser anser		0
BO 378	Sep-03	Greylag Goose (Icelandic population)	Anser anser	1	0
BO 379	Oct-03	Greylag Goose (Icelandic population)	Anser anser		0
BO 380	Nov-03	Greylag Goose (Icelandic population)	Anser anser		0
BO 381	Dec-03	Greylag Goose (Icelandic population)	Anser anser		0
BO 382	lan-04	Greylag Goose (Icelandic population)	Anser anser		1
BO 383	Feb-04	Greylag Goose (Icelandic population)	Anser anser		36
BO 384	Mar-04	Greylag Goose (Icelandic population)	Anser anser		4
BO 385	Apr-04	Greylag Goose (Icelandic population)	Anser anser		24
BO 386	Sep-04	Greylag Goose (Icelandic population)	Anser anser		0
BO 387	Oct-04	Greylag Goose (Icelandic population)	Anser anser		0
BO 388	Nov-04	Greylag Goose (Icelandic population)	Anser anser		0
BO 389	Dec-04	Greylag Goose (Icelandic population)	Anser anser	JI	0
BO 390	Jan-05	Greylag Goose (Icelandic population)	Anser anser	JI	0
BO 391	Feb-05	Greylag Goose (Icelandic population)	Anser anser	JI	0
BO 392	Mar-05	Greylag Goose (Icelandic population)	Anser anser		12
BO 393	Oct-05	Greylag Goose (Icelandic population)	Anser anser	JI	0
BO 394	Nov-05	Greylag Goose (Icelandic population)	Anser anser		0
BO 395	Dec-05	Greylag Goose (Icelandic population)	Anser anser		0
BO 396	lan-06	Greylag Goose (Icelandic population)	Anser anser		0
BO 397	Feb-06	Greylag Goose (Icelandic population)	Anser anser		0
	10000			JI JI	



Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 398	Mar-06	Greylag Goose (Icelandic population)	Anser anser	IL	2
BO 399	Oct-06	Greylag Goose (Icelandic population)	Anser anser	IL	0
BO 400	Nov-06	Greylag Goose (Icelandic population)	Anser anser	IL	0
BO 401	Dec-06	Greylag Goose (Icelandic population)	Anser anser	IL	24
BO 402	Jan-07	Greylag Goose (Icelandic population)	Anser anser	II	7
BO 403	Feb-07	Greylag Goose (Icelandic population)	Anser anser	IL	15
BO 404	Mar-07	Greylag Goose (Icelandic population)	Anser anser	IL	0
BO 405	Apr-07	Greylag Goose (Icelandic population)	Anser anser	IL	0
BO 69	Sep-02	Canada Goose	Branta canadensis	CG	0
BO 70	0ct-02	Canada Goose	Branta canadensis	CG	0
BO 71	Nov-02	Canada Goose	Branta canadensis	00 01	0
BO 72		Canada Goose	Branta canadensis		0
BO 72			Branta canadoneio	6	0
B0 73	Jail-05		Branta canadensis	CG CG	0
8074	Feb-03		Branta canadensis	CG CG	0
BO 75	Mar-03	Canada Goose	Branta canadensis	lG ac	0
BO 76	Sep-03	Canada Goose	Branta canadensis	LG	0
BO 77	Oct-03	Canada Goose	Branta canadensis	CG	0
BO 78	Nov-03	Canada Goose	Branta canadensis	CG	0
BO 79	Dec-03	Canada Goose	Branta canadensis	CG	0
BO 80	Jan-04	Canada Goose	Branta canadensis	CG	0
BO 81	Feb-04	Canada Goose	Branta canadensis	CG	0
BO 82	Mar-04	Canada Goose	Branta canadensis	CG	0
BO 83	Apr-04	Canada Goose	Branta canadensis	CG	2
BO 84	Sep-04	Canada Goose	Branta canadensis	CG	0
BO 85	Oct-04	Canada Goose	Branta canadensis	CG	0
BO 86	Nov-04	Canada Goose	Branta canadensis	CG	0
BO 87	Dec-04	Canada Goose	Branta canadensis	CG	0
BO 88	Jan-05	Canada Goose	Branta canadensis	CG	0
BO 89	Feb-05	Canada Goose	Branta canadensis	CG	0
BO 90	Mar-05	Canada Goose	Branta canadensis	CG	2
BO 91	Oct-05	Canada Goose	Branta canadensis	CG	0
BO 92	Nov-05	Canada Goose	Branta canadensis	CG	0
BO 93	Dec-05	Canada Goose	Branta canadensis	CG	0
BO 94	Jan-06	Canada Goose	Branta canadensis	CG	0
BO 95	Feb-06	Canada Goose	Branta canadensis	CG	0
BO 96	Mar-06	Canada Goose	Branta canadensis	CG	0
BO 97	Oct-06	Canada Goose	Branta canadensis	CG	0
BO 98	Nov-06	Canada Goose	Branta canadensis	CG	0
BO 99	Dec-06	Canada Goose	Branta canadensis	CG	0
BO 100	Jan-07	Canada Goose	Branta canadensis	CG	0
BO 101	Feb-07	Canada Goose	Branta canadensis	CG	0
BO 102	Mar-07	Canada Goose	Branta canadensis	CG	0
BO 103	Apr-07	Canada Goose	Branta canadensis	CG	0
BO 1041	Sep-02	Wigeon	Anas penelope	WN	0
BO 1042	Oct-02	Wigeon	Anas penelope	WN	0
BO 1043	Nov-02	Wigeon	Anas penelope	WN	0
BO 1044	Dec-02	Wigeon	Anas penelope	WN	0
BO 1045	Jan-03	Wigeon	Anas penelope	WN	0
BO 1046	Feb-03	Wigeon	Anas penelope	WN	0
BO 1047	Mar-03	Wigeon	Anas penelope	WN	0
BO 1048	Sep-03	Wigeon	Anas penelope	WN	0
BO 1049	Oct-03	Wigeon	Anas penelope	WN	0
BO 1050	Nov-03	Wigeon	Anas penelope	WN	5
BO 1051	Dec-03	Wigeon	Anas penelope	WN	0
BO 1052	Jan-04	Wigeon	Anas penelope	WN	0
BO 1053	Feb-04	Wigeon	Anas penelope	WN	0

Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 1054	Mar-04	Wigeon	Anas penelope	WN	0
BO 1055	Apr-04	Wigeon	Anas penelope	WN	0
BO 1056	Sep-04	Wigeon	Anas penelope	WN	0
BO 1057	Oct-04	Wigeon	Anas penelope	WN	0
BO 1058	Nov-04	Wigeon	Angs benelobe	WN	0
BO 1059	Dec-04	Wigeon	Anas benelobe	WN	0
BO 1060	lan-05	Wigeon	Anas penelope	WN	0
BO 1061	Feb-05	Wigeon	Anas penelope	WN	0
BO 1062	Mar-05	Wigeon	Anas penelope	WN	4
BO 1062	Oct-05	Wigcon	Anas penelope	WN	0
BO 1064	Nov-05	Wigeon		WN	0
BO 1065	Doc 05	Wigcon		WN	0
BO 1065		Wigcon		W/N	0
BO 1000	5ah-06	Wigcon	Ands penelope	WIN MAIL	0
BO 1067	Feb-06	Wigeon	Ands penelope	WN	0
BO 1068		Wigeon	Ands penelope	WN	18
BO 1069	0000	wigeon	Ands penelope	WN	0
BO 1070	Nov-06	Wigeon	Anas penelope	WN	0
BO 1071	Dec-06	Wigeon	Anas penelope	WN	0
BO 1072	Jan-07	Wigeon	Anas penelope	WN	0
BO 1073	Feb-07	Wigeon	Anas penelope	WN	17
BO 1074	Mar-07	Wigeon	Anas penelope	WN	0
BO 1075	Apr-07	Wigeon	Anas penelope	WN	0
BO 971	Sep-02	Teal	Anas crecca	Т.	0
BO 972	Oct-02	Teal	Anas crecca	Т.	0
BO 973	Nov-02	Teal	Anas crecca	т.	0
BO 974	Dec-02	Teal	Anas crecca	Т.	0
BO 975	Jan-03	Teal	Anas crecca	Т.	9
BO 976	Feb-03	Teal	Anas crecca	Т.	6
BO 977	Mar-03	Teal	Anas crecca	Т.	0
BO 978	Sep-03	Teal	Anas crecca	Т.	0
BO 979	Oct-03	Teal	Anas crecca	Т.	0
BO 980	Nov-03	Teal	Anas crecca	т.	0
BO 981	Dec-03	Teal	Anas crecca	Т.	0
BO 982	Jan-04	Teal	Anas crecca	Т.	0
BO 983	Feb-04	Teal	Anas crecca	Т.	2
BO 984	Mar-04	Teal	Anas crecca	Т.	0
BO 985	Apr-04	Teal	Anas crecca	Т.	0
BO 986	Sep-04	Teal	Anas crecca	T.	0
BO 987	Oct-04	Teal	Anas crecca	T.	0
BO 988	Nov-04	Teal	Anas crecca	Т.	0
BO 989	Dec-04	Teal	Anas crecca	Т.	0
BO 990	Jan-05	Teal	Anas crecca	Т.	0
BO 991	Feb-05	Teal	Anas crecca	Т.	0
BO 992	Mar-05	Teal	Anas crecca	Т.	0
BO 993	Oct-05	Teal	Anas crecca	т.	0
BO 994	Nov-05	Teal	Anas crecca	т.	0
BO 995	Dec-05	Teal	Anas crecca	т	3
BO 996	lan-06	Teal	Anas crecca	т	7
BO 997	Feh-06	Teal	Anas crecca	т	2
BO 998	Mar-06	Teal	Anas crecca	т	0
BO 330				т.	0
BO 1000			Ana crocca	I. 	0
BO 1000				1. 	0
BO 1002		1631 T1		I. 	0
BO 1002	Jan-U/		Anas crecca	l. _	0
BO 1003	Feb-07	Teal	Anas crecca	<u>Т.</u> _	12
BO 1004	Mar-07	Teal	Anas crecca	Т.	0



Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 1005	Apr-07	Teal	Anas crecca	Т.	0
BO 537	Sep-02	Mallard	Anas platyrhynchos	MA	0
BO 538	Oct-02	Mallard	Anas platyrhynchos	MA	6
BO 539	Nov-02	Mallard	Anas platyrhynchos	MA	0
BO 540	Dec-02	Mallard	Anas platyrhynchos	MA	0
BO 541	Jan-03	Mallard	Anas platyrhynchos	MA	26
BO 542	Feb-03	Mallard	Anas platyrhynchos	MA	2
BO 543	Mar-03	Mallard	Anas platyrhynchos	MA	0
BO 544	Sep-03	Mallard	Anas platyrhynchos	MA	0
BO 545	Oct-03	Mallard	Anas platyrhynchos	MA	5
BO 546	Nov-03	Mallard	Anas platyrhynchos	MA	4
BO 547	Dec-03	Mallard	Anas platyrhynchos	MA	6
BO 548	Jan-04	Mallard	Anas platyrhynchos	MA	3
BO 549	Feb-04	Mallard	Anas platyrhynchos	MA	24
BO 550	Mar-04	Mallard	Anas platyrhynchos	MA	0
BO 551	Apr-04	Mallard	Anas platyrhynchos	MA	0
BO 552	Sep-04	Mallard	Anas platyrhynchos	MA	0
BO 553	Oct-04	Mallard	Anas platyrhynchos	МА	0
BO 554	Nov-04	Mallard	Anas platyrhynchos	MA	0
BO 555	Dec-04	Mallard	Anas platyrhynchos	MA	0
BO 556	Jan-05	Mallard	Anas platyrhynchos	MA	1
BO 557	Feb-05	Mallard	Anas platyrhynchos	MA	19
BO 558	Mar-05	Mallard	Anas platyrhynchos	MA	0
BO 559	Oct-05	Mallard	Anas platyrhynchos	MA	5
BO 560	Nov-05	Mallard	Anas platyrhynchos	MA	5
BO 561	Dec-05	Mallard	Anas platyrhynchos	MA	12
BO 562	Jan-06	Mallard	Anas platyrhynchos	MA	4
BO 563	Feb-06	Mallard	Anas platyrhynchos	MA	7
BO 564	Mar-06	Mallard	Anas platyrhynchos	MA	2
BO 565	Oct-06	Mallard	Anas platyrhynchos	MA	0
BO 566	Nov-06	Mallard	Anas platyrhynchos	MA	0
BO 567	Dec-06	Mallard	Anas platyrhynchos	MA	5
BO 568	Jan-07	Mallard	Anas platyrhynchos	MA	2
BO 569	Feb-07	Mallard	Anas platyrhynchos	MA	8
BO 570	Mar-07	Mallard	Anas platyrhynchos	MA	0
BO 571	Apr-07	Mallard	Anas platyrhynchos	MA	0
BO 775	Sep-02	Pintail	Anas acuta	PT	0
BO 776	Oct-02	Pintail	Anas acuta	PT	0
BO 777	Nov-02	Pintail	Anas acuta	РТ	0
BO 778	Dec-02	Pintail	Anas acuta	PT	0
BO 779	Jan-03	Pintail	Anas acuta	РТ	0
BO 780	Feb-03	Pintail	Anas acuta	PT	0
BO 781	Mar-03	Pintail	Anas acuta	РТ	0
BO 782	Sep-03	Pintail	Anas acuta	РТ	0
BO 783	Oct-03	Pintail	Anas acuta	РТ	0
BO 784	Nov-03	Pintail	Anas acuta	РТ	0
BO 785	Dec-03	Pintail	Anas acuta	РТ	0
BO 786	Jan-04	Pintail	Anas acuta	РТ	0
BO 787	Feb-04	Pintail	Anas acuta	РТ	0
BO 788	Mar-04	Pintail	Anas acuta	РТ	0
BO 789	Apr-04	Pintail	Anas acuta	РТ	0
BO 790	Sep-04	Pintail	Anas acuta	РТ	0
BO 791	Oct-04	Pintail	Anas acuta	РТ	0
BO 792	Nov-04	Pintail	Anas acuta	РТ	0
BO 793	Dec-04	Pintail	Anas acuta	РТ	0
BO 794	Jan-05	Pintail	Anas acuta	PT	0
L	1	1	1	1	1

Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 795	Feb-05	Pintail	Anas acuta	РТ	0
BO 796	Mar-05	Pintail	Anas acuta	РТ	0
BO 797	Oct-05	Pintail	Anas acuta	РТ	0
BO 798	Nov-05	Pintail	Anas acuta	PT	0
BO 799	Dec-05	Pintail	Anas acuta	DT	0
BO 735	lap 06	Distail	Anas acuta		0
BO 800	1311-00	Piildi	Ands deute	PI	0
BO 801	Feb-06	Pintali	Ands acuta	PI	0
BO 802	Mar-U6	Pintail	Anas acuta	PI	0
BO 803	Oct-06	Pintail	Anas acuta	РТ	0
BO 804	Nov-06	Pintail	Anas acuta	РТ	0
BO 805	Dec-06	Pintail	Anas acuta	РТ	0
BO 806	Jan-07	Pintail	Anas acuta	РТ	0
BO 807	Feb-07	Pintail	Anas acuta	РТ	0
BO 808	Mar-07	Pintail	Anas acuta	PT	0
BO 809	Apr-07	Pintail	Anas acuta	РТ	0
BO 740	Sep-02	Pochard	Aythya ferina	PO	0
BO 741	Oct-02	Pochard	Aythya ferina	PO	0
BO 742	Nov-02	Pochard	Avthva ferina	РО	0
BO 743	Dec-02	Pochard	Avthva ferina	PO	0
BO 713	lan_03	Pochard	Avthva ferina	PO RO	3
BO 744		Pochard	Ayunya Jerina	FO	2
B0 745	Feb-03	Pochard	Ayunya Jerina	PO	0
BO 746	Miar-03	Pochard	Aytrya ferina	PO	0
BO 747	Sep-03	Pochard	Aythya ferina	PO	0
BO 748	Oct-03	Pochard	Aythya ferina	РО	0
BO 749	Nov-03	Pochard	Aythya ferina	РО	0
BO 750	Dec-03	Pochard	Aythya ferina	РО	0
BO 751	Jan-04	Pochard	Aythya ferina	РО	0
BO 752	Feb-04	Pochard	Aythya ferina	PO	0
BO 753	Mar-04	Pochard	Aythya ferina	PO	0
BO 754	Apr-04	Pochard	Aythya ferina	PO	0
BO 755	Sep-04	Pochard	Aythya ferina	PO	0
BO 756	Oct-04	Pochard	Aythya ferina	PO	0
BO 757	Nov-04	Pochard	Aythya ferina	PO	0
BO 758	Dec-04	Pochard	Avthva ferina	РО	0
BO 759	lan-05	Pochard	Avthva ferina	PO	0
BO 760	Feb-05	Pochard	Avthva ferina	PO	0
BO 761	Mar-05	Pochard	Avthva ferina	PO BO	0
PO 761		Pochard	Author foring	PO RO	0
BO 702	0000	Pochard	Ayunya Jerina	PO	0
BO 763	NOV-05	Pochard	Ayunya jerina	PO	0
BU /64	Dec-05	Pochard	Aytnya Terina	04	0
BO 765	Jan-06	Pochard	Aythya terina	РО	0
BO 766	Feb-06	Pochard	Aythya ferina	РО	0
BO 767	Mar-06	Pochard	Aythya ferina	РО	0
BO 768	Oct-06	Pochard	Aythya ferina	РО	0
BO 769	Nov-06	Pochard	Aythya ferina	PO	0
BO 770	Dec-06	Pochard	Aythya ferina	РО	0
BO 771	Jan-07	Pochard	Aythya ferina	РО	0
BO 772	Feb-07	Pochard	Aythya ferina	РО	0
BO 773	Mar-07	Pochard	Aythya ferina	PO	0
BO 774	Apr-07	Pochard	Aythya ferina	PO	0
BO 1006	Sep-02	Tufted Duck	Aythya fuligula	TU	0
BO 1007	Oct-02	Tufted Duck	Aythya fuligula	TU	0
BO 1008	Nov-02	Tufted Duck	Aythya fuligula	TU	0
BO 1009	Dec-02	Tufted Duck	Avthva fuligula	TU	0
RO 1010	lan-03	Tufted Duck	Avthva fulioula	TII	0
BO 1010	Eab 02	Tuffed Duck	Avthva fuliqula	ти	0
DO 1011	rep-05			10	U



Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 1012	Mar-03	Tufted Duck	Aythya fuligula	TU	0
BO 1013	Sep-03	Tufted Duck	Aythya fuligula	TU	0
BO 1014	Oct-03	Tufted Duck	Aythya fuligula	TU	0
BO 1015	Nov-03	Tufted Duck	Aythya fuligula	TU	0
BO 1016	Dec-03	Tufted Duck	Aythya fuligula	TU	0
BO 1017	Jan-04	Tufted Duck	Aythya fuligula	TU	0
BO 1018	Feb-04	Tufted Duck	Aythya fuligula	TU	0
BO 1019	Mar-04	Tufted Duck	Aythya fuligula	TU	0
BO 1020	Apr-04	Tufted Duck	Aythya fuligula	TU	0
BO 1021	Sep-04	Tufted Duck	Aythya fuligula	TU	0
BO 1022	Oct-04	Tufted Duck	Aythya fuligula	TU	0
BO 1023	Nov-04	Tufted Duck	Aythya fuligula	TU	0
BO 1024	Dec-04	Tufted Duck	Aythya fuligula	TU	0
BO 1025	Jan-05	Tufted Duck	Aythya fuligula	TU	0
BO 1026	Feb-05	Tufted Duck	Aythya fuligula	TU	9
BO 1027	Mar-05	Tufted Duck	Avthva fuligula	ти	0
BO 1028	Oct-05	Tufted Duck	Avthva fuligula	ти	0
BO 1029	Nov-05	Tufted Duck	Avthya fuligula	ти	0
BO 1030	Dec-05	Tuffed Duck	Avthya fuligula	TU	0
BO 1031	lan-06	Tuffed Duck	Avthya fuligula	ти	2
BO 1032	Feb-06	Tuffed Duck	Avthya fuligula	ти	2
BO 1033	Mar-06	Tuffed Duck	Avthya fuligula	TU	- 3
BO 1034	Oct-06	Tuffed Duck	Avthya fuligula	TU	0
BO 1035	Nov-06	Tuffed Duck	Avthya fuligula	TU	0
BO 1035	Dec-06	Tuffed Duck	Avthya fuligula	TU	0
BO 1037	lan-07	Tuffed Duck	Avthya fuligula	TIL	0
BO 1037	Feb-07	Tuffed Duck	Aythya fuligula	TIL	8
BO 1038	Mar-07	Tuffed Duck	Aythya fuligula	TIL	0
BO 1035	Apr 07	Tuffed Duck	Aythya fuligula	TU	0
PO 001		Scaup	Aythya marila	91	0
BO 901	0ct 02	Scaup	Aydıya marila	55	0
BO 902	Nov 02	Scaup	Aythya marila	SP SP	0
BO 903		Scaup	Aydıya marila	Sr CD	0
BO 904		Scaup	Aythya marila	SP SP	0
BO 905	Jail-05	Scaup	Aythya marila	SP SP	0
BO 900	rep-us	Scaup	Aythya marila	SP SP	0
BO 307	Son 03	Scaup	Aythya marila	Sr CD	0
BO 908	0ct 02	Scaup	Aythya marila	SP SP	0
BO 909	Nov 02	Scaup	Aythya marila	SP SP	0
PO 011		Scaup	Aythya marila	SP SP	0
PO 012		Scaup	Aythya marila	SF CD	0
BO 912		Scaup	Avthya marila	Jr CD	0
PO 014	Nor 04	Scaup	Avthva marila	Jr CD	0
BO 914		Scaup	Aydıya marila	Sr CD	0
BO 915	Αμι-04 Son 04	Scaup	Aythya marila	SP SP	0
BO 910	0ct 04	Scaup	Aythya marila	SP SP	0
BO 917	No: 04	Scaup	Ayuya marila	SP SP	0
BO 910		Scaup	Ayuiya mania		0
BO 919		Scaup	Ayuiya Marila	<u> </u>	0
BO 920	Jan-us	Scaup	Ayunya marila	57 57	0
BO 921	Feb-US	Scaup		۲۰۰۲ ۲۰۰۲	0
BO 922		Scaup		5P	0
BU 923		Scaup		<u> </u>	0
BU 924	Nov-05	Scaup	Aytnya marila	SP SP	0
BO 925	Dec-05	Scaup	Aythya marila	SP SP	0
BO 926	Jan-06	Scaup	Aythya marila	SP	0
BO 927	Feb-06	Scaup	Aythya marila	SP SP	0

Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 928	Mar-06	Scaup	Aythya marila	SP	0
BO 929	Oct-06	Scaup	Aythya marila	SP	0
BO 930	Nov-06	Scaup	Aythya marila	SP	0
BO 931	Dec-06	Scaup	Aythya marila	SP	0
BO 932	Jan-07	Scaup	Aythya marila	SP	0
BO 933	Feb-07	Scaup	Aythya marila	SP	0
BO 934	Mar-07	Scaup	Aythya marila	SP	0
BO 935	Apr-07	Scaup	Aythya marila	SP	0
BO 502	Sep-02	Long-tailed Duck	Clangula hyemalis	LN	0
BO 503	Oct-02	Long-tailed Duck	Clangula hyemalis	LN	0
BO 504	Nov-02	Long-tailed Duck	Clangula hyemalis	LN	0
BO 505	Dec-02	Long-tailed Duck	Clangula hyemalis	LN	0
BO 506	Jan-03	Long-tailed Duck	Clangula hyemalis	LN	0
BO 507	Feb-03	Long-tailed Duck	Clangula hyemalis	LN	0
BO 508	Mar-03	Long-tailed Duck	Clangula hyemalis	LN	0
BO 509	Sep-03	Long-tailed Duck	Clangula hyemalis	LN	0
BO 510	Oct-03	Long-tailed Duck	Clangula hyemalis	LN	0
BO 511	Nov-03	Long-tailed Duck	Clangula hyemalis	LN	0
BO 512	Dec-03	Long-tailed Duck	Clangula hyemalis	LN	0
BO 513	Jan-04	Long-tailed Duck	Clangula hyemalis	LN	0
BO 514	Feb-04	Long-tailed Duck	Clangula hyemalis	LN	0
BO 515	Mar-04	Long-tailed Duck	Clangula hyemalis	LN	0
BO 516	Apr-04	Long-tailed Duck	Clangula hyemalis	LN	0
BO 517	Sep-04	Long-tailed Duck	Clangula hyemalis	LN	0
BO 518	Oct-04	Long-tailed Duck	Clangula hyemalis	LN	0
BO 519	Nov-04	Long-tailed Duck	Clangula hyemalis	LN	0
BO 520	Dec-04	Long-tailed Duck	Clangula hyemalis	LN	0
BO 521	Jan-05	Long-tailed Duck	Clangula hyemalis	LN	0
BO 522	Feb-05	Long-tailed Duck	Clangula hyemalis	LN	0
BO 523	Mar-05	Long-tailed Duck	Clangula hyemalis	LN	0
BO 524	Oct-05	Long-tailed Duck	Clangula hyemalis	LN	0
BO 525	Nov-05	Long-tailed Duck	Clangula hyemalis	LN	0
BO 526	Dec-05	Long-tailed Duck	Clangula hyemalis	LN	0
BO 527	Jan-06	Long-tailed Duck	Clangula hyemalis	LN	0
BO 528	Feb-06	Long-tailed Duck	Clangula hyemalis	LN	0
BO 529	Mar-06	Long-tailed Duck	Clangula hyemalis	LN	0
BO 530	Oct-06	Long-tailed Duck	Clangula hyemalis	LN	0
BO 531	Nov-06	Long-tailed Duck	Clangula hyemalis	LN	0
BO 532	Dec-06	Long-tailed Duck	Clangula hyemalis	LN	0
BO 533	Jan-07	Long-tailed Duck	Clangula hyemalis	LN	0
BO 534	Feb-07	Long-tailed Duck	Clangula hyemalis	LN	0
BO 535	Mar-07	Long-tailed Duck	Clangula hyemalis	LN	0
BO 536	Apr-07	Long-tailed Duck	Clangula hyemalis	LN	0
BO 268	Sep-02	Goldeneye	Bucephala clangula	GN	0
BO 269	0ct-02	Goldeneye	Bucephala clangula	GN	3
BO 270	Nov-02	Goldeneye	Bucephala clangula	GN	/
BU 2/1		Coldeneye	Bucebhala clangula	GN	4
BU 272	Jdll-U3	Coldonovo	Bucebhala clangula	GN	3
DO 273	Гер-03 Мат 02	Coldonava	Bucebhala clangula	GN	<u>э</u>
BO 274	CO-161VI	Goldeneye	Bucebhala clangula	GN	9
BO 275		Goldeneve	Bucebhala clangula	GN	2
BO 277	Nov-03	Goldeneve	Bucebhala clangula	GN	5
BO 277	Dec-03	Goldeneve	Bucebhala clangula	GN	3
BO 279	Jan-04	Goldeneve	Bucephala clangula	GN	21
BO 280	Feb-04	Goldeneve	Bucephala clangula	GN	20
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Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 281	Mar-04	Goldeneye	Bucephala clangula	GN	0
BO 282	Apr-04	Goldeneye	Bucephala clangula	GN	0
BO 283	Sep-04	Goldeneye	Bucephala clangula	GN	0
BO 284	Oct-04	Goldeneye	Bucephala clangula	GN	0
BO 285	Nov-04	Goldeneye	Bucephala clangula	GN	0
BO 286	Dec-04	Goldeneye	Bucephala clangula	GN	0
BO 287	Jan-05	Goldeneye	Bucephala clangula	GN	29
BO 288	Feb-05	Goldeneye	Bucephala clangula	GN	0
BO 289	Mar-05	Goldeneye	Bucephala clangula	GN	12
BO 290	Oct-05	Goldeneye	Bucephala clangula	GN	0
BO 291	Nov-05	Goldeneye	Bucephala clangula	GN	7
BO 292	Dec-05	Goldeneye	Bucephala clangula	GN	5
BO 293	Jan-06	Goldeneye	Bucephala clangula	GN	5
BO 294	Feb-06	Goldeneye	Bucephala clangula	GN	2
BO 295	Mar-06	Goldeneye	Bucephala clangula	GN	17
BO 296	Oct-06	Goldeneye	Bucephala clangula	GN	0
BO 297	Nov-06	Goldeneye	Bucephala clangula	GN	13
BO 298	Dec-06	Goldeneye	Bucephala clangula	GN	12
BO 299	Jan-07	Goldeneye	Bucephala clangula	GN	16
BO 300	Feb-07	Goldeneye	Bucephala clangula	GN	53
BO 301	Mar-07	Goldeneye	Bucephala clangula	GN	22
BO 302	Apr-07	Goldeneye	Bucephala clangula	GN	7
BO 936	Sep-02	Smew	Mergellus albellus	SY	0
BO 937	Oct-02	Smew	Mergellus albellus	SY	0
BO 938	Nov-02	Smew	Mergellus albellus	SY	0
BO 939	Dec-02	Smew	Mergellus albellus	SY	0
BO 940	Jan-03	Smew	Mergellus albellus	SY	0
BO 941	Feb-03	Smew	Mergellus albellus	SY	0
BO 942	Mar-03	Smew	Mergellus albellus	SY	0
BO 943	Sep-03	Smew	Mergellus albellus	SY	0
BO 944	Oct-03	Smew	Mergellus albellus	SY	0
BO 945	Nov-03	Smew	Mergellus albellus	SY	1
BO 946	Dec-03	Smew	Mergellus albellus	SY	0
BO 947	Jan-04	Smew	Mergellus albellus	SY	0
BO 948	Feb-04	Smew	Mergellus albellus	SY	0
BO 949	Mar-04	Smew	Mergellus albellus	SY	0
BO 950	Apr-04	Smew	Mergellus albellus	SY	0
BO 951	Sep-04	Smew	Mergellus albellus	SY	0
BO 952	Oct-04	Smew	Mergellus albellus	SY	0
BO 953	Nov-04	Smew	Mergellus albellus	SY	0
BO 954	Dec-04	Smew	Mergellus albellus	SY	0
BO 955	Jan-05	Smew	Mergellus albellus	SY	0
BO 956	Feb-05	Smew	Mergellus albellus	SY	0
BO 957	Mar-05	Smew	Mergellus albellus	SY	0
BO 958	Oct-05	Smew	Mergellus albellus	SY	0
BO 959	Nov-05	Smew	Mergellus albellus	SY	0
BO 960	Dec-05	Smew	Mergellus albellus	SY	0
BO 961	Jan-06	Smew	Mergellus albellus	SY	0
BO 962	Feb-06	Smew	Mergellus albellus	SY	0
BO 963	Mar-06	Smew	Mergellus albellus	SY	0
BO 964	Oct-06	Smew	Mergellus albellus	SY	0
BO 965	Nov-06	Smew	Mergellus albellus	SY	0
BO 966	Dec-06	Smew	Mergellus albellus	SY	0
BO 967	Jan-07	Smew	Mergellus albellus	SY	0
BO 968	Feb-07	Smew	Mergellus albellus	SY	0
BO 969	Mar-07	Smew	Mergellus albellus	SY	0
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Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 970	Apr-07	Smew	Mergellus albellus	SY	0
BO 838	Sep-02	Red-breasted Merganser	Mergus serrator	RM	0
BO 839	Oct-02	Red-breasted Merganser	Mergus serrator	RM	0
BO 840	Nov-02	Red-breasted Merganser	Mergus serrator	RM	0
BO 841	Dec-02	Red-breasted Merganser	Mergus serrator	RM	0
BO 842	Jan-03	Red-breasted Merganser	Mergus serrator	RM	0
BO 843	Feb-03	Red-breasted Merganser	Mergus serrator	RM	0
BO 844	Mar-03	Red-breasted Merganser	Mergus serrator	BM	0
BO 845	Sen-03	Red-breasted Merganser	Mergus serrator	BM	0
BO 846	Oct-03	Red-breasted Merganser	Mergus serrator	BM	0
BO 847	Nov-03	Red-breasted Merganser	Mergus serrator	BM	0
BO 848	Dec-03	Red-breasted Merganser	Mergus serrator	BM	0
BO 849	lan-04	Red-breasted Merganser	Mergus serrator	BM	0
BO 850	Eeb-04	Red-breasted Merganser	Mergus servator	RM	0
BO 850	Mar 04	Pod broasted Morganser	Mergus serrator	PM	0
BO 851	Apr-04	Red-breasted Merganser	Mergus servator	RM	0
BO 852	Son 04	Pod broasted Morgansor	Mergus serrator	PM	0
BO 853	0ct 04	Red broasted Morganser	Morgue corrector	DM	0
BO 854	Nov 04	Red broasted Morganser	Margus servator		0
BO 855	N0V-04	Red-breasted Merganser	Mergus serrator	RIM	0
BO 850	Dec-04	Red-breasted Merganser	Mergus servator	RIM	0
BO 857	Jan-05	Red-breasted Merganser		RM	0
BU 858	FED-US	Red-breasted Merganser	Mergus serrator	RM	0
BO 859	Mar-05	Red-breasted Merganser	Mergus serrator	RM	0
BO 860	0ct-05	Red-breasted Merganser	Mergus serrator	RM	0
BO 861	Nov-05	Red-breasted Merganser	Mergus serrator	RM	0
BO 862	Dec-05	Red-breasted Merganser	Mergus serrator	RM	0
BO 863	Jan-06	Red-breasted Merganser	Mergus serrator	RM	0
BO 864	Feb-06	Red-breasted Merganser	Mergus serrator	RM	0
BO 865	Mar-06	Red-breasted Merganser	Mergus serrator	RM	0
BO 866	Oct-06	Red-breasted Merganser	Mergus serrator	RM	0
BO 867	Nov-06	Red-breasted Merganser	Mergus serrator	RM	0
BO 868	Dec-06	Red-breasted Merganser	Mergus serrator	RM	0
BO 869	Jan-07	Red-breasted Merganser	Mergus serrator	RM	0
BO 870	Feb-07	Red-breasted Merganser	Mergus serrator	RM	0
BO 871	Mar-07	Red-breasted Merganser	Mergus serrator	RM	0
BO 872	Apr-07	Red-breasted Merganser	Mergus serrator	RM	0
BO 233	Sep-02	Goosander	Mergus merganser	GD	0
BO 234	Oct-02	Goosander	Mergus merganser	GD	0
BO 235	Nov-02	Goosander	Mergus merganser	GD	0
BO 236	Dec-02	Goosander	Mergus merganser	GD	3
BO 237	Jan-03	Goosander	Mergus merganser	GD	0
BO 238	Feb-03	Goosander	Mergus merganser	GD	0
BO 239	Mar-03	Goosander	Mergus merganser	GD	0
BO 240	Sep-03	Goosander	Mergus merganser	GD	0
BO 241	Oct-03	Goosander	Mergus merganser	GD	0
BO 242	Nov-03	Goosander	Mergus merganser	GD	0
BO 243	Dec-03	Goosander	Mergus merganser	GD	0
BO 244	Jan-04	Goosander	Mergus merganser	GD	3
BO 245	Feb-04	Goosander	Mergus merganser	GD	2
BO 246	Mar-04	Goosander	Mergus merganser	GD	0
BO 247	Apr-04	Goosander	Mergus merganser	GD	0
BO 248	Sep-04	Goosander	Mergus merganser	GD	0
BO 249	Oct-04	Goosander	Mergus merganser	GD	0
BO 250	Nov-04	Goosander	Mergus merganser	GD	0
BO 251	Dec-04	Goosander	Mergus merganser	GD	0
BO 252	Jan-05	Goosander	Mergus merganser	GD	0



Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 253	Feb-05	Goosander	Mergus merganser	GD	2
BO 254	Mar-05	Goosander	Mergus merganser	GD	0
BO 255	Oct-05	Goosander	Mergus merganser	GD	0
BO 256	Nov-05	Goosander	Mergus merganser	GD	0
BO 257	Dec-05	Goosander	Mergus merganser	GD	2
BO 258	Jan-06	Goosander	Mergus merganser	GD	8
BO 259	Feb-06	Goosander	Mergus merganser	GD	4
BO 260	Mar-06	Goosander	Mergus merganser	GD	0
BO 261	Oct-06	Goosander	Mergus merganser	GD	0
BO 262	Nov-06	Goosander	Mergus merganser	GD	0
BO 263	Dec-06	Goosander	Mergus merganser	GD	0
BO 264	lan-07	Goosander	Mergus merganser	GD	4
BO 265	Eeb-07	Goosander	Mergus merganser	GD GD	0
PO 265	Mar 07	Coosander	Margua marganaar	GD CD	0
BO 200		Consonder	Margus margansar	GD	0
BO 267	Apr-07			GD	0
BO 467	Sep-02			LG	0
BO 468	Uct-02	Little Grebe	lachybaptus ruficollis	LG	0
BO 469	Nov-02	Little Grebe	lachybaptus ruficollis	LG	0
BO 470	Dec-02	Little Grebe	lachybaptus ruficollis	LG	0
BO 471	Jan-03	Little Grebe	Tachybaptus ruficollis	LG	2
BO 472	Feb-03	Little Grebe	Tachybaptus ruficollis	LG	0
BO 473	Mar-03	Little Grebe	Tachybaptus ruficollis	LG	0
BO 474	Sep-03	Little Grebe	Tachybaptus ruficollis	LG	0
BO 475	Oct-03	Little Grebe	Tachybaptus ruficollis	LG	0
BO 476	Nov-03	Little Grebe	Tachybaptus ruficollis	LG	4
BO 477	Dec-03	Little Grebe	Tachybaptus ruficollis	LG	0
BO 478	Jan-04	Little Grebe	Tachybaptus ruficollis	LG	1
BO 479	Feb-04	Little Grebe	Tachybaptus ruficollis	LG	1
BO 480	Mar-04	Little Grebe	Tachybaptus ruficollis	LG	0
BO 481	Apr-04	Little Grebe	Tachybaptus ruficollis	LG	0
BO 482	Sep-04	Little Grebe	Tachybaptus ruficollis	LG	0
BO 483	Oct-04	Little Grebe	Tachybaptus ruficollis	LG	0
BO 484	Nov-04	Little Grebe	Tachybaptus ruficollis	LG	0
BO 485	Dec-04	Little Grebe	Tachybaptus ruficollis	LG	0
BO 486	Jan-05	Little Grebe	Tachybaptus ruficollis	LG	0
BO 487	Feb-05	Little Grebe	Tachybaptus ruficollis	LG	0
BO 488	Mar-05	Little Grebe	Tachybaptus ruficollis	LG	0
BO 489	Oct-05	Little Grebe	Tachybaptus ruficollis	LG	0
BO 490	Nov-05	Little Grebe	Tachybaptus ruficollis	LG	0
BO 491	Dec-05	Little Grebe	Tachybaptus ruficollis	LG	0
BO 492	Jan-06	Little Grebe	Tachybaptus ruficollis	LG	0
BO 493	Feb-06	Little Grebe	Tachybaptus ruficollis	LG	0
BO 494	Mar-06	Little Grebe	Tachybaptus ruficollis	LG	1
BO 495	Oct-06	Little Grebe	Tachybaptus ruficollis	LG	0
BO 496	Nov-06	Little Grebe	Tachybaptus ruficollis	LG	0
BO 497	Dec-06	Little Grebe	Tachybaptus ruficollis	LG	2
BO 498	Jan-07	Little Grebe	Tachybaptus ruficollis	LG	2
BO 499	Feb-07	Little Grebe	Tachybaptus ruficollis	LG	1
BO 500	Mar-07	Little Grebe	Tachybaptus ruficollis	LG	0
BO 501	Apr-07	Little Grebe	Tachybaptus ruficollis	LG	2
BO 34	Sep-02	Cormorant	Phalacrocorax carbo	CA	0
BO 35	Oct-02	Cormorant	Phalacrocorax carbo	CA	0
BO 36	Nov-02	Cormorant	Phalacrocorax carbo	СА	0
BO 37	Dec-02	Cormorant	Phalacrocorax carbo	CA	0
BO 38	Jan-03	Cormorant	Phalacrocorax carbo	CA	0
BO 39	Feb-03	Cormorant	Phalacrocorax carbo	CA CA	1

Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 40	Mar-03	Cormorant	Phalacrocorax carbo	CA	1
BO 41	Sep-03	Cormorant	Phalacrocorax carbo	CA	0
BO 42	Oct-03	Cormorant	Phalacrocorax carbo	CA	0
BO 43	Nov-03	Cormorant	Phalacrocorax carbo	CA	0
BO 44	Dec-03	Cormorant	Phalacrocorax carbo	CA	0
BO 45	Jan-04	Cormorant	Phalacrocorax carbo	CA	0
BO 46	Feb-04	Cormorant	Phalacrocorax carbo	۲۵ ۵۱	0
BO 47	Mar-04	Cormorant	Phalacrocorax carbo	CA	0
BO 48	Apr-04	Cormorant	Phalacrocorax carbo		0
BO 49		Cormorant	Phalacrocorax carbo	CA	0
80 50	0ct 04	Cormorant	Phalacrocoray carbo	CA	0
B0 50	Nov 04	Cormorant		CA CA	0
80.53	Doc 04	Cormorant	Phalacrocorax carbo	CA CA	0
BO 52		Cormorant		CA	1
BO 53	Jail-05	Cormorant		CA	1
BO 54	Feb-05	Cormorant	Phalacrocorax carbo	CA	2
BU 55	Mar-05	Cormorant	Phalacrocorax carbo	CA	0
BO 56	Oct-05	Cormorant	Phalacrocorax carbo	CA	0
BO 57	Nov-05	Cormorant	Phalacrocorax carbo	CA	0
BO 58	Dec-05	Cormorant	Phalacrocorax carbo	CA	0
BO 59	Jan-06	Cormorant	Phalacrocorax carbo	CA	0
BO 60	Feb-06	Cormorant	Phalacrocorax carbo	CA	1
BO 61	Mar-06	Cormorant	Phalacrocorax carbo	CA	0
BO 62	Oct-06	Cormorant	Phalacrocorax carbo	CA	0
BO 63	Nov-06	Cormorant	Phalacrocorax carbo	CA	0
BO 64	Dec-06	Cormorant	Phalacrocorax carbo	CA	1
BO 65	Jan-07	Cormorant	Phalacrocorax carbo	CA	0
BO 66	Feb-07	Cormorant	Phalacrocorax carbo	CA	1
BO 67	Mar-07	Cormorant	Phalacrocorax carbo	CA	0
BO 68	Apr-07	Cormorant	Phalacrocorax carbo	CA	0
BO 303	Sep-02	Grey Heron	Ardea cinerea	Н.	0
BO 304	Oct-02	Grey Heron	Ardea cinerea	Н.	0
BO 305	Nov-02	Grey Heron	Ardea cinerea	Н.	0
BO 306	Dec-02	Grey Heron	Ardea cinerea	Н.	0
BO 307	Jan-03	Grey Heron	Ardea cinerea	Н.	2
BO 308	Feb-03	Grey Heron	Ardea cinerea	Н.	0
BO 309	Mar-03	Grey Heron	Ardea cinerea	Н.	0
BO 310	Sep-03	Grey Heron	Ardea cinerea	H.	0
BO 311	Oct-03	Grey Heron	Ardea cinerea	H.	0
BO 312	Nov-03	Grey Heron	Ardea cinerea	H.	0
BO 313	Dec-03	Grey Heron	Ardea cinerea	Н.	0
BO 314	Jan-04	Grey Heron	Ardea cinerea	н.	0
BO 315	Feb-04	Grev Heron	Ardea cinerea	Н.	0
BO 316	Mar-04	Grev Heron	Ardea cinerea	Н.	0
BO 317	Apr-04	Grev Heron	Ardea cinerea	н.	0
BO 318	Sen-04	Grev Heron	Ardea cinerea	н.	1
BO 319	0ct-04	Grey Heron	Ardea ciperea	н	0
BO 320	Nov-04	Grev Heron	Ardea cinerea	н	0
RO 321	Dec-04	Grev Heron	Ardea cinerea	н	0
BO 321	lan_05	Grey Heron	Ardea cinerea	н	0
BO 322	Fah-05	Grey Heron	Ardea cinerea	н.	0
BO 323	Nor 05	Grey Heron	Ardea cinerea	н. ц	0
BU 324			Ardea cinerea	п.	
BU 325				п.	0
BU 320				н.	
BU 327	Dec-05	Grey Heron	Ardea cinerea	Н.	0
BO 328	Jan-U6	Grey Heron	Ardea cinerea	Н.	2
BO 329	Feb-06	Grey Heron	Ardea cinerea	Н.	1



Ret No	Date	Species	Scientific Name	SpeciesCode	Count
BO 330	Mar-U6	Grey Heron	Ardea cinerea	Н.	0
BO 331	Uct-06	Grey Heron	Ardea cinerea	Н.	0
BO 332	Nov-06	Grey Heron	Ardea cinerea	Н.	0
BO 333	Dec-06	Grey Heron	Ardea cinerea	Н.	0
BO 334	Jan-07	Grey Heron	Ardea cinerea	Н.	0
BO 335	Feb-07	Grey Heron	Ardea cinerea	Н.	0
BO 336	Mar-07	Grey Heron	Ardea cinerea	Н.	0
BO 337	Apr-07	Grey Heron	Ardea cinerea	Н.	0
BO 572	Sep-02	Moorhen	Gallinula chloropus	MH	0
BO 573	Oct-02	Moorhen	Gallinula chloropus	MH	0
BO 574	Nov-02	Moorhen	Gallinula chloropus	MH	0
BO 575	Dec-02	Moorhen	Gallinula chloropus	MH	0
BO 576	Jan-03	Moorhen	Gallinula chloropus	MH	2
BO 577	Feb-03	Moorhen	Gallinula chloropus	MH	0
BO 578	Mar-03	Moorhen	Gallinula chloropus	MH	0
BO 579	Sep-03	Moorhen	Gallinula chloropus	MH	0
BO 580	Oct-03	Moorhen	Gallinula chloropus	MH	0
BO 581	Nov-03	Moorhen	Gallinula chloropus	MH	1
BO 582	Dec-03	Moorhen	Gallinula chloropus	MH	0
BO 583	Jan-04	Moorhen	Gallinula chloropus	MH	0
BO 584	Feb-04	Moorhen	Gallinula chloropus	MH	0
BO 585	Mar-04	Moorhen	Gallinula chloropus	MH	0
BO 586	Apr-04	Moorhen	Gallinula chloropus	MH	0
BO 587	Sep-04	Moorhen	Gallinula chloropus	MH	0
BO 588	Oct-04	Moorhen	Gallinula chloropus	MH	0
BO 589	Nov-04	Moorhen	Gallinula chloropus	MH	0
BO 590	Dec-04	Moorhen	Gallinula chloropus	MH	0
BO 591	Jan-05	Moorhen	Gallinula chloropus	MH	0
BO 592	Feb-05	Moorhen	Gallinula chloropus	MH	0
BO 593	Mar-05	Moorhen	Gallinula chloropus	MH	0
BO 594	Oct-05	Moorhen	Gallinula chloropus	MH	0
BO 595	Nov-05	Moorhen	Gallinula chloropus	MH	0
BO 596	Dec-05	Moorhen	Gallinula chloropus	MH	1
BO 597	Jan-06	Moorhen	Gallinula chloropus	MH	0
BO 598	Feb-06	Moorhen	Gallinula chloropus	MH	1
BO 599	Mar-06	Moorhen	Gallinula chloropus	MH	0
BO 600	Oct-06	Moorhen	Gallinula chloropus	MH	0
BO 601	Nov-06	Moorhen	Gallinula chloropus	MH	0
BO 602	Dec-06	Moorhen	Gallinula chloropus	MH	0
BO 603	Jan-07	Moorhen	Gallinula chloropus	MH	0
BO 604	Feb-07	Moorhen		MH	0
BO 605	Mar-07	Moorhen	Gallinula chloropus	MH	0
BO 606	Apr-07	Moorhen	Gallinula chloropus	MH	0
BO 137	Sep-02	Coot	Fulica atra	CO	0
BO 138	Oct-02	Coot	Fulica atra	C0	0
BO 139	Nov-02	Coot	Fulica atra	СО	0
BO 140	Dec-02	Coot	Fulica atra	<u> </u>	0
BO 141	Jan-03	Coot	Fulica atra	CO	1
BO 142	Feb-03	Coot	Fulica atra	00	0
BO 143	Mar-03	Coot		00	0
BO 144	Sep-03	Coot	Fulica atra	<u> </u>	0
BO 145	Oct-03	Coot	Fulica atra	CO	0
BO 146	Nov-03	Coot	Fulica atra	CO	0
BO 147	Dec-03	Coot	Fulica atra	CO	0
BO 148	Jan-04	Coot	Fulica atra	СО	0
BO 149	Feb-04	Coot	Fulica atra	СО	0

Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 150	Mar-04	Coot	Fulica atra	СО	0
BO 151	Apr-04	Coot	Fulica atra	СО	0
BO 152	Sep-04	Coot	Fulica atra	СО	0
BO 153	Oct-04	Coot	Fulica atra	СО	0
BO 154	Nov-04	Coot	Fulica atra	CO	0
BO 155	Dec-04	Coot	Fulica atra	CO	0
BO 156	Jan-05	Coot	Fulica atra	CO	0
BO 157	Feb-05	Coot	Fulica atra	0	0
BO 158	Mar-05	Coot	Fulica atra	0	0
BO 159	Oct-05	Coot	Fulica atra	0	0
BO 160	Nov-05	Coot	Fulica atra	00	0
BO 161	Dec-05	Coot	Fulica atra	0	0
BO 162	lan-06	Coot	Fulica atra	00	0
BO 163	Feb-06	Coot	Fulica atra	0	0
BO 164	Mar-06	Coot	Fulica atra	0	0
BO 165	0ct-06	Coot	Fulica atra	0	0
BO 165	Nov-06	Coot	Fulica atra	6	0
BO 160	Dec-06	Coot	Fulica atra	6	0
BO 167		Coot	Fulica atra	6	0
BO 168	Sali-07	Coot	Fulica atra	6	0
BO 109	Nor 07	Coot	Fulica atra	69	0
BO 170		Coot	Fulica atra	69	0
BO 171	Apr-07	Oustarsatchar		6	0
BO 677	0ct 02	Oystercatcher		<u> </u>	0
BO 678	Nov 02	Oystercatcher		<u> </u>	0
BO 679	N00-05	Oystercatcher		<u> </u>	0
BO 680	Dec-03	Oystercatcher		<u> </u>	0
BO 081	Jail-04	Oystercatcher		00	0
BO 082	Mar 04	Oystercatcher		<u> </u>	0
BO 083		Oystercatcher		<u> </u>	0
BO 684	Ap1-04	Oystercatcher		00	0
BO 085	Sep-04	Oystercatcher		00	0
BO 687	0ct-04	Oystercatcher		00	0
BO 687	N0V-04	Oystercatcher		00	0
BO 000		Oystersetcher	Haematehun estralegus	00	0
BO 600	Jail-05	Ovstersatcher	Haematobus ostralegus	05	0
BO 690	Mar 05	Ovstercatcher	Haematobus ostralegus	05	0
BO 691		Oystercatcher		00	0
BO 692	Nov 05	Oystercatcher	Haematehun estralegus	00	0
BO 693	Doc 05	Ovstersatcher	Haematobus ostralegus	05	0
BO 694	Dec-05	Oystercatcher		00	0
BO 606	Jall-00	Ovstercatcher	Haematohus ostralogus		0
BO 607		Oustorsatshar	Haematohus ostralogus		0
BO 609		Ovstercatcher	Haematohus ostralogus		0
BO 698	0000	Oystercatcher		00	0
BO 599	NOV-06	Oystercatcher			0
BO 700	Dec-06	Oystercatcher		00	0
BO 701	Jan-07	Oystercatcher		00	0
BU 702	FED-U/	Oystercatcher			0
BU /03	IVIAF-07				
BU /04	Apr-U/	Uystercatcher			
BU 406	5ep-03	Lapwing		L.	
BU 407	Uct-U3	Lapwing		L.	0
BU 408	Nov-03	Lapwing	Vaneiius vaneilus	L.	0
BO 409	Dec-03	Lapwing	Vaneilus vaneilus	L.	0
BO 410	Jan-04	Lapwing	Vanellus vanellus	L.	0
BO 411	Feb-04	Lapwing	Vanellus vanellus	L.	0



Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 412	Mar-04	Lapwing	Vanellus vanellus	L.	0
BO 413	Apr-04	Lapwing	Vanellus vanellus	L.	0
BO 414	Sep-04	Lapwing	Vanellus vanellus	L.	0
BO 415	Oct-04	Lapwing	Vanellus vanellus	L.	0
BO 416	Nov-04	Lapwing	Vanellus vanellus	L.	0
BO 417	Dec-04	Lapwing	Vanellus vanellus	1.	0
BO 117	lan 05	Lapwing	Vanellus vanellus	1	0
BO 410	Sah OF	Lapwing	Vanellus vanellus	L	0
BO 419	FED-05	Lapwing		L.	0
BO 420	Mar-05	Lapwing	vaneilus vaneilus	L.	0
BO 421	UCT-US	Lapwing	vanelius vanelius	L.	0
BO 422	Nov-05	Lapwing	Vanellus vanellus	L.	0
BO 423	Dec-05	Lapwing	Vanellus vanellus	L.	0
BO 424	Jan-06	Lapwing	Vanellus vanellus	L.	0
BO 425	Feb-06	Lapwing	Vanellus vanellus	L.	0
BO 426	Mar-06	Lapwing	Vanellus vanellus	L.	0
BO 427	Oct-06	Lapwing	Vanellus vanellus	L.	0
BO 428	Nov-06	Lapwing	Vanellus vanellus	L.	0
BO 429	Dec-06	Lapwing	Vanellus vanellus	L.	0
BO 430	Jan-07	Lapwing	Vanellus vanellus	L.	1
BO 431	Feb-07	Lapwing	Vanellus vanellus	L.	0
BO 432	Mar-07		Vanellus vanellus		0
BO 433	Δης-07	Lapwing	Vanellus vanellus		0
BO 933	Son 02	Snino	Callinago gallinago	CNI CNI	0
DO 873	Sep-05	Shipe		SIN	0
BO 874	000-03	Silipe		SN	0
B0 875	Nov-03	Snipe	Gallinago gallinago	SN	0
BO 876	Dec-03	Snipe	Gallinago gallinago	SN	0
BO 877	Jan-04	Snipe	Gallinago gallinago	SN	0
BO 878	Feb-04	Snipe	Gallinago gallinago	SN	0
BO 879	Mar-04	Snipe	Gallinago gallinago	SN	0
BO 880	Apr-04	Snipe	Gallinago gallinago	SN	0
BO 881	Sep-04	Snipe	Gallinago gallinago	SN	0
BO 882	Oct-04	Snipe	Gallinago gallinago	SN	0
BO 883	Nov-04	Snipe	Gallinago gallinago	SN	0
BO 884	Dec-04	Snipe	Gallinago gallinago	SN	0
BO 885	Jan-05	Snipe	Gallinago gallinago	SN	0
BO 886	Feb-05	Snipe	Gallinago gallinago	SN	0
BO 887	Mar-05	Snipe	Gallinago gallinago	SN	0
BO 888	Oct-05	Snipe	Gallinago gallinago	SN	0
BO 889	Nov-05	Snipe	Gallinago gallinago	SN	0
BO 890	Dec-05	Snipe	Gallinago gallinago	SN	0
BO 891	lan-06	Snine	Gallinago gallinago	SN	2
BO 892	Feb-06	Spine	Gallinggo gallinggo	CN CN	2
BO 802	Nor 06	Snipe	Callinago gallinago	CNI	0
		Shipe	Callinago gallinago		0
BO 894	Oct-06	Shipe		SN	0
BO 895	NOV-06	Snipe		SN	0
BU 896	Dec-06	Snipe	Galiinago	SN SN	0
BO 897	Jan-07	Snipe	Gallinago gallinago	SN SN	0
BO 898	Feb-07	Snipe	Gallinago gallinago	SN SN	0
BO 899	Mar-07	Snipe	Gallinago gallinago	SN	0
BO 900	Apr-07	Snipe	Gallinago gallinago	SN	0
BO 172	Sep-03	Curlew	Numenius arquata	CU	0
BO 173	Oct-03	Curlew	Numenius arquata	CU	0
BO 174	Nov-03	Curlew	Numenius arquata	CU	0
BO 175	Dec-03	Curlew	Numenius arquata	CU	0
BO 176	Jan-04	Curlew	Numenius arquata	CU	0
BO 177	Feb-04	Curlew	Numenius arguata	С	0
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Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 178	Mar-04	Curlew	Numenius arquata	CU	0
BO 179	Apr-04	Curlew	Numenius arquata	CU	0
BO 180	Sep-04	Curlew	Numenius arquata	CU	0
BO 181	Oct-04	Curlew	Numenius arquata	си	0
BO 182	Nov-04	Curlew	Numenius arquata	CU	0
BO 183	Dec-04	Curlew	Numenius arquata	CU	0
BO 184	Jan-05	Curlew	Numenius arquata	CU	0
BO 185	Feb-05	Curlew	Numenius arquata	CU	0
BO 186	Mar-05	Curlew	Numenius arguata	CU	0
BO 187	Oct-05	Curlew	Numenius arguata	CU	0
BO 188	Nov-05	Curlew	Numenius arguata	CU	0
BO 189	Dec-05	Curlew	Numenius arguata	CU	0
BO 190	Jan-06	Curlew	Numenius arguata	CU	0
BO 191	Feb-06	Curlew	Numenius arguata	CU	1
BO 192	Mar-06	Curlew	Numenius arguata	CU	0
BO 193	Oct-06	Curlew	Numenius arguata	CU	0
BO 194	Nov-06	Curlew	Numenius arguata	CU	0
BO 195	Dec-06	Curlew	Numenius arguata	CU	0
BO 196	Jan-07	Curlew	Numenius arguata	CU	0
BO 197	Feb-07	Curlew	Numenius arguata	CU	0
BO 198	Mar-07	Curlew	Numenius arguata	CU	0
BO 199	Apr-07	Curlew	Numenius arguata	CU	0
BO 810	Sep-03	Redshank	Tringa totanus	RK	0
BO 811	Oct-03	Redshank	Tringa totanus	RK	0
BO 812	Nov-03	Redshank	Tringa totanus	RK	0
BO 813	Dec-03	Redshank	Tringa totanus	RK	0
BO 814	Jan-04	Redshank	Tringa totanus	RK	0
BO 815	Feb-04	Redshank	Tringa totanus	RK	0
BO 816	Mar-04	Redshank	Tringa totanus	RK	0
BO 817	Apr-04	Redshank	Tringa totanus	RK	0
BO 818	Sep-04	Redshank	Tringa totanus	RK	0
BO 819	Oct-04	Redshank	Tringa totanus	RK	0
BO 820	Nov-04	Redshank	Tringa totanus	RK	0
BO 821	Dec-04	Redshank	Tringa totanus	RK	0
BO 822	Jan-05	Redshank	Tringa totanus	RK	0
BO 823	Feb-05	Redshank	Tringa totanus	RK	0
BO 824	Mar-05	Redshank	Tringa totanus	RK	0
BO 825	Oct-05	Redshank	Tringa totanus	RK	0
BO 826	Nov-05	Redshank	Tringa totanus	RK	0
BO 827	Dec-05	Redshank	Tringa totanus	RK	0
BO 828	Jan-06	Redshank	Tringa totanus	RK	0
BO 829	Feb-06	Redshank	Tringa totanus	RK	0
BO 830	Mar-06	Redshank	Tringa totanus	RK	0
BO 831	Oct-06	Redshank	Tringa totanus	RK	0
BO 832	Nov-06	Redshank	Tringa totanus	RK	0
BO 833	Dec-06	Redshank	Tringa totanus	RK	0
BO 834	Jan-07	Redshank	Tringa totanus	RK	0
BO 835	Feb-07	Redshank	Tringa totanus	RK	0
BO 836	Mar-07	Redshank	Tringa totanus	RK	0
BO 837	Apr-07	Redshank	Tringa totanus	RK	0
BO 1	Sep-02	Black-headed Gull	Larus ridibundus	ВН	0
BO 2	Oct-02	Black-headed Gull	Larus ridibundus	ВН	0
BO 3	Nov-02	Black-headed Gull	Larus ridibundus	ВН	0
BO 4	Dec-02	Black-headed Gull	Larus ridibundus	ВН	0
BO 5	Jan-03	Black-headed Gull	Larus ridibundus	ВН	0
BO 6	Mar-03	Black-headed Gull	Larus ridibundus	ВН	7
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Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 7	Sep-03	Black-headed Gull	Larus ridibundus	ВН	0
BO 8	Oct-03	Black-headed Gull	Larus ridibundus	ВН	0
BO 9	Nov-03	Black-headed Gull	Larus ridibundus	ВН	0
BO 10	Dec-03	Black-headed Gull	Larus ridibundus	ВН	0
BO 11	Jan-04	Black-headed Gull	Larus ridibundus	ВН	0
BO 12	Feb-04	Black-headed Gull	Larus ridibundus	ВН	0
BO 13	Sep-04	Black-headed Gull	Larus ridibundus	ВН	0
BO 14	Oct-04	Black-headed Gull	Larus ridibundus	ВН	0
BO 15	Nov-04	Black-headed Gull	Larus ridibundus	ВН	0
BO 16	Dec-04	Black-headed Gull	Larus ridibundus	ВН	0
BO 17	lan-05	Black-beaded Gull	l arus ridibundus	BH	0
BO 18	Feb-05	Black-beaded Gull	l arus ridibundus	BH	0
BO 19	Mar-05	Black-headed Gull	Larus ridibundus	BH	0
BO 20	Son OF	Plack headed Gull			0
BO 20	Sep-05				0
BO 21	0000	Black-fielded Gull	Larus Halbundus	ВП	0
BO 22	N0V-05	Black-headed Gull		ВН	0
BO 23	Dec-05	Black-neaded Gull		ВН	0
BO 24	Jan-06	Black-headed Gull	Larus ridibundus	BH	0
BO 25	Feb-06	Black-headed Gull	Larus ridibundus	BH	0
BO 26	Mar-06	Black-headed Gull	Larus ridibundus	ВН	27
BO 27	Oct-06	Black-headed Gull	Larus ridibundus	BH	0
BO 28	Nov-06	Black-headed Gull	Larus ridibundus	ВН	0
BO 29	Dec-06	Black-headed Gull	Larus ridibundus	ВН	0
BO 30	Jan-07	Black-headed Gull	Larus ridibundus	ВН	0
BO 31	Feb-07	Black-headed Gull	Larus ridibundus	ВН	11
BO 32	Mar-07	Black-headed Gull	Larus ridibundus	ВН	42
BO 33	Apr-07	Black-headed Gull	Larus ridibundus	ВН	12
BO 104	Sep-02	Common Gull	Larus canus	CM	0
BO 105	Oct-02	Common Gull	Larus canus	CM	0
BO 106	Nov-02	Common Gull	Larus canus	СМ	0
BO 107	Dec-02	Common Gull	Larus canus	CM	0
BO 108	Jan-03	Common Gull	Larus canus	СМ	7
BO 109	Mar-03	Common Gull	Larus canus	СМ	6
BO 110	Sep-03	Common Gull	Larus canus	CM	0
BO 111	Oct-03	Common Gull	Larus canus	CM	0
BO 112	Nov-03	Common Gull	Larus canus	СМ	0
BO 113	Dec-03	Common Gull	Larus canus	CM	0
BO 114	Jan-04	Common Gull	Larus canus	CM	0
BO 115	Feb-04	Common Gull	Larus canus	CM	0
BO 116	Sep-04	Common Gull	Larus canus	CM	0
BO 117	Oct-04	Common Gull	Larus canus	CM	0
BO 118	Nov-04	Common Gull	Larus canus	СМ	0
BO 119	Dec-04	Common Gull	Larus canus	СМ	0
BO 120	Jan-05	Common Gull	Larus canus	СМ	0
BO 121	Feb-05	Common Gull	Larus canus	СМ	0
BO 122	Mar-05	Common Gull	Larus canus	CM	0
BO 123	Sep-05	Common Gull	Larus canus	CM	0
BO 124	Oct-05	Common Gull	Larus canus	СМ	0
BO 125	Nov-05	Common Gull	Larus canus	СМ	0
BO 126	Dec-05	Common Gull	Larus canus	СМ	0
BO 127	Jan-06	Common Gull	Larus canus	СМ	0
BO 128	Feb-06	Common Gull	Larus canus	СМ	0
BO 129	Mar-06	Common Gull	Larus canus	СМ	0
BO 130	Oct-06	Common Gull	Larus canus	СМ	0
BO 131	Nov-06	Common Gull	Larus canus	СМ	0
BO 132	Dec-06	Common Gull	Larus canus	CM	0

Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 133	Jan-07	Common Gull	Larus canus	СМ	0
BO 134	Feb-07	Common Gull	Larus canus	СМ	0
BO 135	Mar-07	Common Gull	Larus canus	СМ	0
BO 136	Apr-07	Common Gull	Larus canus	СМ	14
BO 434	Sep-02	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 435	Oct-02	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 436	Nov-02	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 437	Dec-02	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 438	Jan-03	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 439	Mar-03	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 440	Sep-03	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 441	Oct-03	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 442	Nov-03	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 443	Dec-03	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 444	Jan-04	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 445	Feb-04	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 446	Sep-04	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 447	Oct-04	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 448	Nov-04	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 449	Dec-04	Lesser Black-backed Gull	Larus fuscus	LB	0
BO 450	lan-05	Lesser Black-backed Gull		IB	0
BO 451	Feb-05	Lesser Black-backed Gull	l arus fuscus	IB	0
BO 452	Mar-05	Lesser Black-backed Gull		IB	0
BO 453	Sep-05	Lesser Black-backed Gull		IB	0
BO 454	Oct-05	Lesser Black-backed Gull		IB	0
BO 455	Nov-05	Lesser Black-backed Gull		IB	0
BO 456	Dec-05	Lesser Black-backed Gull		IB	0
BO 457	lan-06	Lesser Black-backed Gull		IB	0
BO 458	Feb-06	Lesser Black-backed Gull	Larus fuscus	IB	0
BO 459	Mar-06	Lesser Black-backed Gull		IB	0
BO 460	Oct-06	Lesser Black-backed Gull		LB	0
BO 461	Nov-06	Lesser Black-backed Gull		LB	0
BO 462	Dec-06	Lesser Black-backed Gull		LB	0
BO 463	lan-07	Lesser Black-backed Gull	l arus fuscus	IB	0
BO 464	Feb-07	Lesser Black-backed Gull		LB	0
BO 465	Mar-07	Lesser Black-backed Gull		LB	0
BO 465	Δης-07	Lesser Black-backed Gull		IB	0
BO 338	Sen-02	Herring Gull	l arus argentatus	не	0
BO 339	Oct-02	Herring Gull	arus argentatus	на	0
BO 340	Nov-02	Herring Gull	arus argentatus	на	0
BO 341	Dec-02	Herring Gull	arus argentatus	на	0
BO 342	lan-03	Herring Gull	Larus argentatus	на	0
BO 343	Mar-03	Herring Gull	Larus argentatus	на	0
BO 344	Sep-03	Herring Gull	Larus argentatus	HG	0
BO 345	Oct-03	Herring Gull	Larus argentatus	HG	0
BO 346	Nov-03	Herring Gull	Larus argentatus	НС	0
BO 347	Dec-03	Herring Gull	Larus argentatus	HG	0
BO 348	 Jan-04	Herring Gull	Larus argentatus	HG	0
BO 349	Feb-04	Herring Gull	Larus argentatus	HG	0
BO 350	Sep-04	Herring Gull	Larus argentatus	HG	0
BO 351	Oct-04	Herring Gull	Larus argentatus	HG	0
BO 352	Nov-04	Herring Gull	Larus argentatus	HG	0
BO 353	Dec-04	Herring Gull	Larus argentatus	не	0
BO 354	Jan-05	Herring Gull	Larus argentatus	HG	0
BO 355	Feb-05	Herring Gull	Larus argentatus	на	0
BO 356	Mar-05	Herring Gull	arus argentatus	на	
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Ref No	Date	Species	Scientific Name	SpeciesCode	Count
BO 357	Sep-05	Herring Gull	Larus argentatus	HG	0
BO 358	Oct-05	Herring Gull	Larus argentatus	HG	0
BO 359	Nov-05	Herring Gull	Larus argentatus	HG	0
BO 360	Dec-05	Herring Gull	Larus argentatus	HG	0
BO 361	Jan-06	Herring Gull	Larus argentatus	HG	0
BO 362	Feb-06	Herring Gull	Larus argentatus	HG	0
BO 363	Mar-06	Herring Gull	Larus argentatus	HG	0
BO 364	Oct-06	Herring Gull	Larus argentatus	HG	0
BO 365	Nov-06	Herring Gull	Larus argentatus	HG	0
BO 366	Dec-06	Herring Gull	Larus argentatus	HG	0
BO 367	Jan-07	Herring Gull	Larus argentatus	HG	0
BO 368	Feb-07	Herring Gull	Larus argentatus	HG	0
BO 369	Mar-07	Herring Gull	Larus argentatus	HG	0
BO 370	Apr-07	Herring Gull	Larus argentatus	HG	0
BO 200	Sep-02	Great Black-backed Gull	Larus marinus	GB	0
BO 201	Oct-02	Great Black-backed Gull	Larus marinus	GB	0
BO 202	Nov-02	Great Black-backed Gull	Larus marinus	GB	0
BO 203	Dec-02	Great Black-backed Gull	Larus marinus	GB	0
BO 204	Jan-03	Great Black-backed Gull	Larus marinus	GB	0
BO 205	Mar-03	Great Black-backed Gull	Larus marinus	GB	1
BO 206	Sep-03	Great Black-backed Gull	Larus marinus	GB	0
BO 207	Oct-03	Great Black-backed Gull	Larus marinus	GB	0
BO 208	Nov-03	Great Black-backed Gull	Larus marinus	GB	0
BO 209	Dec-03	Great Black-backed Gull	Larus marinus	GB	0
BO 210	Jan-04	Great Black-backed Gull	Larus marinus	GB	0
BO 211	Feb-04	Great Black-backed Gull	Larus marinus	GB	0
BO 212	Sep-04	Great Black-backed Gull	Larus marinus	GB	0
BO 213	Oct-04	Great Black-backed Gull	Larus marinus	GB	0
BO 214	Nov-04	Great Black-backed Gull	Larus marinus	GB	0
BO 215	Dec-04	Great Black-backed Gull	Larus marinus	GB	0
BO 216	Jan-05	Great Black-backed Gull	Larus marinus	GB	0
BO 217	Feb-05	Great Black-backed Gull	Larus marinus	GB	0
BO 218	Mar-05	Great Black-backed Gull	Larus marinus	GB	0
BO 219	Sep-05	Great Black-backed Gull	Larus marinus	GB	0
BO 220	Oct-05	Great Black-backed Gull	Larus marinus	GB	0
BO 221	Nov-05	Great Black-backed Gull	Larus marinus	GB	0
BO 222	Dec-05	Great Black-backed Gull	Larus marinus	GB	0
BO 223	Jan-06	Great Black-backed Gull	Larus marinus	GB	0
BO 224	Feb-06	Great Black-backed Gull	Larus marinus	GB	0
BO 225	Mar-06	Great Black-backed Gull	Larus marinus	GB	0
BO 226	Oct-06	Great Black-backed Gull	Larus marinus	GB	0
BO 227	Nov-06	Great Black-backed Gull	Larus marinus	GB	0
BO 228	Dec-06	Great Black-backed Gull	Larus marinus	GB	0
BO 229	Jan-07	Great Black-backed Gull	Larus marinus	GB	0
BO 230	Feb-07	Great Black-backed Gull	Larus marinus	GB	0
BO 231	Mar-07	Great Black-backed Gull	Larus marinus	GB	0
BO 232	Apr-07	Great Black-backed Gull	Larus marinus	GB	1

D.3 Flight Activity Survey Effort and Weather Conditions during Surveys

Table D3.1 - Season 1, October 2007 – April 2008

Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
04/10/07	3	15:30	18:30	180	>10	30%	Unk.	15	2	SW	N/A
04/10/07	1	12:15	15:15	180	>10	20%	Unk.	12	2	SW	Dry bright and

Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
04/10/07	6	12:30	15:30	180	20	30%	Unk.	17	2	SW	Scattered cloud in blue sky / sunshine. Dry.
04/10/07	15	16:30	17:30	60	20	20%	Unk.	17	2	SW	Blue sky bright sun (lots of glare as sun near W) dry.
05/10/07	9	12:45	15:45	180	>10	90%	Unk.	12.5	2	SW	Dry and bright but overcast, low cloud on hills to west and north of VP but not on hills directly across valley.
05/10/07	14	13:00	16:00	180	20	60%	750	13	1	SW	Mist clearing after midday blue sky.
05/10/07	15	16:45	18:45	120	20	50%	900	13	1	SW	Scattered cumulus in blue sky - dry.
06/10/07	13	13:25	16:30	185	10	60%	Unk.	15	1	w	Dry, variable cloud
06/10/07	18	09:30	12:30	180	1	100%	Unk.	11	1	SW	Mist along Ken Dee course - improving by 1100.
07/10/07	5	09:30	12:30	180	0.5	100%	400	15	0	S	Swirling low cloud mist; heavily overcast light drizzle 10:45 on.
09/10/07	7	13:45	16:45	180	>10	60%	Unk.	21	1	NW	Dry and bright with light winds
09/10/07	16	13:00	16:00	180	6	80%	500	14	0-2	NW	Heavy cumulus. Rain showers 1305-1350 then clearing cloud 60% with bright glaring sun by 1530.
10/10/07	1	11:30	14:30	180	>10	20%	Unk.	14	0	NE	Dry, bright & sunny.
10/10/07	1	14:45	17:45	180	>10	10%	Unk.	16	1	NE	Dry, bright and very sunny and warm.
10/10/07	4	14:45	17:45	180	>10	25%	Unk.	Unk.	2-3	SW-W	Clear, bright & sunny - warm.
10/10/07	4	14:45	17:45	180	>10	25%	Unk.	Unk.	2-3	S-SW	Warm, dry, bright.
10/10/07	2	11:30	14:30	180	>10	50%	Unk.	Unk.	1-2	SW-W	Dry, bright, sunny.
10/10/07	12	13:00	16:00	180	15	50%	Unk.	17	1	SE	Scattered cumulus in blue sky, dry, brightening cloud 20% by 15:00.
11/10/07	10	11:45	14:45	180	>10	70%	Unk.	15	2	w	Dull and overcast with low cloud on higher surrounding hills.
11/10/07	13	14:45	17:45	180		100%	Unk.	Unk.	2-3	SW	Overcast, bright periods, cloud mist occ descending.
11/10/07	13	14:45	17:45	180	5	100%	Unk.	Unk.	2	SW	Overcast, cloud mist occ descending.
11/10/07	11	14:50	17:50	180	8	100%	Unk.	Unk.	2	w	Dull and overcast with low cloud / rain / mist on hills but local view is fine. Still ok to do VP.
11/10/07	18	11:30	14:30	180	>10	100%	Unk.	Unk.	2-3	w	Overcast, bright periods, misty clouds on Craiglee, Blackcraig.
11/10/07	8	15:15	18:15	180	7	90%	450	16	0	N/A	Heavy cumulus, bright spells.
11/10/07	9	12:00	15:00	180	10-5	90%	450	16	0	w	Cumulus, brightening after rain then threatening showers.
12/10/07	3	09:45	12:45	180	>10	100%	Unk.	15	1	w	Dull & overcast but dry.
16/10/07	21	15:05	18:53	228	>10	50%	Unk.	Unk.	3	NW	Extended watch till dark to check for roosting hen harrier
16/10/07	8	09:20	12:20	180	5	75%	Unk.	Unk.	2	SW	N/A
16/10/07	7	10:00	13:00	180	7	90%	550	12	1	w	Heavy cumulus, showers.
16/10/07	20	15:15	18:15	180	7	60%	550	12	2-4	NW	Scattered cumulus in blue sky, dry, bright, rain 1530.
17/10/07	6	10:00	13:00	180	>10	30%	Unk.	Unk.	3	NW	High cloud, occasional squally showers around the area
17/10/07	7	15:15	19:00	225	>10	25%	Unk.	Unk.	3	NW	Occasional squally showers.
18/10/07	17	12:45	15:45	180	>10	100%	Unk.	8	Unk	Unk.	Cold but bright & sunny
18/10/07	23	16:00	19:00	180	>10	100%	Unk.	6	1	E	Dull and overcast with sunny spells.
18/10/07	19	12:45	15:45	180	>10	90%	700-800	8	0-1	WNW	Calm wind variable (mainly wnw), 0 precipitation.
18/10/07	22	16:10	19:10	180	>10	90%	1000	8	0	N/A	Cold, 0 precipitation.
18/10/07	4	13:55	16:55	180	>10	50%	Unk.	Unk.	1	SW	Wind turned to SW, sun came out, slight warming.
18/10/07	9	09:45	12:45	180	>10	60%	Unk.	Unk.	1	NW	Calm cold morning overnight 'air frost'.
18/10/07	12	16:15	19:15	180	5	80%	650-500	8	0	N/A	Overcast, cumulus, dry, base drop to 500m by 1800.
18/10/07	15	12:45	15:45	180	5	100%	650	8	0-1	SW	Cumulus, dry (just). Cloud at 60% by 1445 visibility 7km with bright spells.
19/10/07	19	10:00	13:00	180	>10	80%	Unk.	10	1	S	Unsure of wind direction due to being in deep sided valley. Lots of mist around Carsphairn.
19/10/07	2	09:10	12:10	180	1	100%	Unk.	Unk.	1	NE	Still calm, overcast morning, light precipitation.
19/10/07	11	14:45	17:45	180	4	70%	500	11	1	S	Cumulus with blue sky bright spells.
19/10/07	14	11:15	14:15	180	2	100%	250-400	10	0	N/A	Mist at 250m lifting to 300m by 12:30. 400m by 13:15 cloud 80%
21/10/07	2	09:30	12:30	180	0.5	100%	Unk.	10	0	S	Mist and drizzle constant to 1130, clearing and wind increasing.
21/10/07	16	13:45	16:45	180	3	80%	500	10	1-2	S	Cumulus, increasing blue sky breaking, dry.
22/10/07	17	11:30	14:30	180	5	100%	400	8	1-2	S	Cold wind, overcast, 0 precipitation.
22/10/07	21	15:00	18:00	180	>10	90%	500-1000	8	2-3	SW	Cool, overcast, breezv. 0 precipitation
22/10/07	3	11:45	14:45	180	3	100%	Unk.	11	1	S	Low cloud mist reducing visibility. drv. Improving visibility 1230 onward.
22/10/07	9	15:10	18:10	180	3	80%	500	11	1	S	Drv. hazv and glare off loch.
23/10/07	4	10:00	13:00	180	3	100%	Unk.	9	1	S	Continued misty haze. Dry
23/10/07	10	13:30	16:30	180	3	100%	Unk	9	1	s	Misty haze, dry
-,, 0.			1		-			-		-	





Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes			
24/10/07	23	09:30	12:30	180	>10	10%	Unk.	3	0-1	SW	Calm, sunny, very cold, frost on ground, only a few light clouds at very high height, 0 precipitation.			
24/10/07	20	13:30	16:30	180	>10	20%	Unk.	8	1	SSW	Sunny, calm, cold, cloud base very high, 0 precipitation.			
24/10/07	12	09:30	12:30	180	2	10%	Unk.	0	0	N/A	Mist, haze, dry, heavy ground frost.			
24/10/07	22	13:15	16:15	180	10	10%	1500	8	1	S	Blue sky, dry, bright, cloud building.			
25/10/07	18	14:05	17:05	180	5	100%	600-800	8	1-2	S	Cool, calm, overcast, 0 precipitation.			
25/10/07	15	10:00	13:00	180	5	100%	500-700	10	0-1	S	Overcast, calm, some light drizzle during 1st hour.			
25/10/07	5	15:15	18:15	180	2-3	100%	500	11	0	N/A	Cumulus, dry, heavily overcast, visibility decreasing.			
25/10/07	6	10:15	13:15	180	3	100%	450	8	0	N/A	Heavy overcast, dry.			
26/10/07	13	09:25	12:25	180	5	100%	400-500	13	2	S-SW	Overcast, despite threatening to no precipitation.			
26/10/07	19	13:45	16:45	180	5	100%	500-600	14	2	SSW	Grey, overcast, more persistent light rain for last 45 mins - visibility still good.			
26/10/07	11	09:30	12:30	180	2	100%	350	11	2	S	Light drizzle.			
29/10/07	21	09:35	12:35	180	>10	60%	800-1000	8	3-4	w	Cool, 0 precipitation, some sun.			
29/10/07	17	14:00	17:00	180	>10	60%	600-800	8	3	WSW	N/A			
30/10/07	16	08:00	11:00	180	>10	60%	Unk.	Unk.	1	SW	Dry and bright but cool first thing but only a bit of a mist in valley bottom.			
30/10/07	14	11:40	14:40	180	>10	40%	Unk.	Unk.	2	SW	Dry bright and sunny all mist burnt off, quite warm in sun.			
31/10/07	23	11:35	14:35	180	>10	60%	Unk.	Unk.	2	SW	Dull & overcast with occasional brief light showers.			
31/10/07	22	08:15	11:15	180	>10	65%	Unk.	Unk.	2	SW	Dry and bright with dull periods and occasional light showers.			
01/11/07	20	08:00	11:00	180	>10	75%	Unk.	Unk.	3	s	Dull and overcast with occasional bright spells.			
01/11/07	12	12:00	15:00	180	>10	85%	Unk.	Unk.	2	S	Dull & overcast with bright spells.			
02/11/07	19	09:00	12:00	180	>10	90%	Unk.	Unk.	1	S	Dull & overcast with some showers (brief and light)			
06/11/07	6	11:45	14:45	180	>10	90%	Unk.	Unk.	2	w	Dry bright and sunny, mild after a cool start.			
06/11/07	11	09:50	12:50	180	>10	30%	1000-1500	9	3-4	w	Cool mostly sunny, breezy, 0 precipitation.			
06/11/07	18	14:00	17:00	180	5	100%	600-800	8	3-4	W-NW	Showers in 1st hour, overcast but 0 precipitation for other 2 hours, cool, windy.			
07/11/07	10	10:15	13:15	180	>10	50%	Unk.	Unk.	3	w	Dry and bright after a dull and overcast start.			
07/11/07	5	13:20	16:20	180	>10	60%	Unk.	Unk.	3	w	Dry, bright & sunny with occasional light showers.			
07/11/07	1	10:15	13:15	180	1	90%	Unk.	11	1	S	Showers at first, good visibility.			
07/11/07	1	10:15	13:15	180	>10	60%	Unk.	12	2	SW	N/A			
07/11/07	8	13:45	16:45	180	>10	65%	800	12	2-3	NW	N/A			
07/11/07	9	10:15	13:15	180	>10	60%	Unk.	11	3-4	W-NW	N/A			
07/11/07	13	13:15	16:50	215	>10	60%	600-700	10	3-4	W-NW	Cool, breezy, some sun, showers during last 1/2hr.			
08/11/07	7	10:00	13:00	180	>10-5	20%-100%	Unk.	Unk.	4	NW	Dry, bright & sunny with gusty wind changing to dull and overcast with showers within a couple mins and back again throughout VP.			
08/11/07	2	09:30	12:30	180	>10	60%	Unk.	7	3	NW	Frequent heavy showers, clear blue sky, then very dark and short sharp showers. Wind gusting to NW F4.			
08/11/07	3	13:00	16:00	180	>10	20%	Unk.	6	3	NW	Very heavy short sharp showers then wind increase to F4.			
09/11/07	4	09:20	12:20	180	>10	80%	Unk.	7	2	NW	Good visibility, blue sky, then overcast. Drizzle in the air but mainly dry.			
09/11/07	16	09:55	12:55	180	>10	70%	600-800	8	3-4	NW	Showers during the 3hrs, cool, breezy.			
09/11/07	21	13:50	16:50	180	>10	70%	600-800	8	3-4	NW	Showers, cool, breezy.			
10/11/07	20	09:50	12:50	180	5	100%	Unk.	Unk.	3	w	Cloud high and breaking at times, some rainfall.			
10/11/07	6	14:00	17:00	180	5	70%	Unk.	Unk.	3	w	N/A			
10/11/07	5	13:00	16:30	210	5	90%	500	12	1	w	Cumulus, dry, overcast, and wind increasing, occasional drizzle 1500 on.			
11/11/07	15	13:30	16:30	180		30%	Unk.	Unk.	2	N	N/A			
11/11/07	12	09:50	12:50	180	>10	40%	Unk.	Unk.	1	NE	N/A			
11/11/07	8	09:00	12:30	210	10	80%	500	8	1	NW	Cumulus, dry, squally showers over hills, clearing by 1000.			
11/11/07	17	13:00	16:30	210	15	20%	Unk.	6	1	NW	Scattered cloud in blue sky, dry, wind turning NNE.			
12/11/07	13	09:30	12:50	200	>10	40%	Unk.	Unk.	1	N	Overnight frost, calm clear morning			
12/11/07	10	14:00	17:00	180	>10	70%	Unk.	Unk.	1	SW	N/A			
12/11/07	5	14:00	17:00	180	>10	70%	1000-1500	6	0	N/A	Overcast, cold, calm, 0 precipitation.			
12/11/07	14	09:40	12:40	180	>10	30%	Unk.	7	0	N/A	Calm, sunny, cold, frost on the ground, scattered clouds at very high heights. 0 precipitation.			
12/11/07	4	14:00	17:30	210	5	80%	Unk.	0	0	w	Building cumulus, dry, visibility reduced to 1km by 1630.			
12/11/07	10	10:00	13:30	210	20	30%	Unk.	-1	0	w	Scattered cirrus 1000m+ in blue skv. drv. bright.			
			1				1		-	1				
Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes			
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13/11/07	19	09:45	12:45	180	>10	65%	500-700	9	2-3	NW	NW Rain showers, cool.			
13/11/07	20	13:35	16:35	180	>10	60%	800-1000	6	3-4	NW	Cold, breezy / windy, rain showers.			
13/11/07	6	11:00	14:30	210	5	70%	500	9	1	NW	Cumulus, dry (just), rain in 1200, wind increase 2-3, sunshine and showers.			
15/11/07	17	09:00	12:00	180	5	60%	800	3	0	N/A	Cloud cover of 60% was due to low mist / cloud over forestry during 1st hour, otherwise cloud base high >800m. Calm, cool, 0 precipitation.			
15/11/07	21	12:35	15:35	180	5	80%	800-1000	4	1	S	Calm, cold, overcast, 0 precipitation.			
15/11/07	5	11:45	15:15	210	0.5	100%	Unk.	2	1	S	Mist / harr reducing visibility throughout VP.			
15/11/07	9	08:00	11:30	210	2	100%	500	0	0	N/A	Frost. Mist off water and in valleys, dry, temp rising to 2°c.			
17/11/07	10	09:30	13:00	210	2-5	60%	600	10	4	SW	Bright spells, dry, cloud build 100% by 10:45.			
18/11/07	6	08:00	11:00	180	5	100%	400-600	9	0	N/A	Calm, still, 0 precipitation in 1st 1.5hrs, light rain showers in 2nd 1.5hrs. Overcast, low cloud.			
18/11/07	12	11:45	14:45	180	5	100%	350-500	6	1	S	0 precipitation in 1st and 3rd hrs, rain showers in 2nd hour, calm, overcast, grey, low cloud.			
18/11/07	7	07:15	10:45	210	2	100%	450	7	0	SW	Cumulus, occasional drizzle.			
18/11/07	18	11:15	14:45	210	1-3	80%	400	7	0	N/A	Cumulus, mist over loch and plantations, blue sky breaking, light drizzle, increasing to constant with mist by 1400.			
19/11/07	5	13:15	16:45	210	8	90%	Unk.	Unk.	1	NW	Dull and overcast with frequent light showers.			
19/11/07	2	07:20	10:50	210	2	100%	450	7	2	E	Cumulus, dry, wind increasing, light spits of rain, temp rise to 10°c by 0930.			
20/11/07	1	12:30	16:00	210	>10	80%	Unk.	Unk.	2	NE	N/A			
20/11/07	3	12:30	16:00	210	8	100%	Unk.	Unk.	2-3	NE	Dull and overcast and regular light squalls, visibility increases between showers. Weather improved at 13:45.			
20/11/07	6	08:30	12:00	210	>10	80%	Unk.	Unk.	3	NE	N/A			
20/11/07	10	08:30	12:00	210	5	95%	Unk.	Unk.	1-2	NE	Dull and overcast with regular light rain spells.			
20/11/07	11	12:40	15:40	180	5	100%	500-700	9	2-3	E	Largely overcast, showers,			
20/11/07	15	07:40	10:40	180	5	80%	600-700	8	1	SE	Cool, overcast, 0 precipitation for 1st 2hrs, intermittent light drizzle in last hour.			
20/11/07	8	12:45	16:15	210	5	100%	500	8	1	SE	Occasional drizzle.			
20/11/07	16	07:30	11:00	210	2	90%	500	6	2	W				
21/11/07	21	12:55	15:55	180	>10	70%	Unk	Unk.	3	NF	N/A			
21/11/07	18	09.45	12:45	180	>10		Unk	Unk	3	NE	N/A			
21/11/07	19	13.00	16.30	210	1	100%	400	7	1	NW	Cumulus hill mist dry by 1430 visibility down to 500m			
21/11/07	17	09.00	12:30	210	3	100%	400	6	2	NW	Scattered showers mist level drop to 350m by 1145			
22/11/07	7	08.55	11.55	180	>10	50%	Link	Unk	3	N	N/A			
22/11/07	, 21	12.10	15.10	180	>10	50%	Unk	Unk.	3	N	N/A			
23/11/07	5	11:40	14:40	180	>10	0%	Unk	3	1	N	Sunny calm negligible - zero clouds clear blue sky 0 precipitation			
23/11/07	20	07:40	10:40	180	>10	5%	Unk.	-1	0	N/A	Calm cold suppy frost on the ground negligible clouds at y high heights			
23/11/07	5	13.00	16:00	180	210	40%	Unk.	7	3	NW/	Earlier cloud clearing, still occasional shower			
24/11/07	ر م	13.00	12.30	180		100%	Unk.	, ,	3	NW	Occasional basiv shower skips clearing from the NW later			
25/11/07	3	09.30	11.30	180		90%	Unk.	0	1	NW				
25/11/07	4	12.15	15.15	180	5	50%	Unk.	11	1	NW	N/A			
23/11/07	12	11.20	15:00	210	>10	80%	Unk.		1	NE	N/A			
27/11/07	2	10.00	12:00	190		100%	Unk.	Unk.	1	SM/	N/A			
28/11/07	12	12:40	15.00	180	>10	200%	Unk.	Unk.	2	500	N/A			
28/11/07	12	12.40	13.40	180	>10	00%	Unk.	Unk.	2 Unk	Unk	N/A			
28/11/07	10	12.20	12.30	180	>10	90%	Unk.	Unk.		CINC.	N/A			
28/11/07	11	13:20	10:20	180	2	100%	200	10	1	SW	Visibility ZKII - SKII and dui and misty with showers, constantly			
28/11/07	1	12:45	15:45	180	2	100%	300	10	1	SW	Constant rain to 1440, clearing to blue sky by 1445 from the w and dry. Wind changing, cloud over and rain again by 1540.			
28/11/07	2	10:00	12:30	150	2	100%	300	11	1	SW	Cumulus, constant rain.			
29/11/07	8	12:32	15:32	180	>10	50%	Unk.	Unk.	3	NW	N/A			
29/11/07	14	09:20	12:20	180	>10	20%	<u>Unк.</u>	<u>Unк.</u>	3	NW	Cloud cover very variable 10% to 90%, when shower came through			
29/11/07	20	12:45	15:45	180	>10	80%	Unk.	Unk.	3	NW	Dry bright and sunny but cool wind			
29/11/07	16	09:15	12:15	180	>10	20%	Unk.	Unk.	2	NW	Dry bright and sunny with one light shower			
29/11/07	4	13:00	16:00	180	3	/0%	500	8		NW	Uccasional showers variable cloud, bright spells.			
29/11/07	15	08:45	12:15	210	10	30%	650	5	2	NW	N/A			
30/11/07	14	09:30	13:00	210	2-1	100%	380	12	0	SW	Hill mist in and out with heavy showers, improving after 1100.			
01/12/07	1	11:30	14:30	180	4	80%	Unk.	6	3	SW	Cumulus base 450m, breaking blue sky, dry, rain by 1410, cloud 100% dull.			
01/12/07	2	08:15	11:15	180	3	90%	450	6	2	SW	N/A			





Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes			
02/12/07	3	07:30	10:30	180	3	100%	Unk.	7	0	SE	Cumulus base 450m with strands mist over plantation light rain, valley mist increasing (extensive by 1000)			
02/12/07	6	11:00	14:00	180	3	100%	450	6	0	SE	Constant drizzle.			
03/12/07	9	12:15	15:15	180	>10	100%	Unk.	Unk.	3	w	W Visibility mostly 10km this afternoon fewer showery periods but to 5km during showers. W Visibility variable in showers 5-10K good clear moving fast wintry showers very cold occ suppy periods			
03/12/07	7	08:30	11:30	180	>10-5	100%	Unk.	Unk.	3	w	Visibility variable in showers 5-10K good clear, moving fast, wintry showers, very cold occ. sunny periods.			
03/12/07	10	08:30	11:30	180	>10-5	100%	Unk.	Unk.	3	w	Visibility down to 5km when bad weather but up to 10km during sunny spells.			
04/12/07	2	12:30	15:00	150	>10	100%	Unk.	10	3	SW	Dull and overcast but improvement on this morning but colder			
04/12/07	13	09:00	12:00	180	>10	100%	Unk.	10	3	SW	Dull and overcast with frequent showers throughout watch period.			
04/12/07	1	12:30	15:30	180	>10-5	100%	Unk.	Unk.	4-5	SW	Overcast occ. Bright periods, mist on hills (Fell Hill), strong SW wind.			
04/12/07	11	09:00	12:00	180	>10-5	100%	Unk.	Unk.	2	SW	Cloud height variable, overcast, wind increasing.			
04/12/07	21	11:15	14:15	180	5	100%	450	12	3	SW	Scattered hill mist, light drizzle, clearing by 1200.			
05/12/07	3	11:30	14:00	150	>10	100%	Unk.	12	2	w	Dull and overcast with occasional light showers.			
05/12/07	5	08:00	11:00	180	>10	100%	Unk.	9	2	w	Dull and overcast with 1 light shower.			
05/12/07	17	11:45	14:45	180	>10	80%	900-1200	10	4-5	w	Windy, blustery showers, some sun.			
05/12/07	19	08:15	11:15	180	>10	85%	800-1100	10	4	w	Dry in 1st & 3rd hours, showers in 2nd hour, some sun, breezy, mild.			
06/12/07	17	12:00	14:30	150	>10	80%	Unk.	12	2	w	Weather improving and showers few and far between.			
06/12/07	18	08:30	11:30	180	8 -> 4	100%	Unk.	9	2	w	Dull and overcast and showers to start with, but these cleared up by 10 - 15.			
08/12/07	8	12:05	15:05	180	>10-5	100%	Unk.	Unk.	3	Unk.	Visibility improving 10k, showers decreasing, sunny periods.			
10/12/07	4	08:15	11:15	180	4	10%	Unk.	2	2	NE	Blue sky, scattered high cirrus, strong sunrise.			
10/12/07	14	12:15	15:15	180	15	0%	Unk.	4	1	NE	Dusting of snow over 500m, moderate wind chill (0°c)			
12/12/07	1	08:45	11:45	180	1-2	100%	Unk.	Unk.	1-2	SW	Cold SW wind, cloud on Fell Hill, occ. Very light drizzle.			
12/12/07	10	12:50	15:50	180	5	100%	400-500	7	3-4	SE	Cool, grev. overcast. windy, 0 precipitation.			
12/12/07	12	08:55	11:55	180	5	100%	300-500	8	2-3	SW	Overcast, some drizzle in the 3hrs.			
12/12/07	13	12:50	15:50	180	5-1	100%	Unk.	Unk.	3	SW	Visibility from 1-3k. cold SW wind.			
12/12/07	6	09:30	12:30	180	2	100%	350	6	1	SW	Hill mist, light drizzle.			
12/12/07	9	12:45	15:45	180	2	100%	250	6	0	s	Squally light drizzle			
13/12/07	2	09:40	12:10	150	5	100%	600-800	7	3	SSW	Cool, grey, overcast, 0 precipitation.			
13/12/07	3	09.00	12:00	180	5-1	100%	Unk	Unk	4	SW	Cold SW wind visibility variable 1-5K - light haze - improving occ bright period			
13/12/07	15	12:45	15:45	180	>10-5	100%	Unk	Unk	4-5	SW	Cloud height variable clear cold strong wind. Mainly overcast with occ brightness, wind increasing towards afternoon			
13/12/07	16	13:15	16:15	180	5	90%	700-900	8	4	SSW	l argely overcast: a little sun especially during last hour, a few light rain showers, windy			
13/12/07	8	07:30	10.30	180	2	100%	400	7	1	s	Light drizzle clear by 0800			
13/12/07	11	10.42	13.45	180	4	100%	400	8	2	s	N/A			
14/12/07	21	09:15	12:15	180	5	90%	500-700	7	3	SSE	A little sun, cool, grey, overcast, 0 precipitation.			
14/12/07	19	13.00	16:00	180	5	100%	600-700	7	3-4	S	Cool grey overcast () precipitation			
17/12/07	15	13.00	16.00	180	>10	0%	Unk	3	2	F	Clear suppy Cold Oprecipitation			
17/12/07	20	09.30	12:30	180	>10	5%	Unk	-2	1	F	Suppy clear sky cold, frost on ground at start of VP 0 precipitation			
18/12/07	14	13.00	16:00	180	5	60%	700-800	4	1	NF-F	Still calm cold 0 precipitation			
18/12/07	18	08.30	11.30	180	>10	30%	600-700	1	2	NE	Sunny clear cold Oprecipitation			
18/12/07	7	08:45	11:45	180	5	40%	Unk	0	0		Cumulus building to W dry bard frost			
18/12/07	17	13.00	16:00	180	7	30%	650	0	1	SW/	Blue sky dry wind chill 2°c			
19/12/07	13	12:00	15:00	180	5	5%	Unk	5	0	N/A	Calm suppy clear only a very few clouds at a very high beights 0 precipitation			
19/12/07	16	08.05	11:05	180	5	30%	600-700	_3	1	NF-F	Cold (hard frost on ground) calm suppy scattered clouds 0 precipitation.			
19/12/07	5	08.05	11.05	180	2	0%	Unk	-5	0		Cold (hard frost on ground), calm, sunny, scattered clouds, 0 precipitation.			
19/12/07	12	11.50	14.50	180	>10	0%	Unk.	-0	0	N/A	Dry, hard frost, warming to -3°c.			
20/12/07	12	00.15	12.15	180		20%	600 800	1	0	N/A	Blue sky, dry.			
20/12/07	4 6	12.05	16.05	100	<u> </u>	50% 60%	800 1000	-4	0		Calm, cold, hoppy frost on ground. O precipitation.			
20/12/07	1	12.05	10.05	100	3	70%	000-1000		0	E N/A				
20/12/07	1 2	12.43	12.45	100	3 1	C0%		-2	1	E	Valley Illist, ury, cloud bulluling to 50%.			
20/12/07	17	09:30	11.30	100	2	00%	UIIK.	-4			Cloud mist variable, meezing rog.			
21/12/07	10	12:10	11:45	100	3	70%	UIIK.	-0	U	IN/A	Cloud huilding over fremen for, dry threatening towards show			
21/12/07	13	12:10	11:00	100		/0%	UIIK.	-4		UIIK.	Cold, how from a strand or the Constraint to the second straint of			
25/12/07	1/	08:30	11:00	150	5	40%	600-700	-2		SE Cold, heavy frost on ground, calm, 0 precipitation, some sun.				

	Wind Direction	Wind Speed (BS)	Temp (°C)	Cloud Base (c. m)	Cloud Cover (%)	Visibility (km)	Duration (Mins)	Finish	Start	VP	Date
Cool, some	SW	2-3	5	800+	60%	5	180	16:15	13:15	21	25/12/07
	w	2	6	Unk.	70%	>10	150	16:10	13:40	1	27/12/07
	w	2	6	Unk.	70%	>10	150	11:30	09:00	2	28/12/07
	w	2	6	Unk.	70%	>10	180	14:30	11:30	3	28/12/07
	w	2	10	Unk.	70%	>10	180	17:10	14:10	8	28/12/07
Very overcast, clearing	SW	3	10	400	90%	7	180	12:15	09:15	10	28/12/07
Overcast, developir	SW	3	8	450	100%	2	150	15:30	13:00	17	28/12/07
	w	3	Unk.	Unk.	60%	>10-5	180	12:30	09:30	18	29/12/07
	w	2	Unk.	Unk.		>10	180	16:00	13:00	20	29/12/07
R	SW	2	2	400	100%	2	180	12:15	09:15	3	29/12/07
Snow above 400m, rain to 1340 then brig	w	1	4	450	100%	2	180	16:00	13:00	14	29/12/07
Mild, some	SW	1-2	10	500-1000	80%	5	180	11:10	08:10	7	30/12/07
	w	2	Unk.	Unk.	80%	>10	180	17:00	14:00	9	30/12/07
0 precipitati	SW	1	8	400-800	80%	5	180	15:30	12:30	11	30/12/07
Bec	Unk.	Unk.	Unk.	Unk.	20%		180	13:15	10:15	15	30/12/07
Hill mist, ligh	SW	2	9	450	100%	2	180	12:30	09:30	16	31/12/07
Hill / forest r	N/A	0	9	350	100%	500m	180	12:15	09:15	2	01/01/08
Breakii	SW	1	9	400	80%	3	150	15:30	13:00	21	01/01/08
Wintry showers o	NW	3	4	Unk.	100%	2	150	15:15	12:45	1	02/01/08
Heavily ov	NE	1	7	Unk.	100%	3	150	12:30	10:00	3	02/01/08
Showers, cool, so	w	1-2	4	500-800	90%	>10	180	13:00	10:00	19	07/01/08
Breezy, showers, cold, s	w	3-4	3	500-800	90%	5	180	16:35	13:35	20	07/01/08
Snow above 400m.	N/A	0	4	550	80%	3	180	11:45	08:45	4	07/01/08
Breaking blu	W	1	4	600	80%	5	180	15.00	12.00	5	07/01/08
Showers some so	SW	3-4	4	600	100%	5	180	12.15	09.15	17	08/01/08
Heavily overcast cons	N/A	0	3	450	100%	2	180	12:15	09.15	7	08/01/08
Broaking blue	W	3	3	600	70%	10	180	15.45	12:45	6	09/01/08
Breaking blue s		3	3	600	70%	10	180	12.45	00.15	8	09/01/08
Hill mist consta	N/A	0	3	450	100%	2	180	12.13	09:10	2	10/01/08
Snow above 500m, sunshine	11/A	1		600	60%	7	180	16:00	12:00	14	10/01/08
Colm cold cloud ba	N/A		5	Upk	15%	>10	180	16.50	12.50	21	11/01/08
Brooking blue sky bright day snow	N/A	0	1	800	70%	10	180	15.45	12.30	21	11/01/08
Dieaking blue sky, blight day, show	N/A	0	1	700	0.0%	10	180	12.45	00.15	0	11/01/08
Hill fog roducing visibility at times 1.5	1000	1	Upk	700	100%	5 1	180	12.15	09.15	1	12/01/08
	\$\V\ \$\V/	1	Unk.	Unk.	100%	5-1	180	12.50	12.00		12/01/08
	500	1	2	500	100%	5-1	180	11.55	13.00	12	12/01/08
Grey, overcast, califi, light covern	E	1	2	500	100%	5	180	11.55	12.25	10	12/01/08
Overcast, call		2.4	Z Upk	500-1000	100%	5	180	15.55	12.55	10	12/01/08
Oce light showers vis 1 Firm oce hill a	VV3VV	2.4	Unk.	Unk.	100%	5-1	180	11.45	08.45	11	13/01/08
	VV5VV	3-4	Unk.	Unk.	100%	5-1	210	11:45	12.20	13	13/01/08
Low cloud, neavy showers, vi	500	3	UIIK. 7	100	100%	5-1	210	16:00	12:30	10	13/01/08
	VV	3	7	100	100%	5	75	10:10	14:55	19	14/01/08
Dry to sta	SE	3	6	100+	100%	5	150	14:45	12:15	20	14/01/08
Silver	SE	3	5	100	100%	5	150	12:00	09:30	21	14/01/08
Bright, clear, o	W	1-2	Unk.	Unk.	100%	5-1	180	16:30	13:30	4	14/01/08
Light to heavy showers, visibility variable, hill fog o	WSW	1-2	Unk.	Unk.	100%	5-1	180	12:45	09:45	9	14/01/08
Overcast, cool, drizzle -	SSW	2	5	400-600	100%	5	180	16:45	13:45	1	14/01/08
Light - moderate rain for 1st	SSE		7	400-600	100%	5	180	12:55	09:55	12	14/01/08
Cloud liftir	SW		Unk.	Unk.	80%	5	180	16:25	13:25	7	14/01/08
Low	SW		Unk.	Unk.	100%	5-1	180	12:35	09:35	10	14/01/08
Regular rain / drizzle	SW	3	6	Unk.	100%	5	150	15:30	13:00	4	15/01/08

lotes



in, 0 precipitation.
N/A
N/A
N/A
N/A
N, occasional drizzle, vis. 2km.
mist, and constant drizzle.
N/A
N/A
n / sleet.
ening with cloud 50%, base 550m, visibility 7km.
ın, 0 precipitation.
N/A
n, a little sun, calm.
ning misty.
drizzle throughout.
st constant drizzle
hlue sky, dry
nstant then dry by 13:45
rast rain by 1115
as now on the ground
ne show on the ground.
re patches of show on ground.
sky, wintry showers.
v patches on the ground.
nt drizzle / wintery snowers.
ky, sunny spells, dry.
and sunny spells, dry.
rain to 1150, dry after.
nd squally showers, wind increasing.
e very high, 0 precipitation.
bove 500m, cloud clearing to 30% by 1400.
Iry, frost / black ice.
n. Light covering of snow, hard frost, bright.
hill fog, freezing, bright.
of snow on the ground, 0 precipitation.
cold, 0 precipitation.
nd with gusts.
t on (Marscalloch), wind F3/4 - gusting - mild.
ility <5km as afternoon progressed.
e, dry at 1525.
, drizzle at 1225.
ady rain.
light shower, drizzle.
hill tops (Knockclud Hill), brightening up - wind reducing.
ght rain off and on in the 3hrs.
rs, showers in last hour, mild, calm.
, occ light drizzle.
loud, rain.
ith occasional bright spells.

Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
15/01/08	13	13:20	15:50	150	5	100%	200	6	3	SE	Steady drizzle.
15/01/08	18	10:30	13:00	150	5	100%	200+	5	3	NE	Dry at start, mist / drizzle from S at 1125.
15/01/08	19	08:45	10:00	75	5	100%	200	4	3	S	Dry, then drizzle and heavier rain at 0935.
15/01/08	12	13:15	16:15	180	5-1	100%	Unk.	Unk.	1-2	WSW	Occ light drizzle.
15/01/08	15	08:50	11:50	180	>10-5	10%	Unk.	Unk.	2-3	WSW	Dry, clear variable cloud base on top of hills (Meaul), occ light showers.
15/01/08	14	09:00	12:00	180	5-1	100%	1000	Unk.	1	SSE	Occ light shower.
15/01/08	18	13:20	16:20	180	5-1	100%	Unk.	Unk.	1	SE	Low cloud, light drizzle, visibility increasing late afternoon.
16/01/08	4	09:30	12:00	150	>10	75%	500	3	2	NE	N/A
16/01/08	4	12:15	14:45	150	>10	20%	Unk.	5	1	E	Dry, bright and sunny but cool on exposed hill top.
16/01/08	5	15:00	16:15	75	>10	35%	Unk.	4	1	E	Dry and bright and cool, getting dark quickly.
16/01/08	7	15:00	16:15	75	>10	5%	Unk.	3	Unk.	Unk.	Dry and virtually no cloud.
16/01/08	8	09:30	12:00	150	>10	90%	Unk.	3-6	1	NE	Dry but overcast and relatively warm, not cold, becoming brighter sunny by 1000.
16/01/08	9	12:15	14:45	150	>10	60%	1500	9	1	E	N/A
16/01/08	19	09:30	12:30	180	>10	25%	Unk.	Unk.	1	w	Clear, bright, sunny, good visibility
16/01/08	21	13:30	16:30	180			Unk.	Unk.	Unk.	Unk.	N/A
16/01/08	15	13:45	16:45	180	>10	25%	800-1000	4	0	N/A	Sunny, calm, cool, 0 precipitation.
16/01/08	16	09:25	12:25	180	>10	40%	600-800	5	2	N	Very good conditions, calm, cool, sunny, 0 precipitation.
16/01/08	17	09:50	12:50	180	>10	50%	Unk.	Unk.	1	N	Dry, cold and sunny.
16/01/08	20	14:00	17:00	180	>10	60%	Unk.	5	1	SE	Cool, sunny
16/01/08	10	10:00	13:00	180	15	60%	700	3	1	N	Scattered cumulus with blue sky, dry, snow over 600m, cloud 20% by 1130.
16/01/08	11	13:15	16:15	180	15	60%	700	3	0	N/A	Could building to W, blue sky, dry.
17/01/08	5	09:35	10:50	75	5-1	100%	0-50	6	4	S	Steady heavy rain, cloud base 50m+ to start. Rain easing at 1020 and cloud base dropping to zero. 150m visibility briefly then lifted again.
17/01/08	7	09:15	13:00	225	>10	100%	Unk.	7	1	N/A	Steady light rain from 0915-1045 then brightened up.
17/01/08	8	13:40	16:10	150	5->10	100-80%	200+	6	3	SW	Heavy, persistent rain to start. Rain clearing at 1405 then showery.
17/01/08	10	11:00	13:30	150	>10	85%	Unk.	7	4	S	N/A
17/01/08	10	13:00	16:00	180	8	100%	Unk.	6	1	Unk.	Raining to start with on VP. Rain stopped at 1415, still overcast.
17/01/08	6	13:30	16:30	180	5	90%	Unk.	Unk.	1	SW	Heavy cloud returning from W. occasional heavy showers
17/01/08	8	09:55	12:55	180	5-1	90%	2000	8	1-2	SW	Early morning heavy rain clearing.
18/01/08	5	12:20	13:35	75	5	100%	Unk.	5	2	SE	Constant rain and low cloud base and cool.
18/01/08	8	09:30	12:00	150	2-5	100%	Unk.	4	3	SE	Fairly constant rain, heavy at times, with low cloud base.
18/01/08	18	09:50	12:20	150	1	100%	100+	5	4	SE	Persistent heavy rain.
18/01/08	19	12:25	13:40	75	1	100%	50+	10	3	S	Steady drizzle, heavy rain at 1235, clearing 1250.
18/01/08	21	13:50	16:20	150	>10	100%	100	11	4	SW	Dry. rain started 1555, brief shower to 1605.
18/01/08	2	09:35	12:35	180	1	100%	Unk.	Unk.	1-2	SW	Overnight rain, low cloud, continuous drizzle, occ heavy showers.
18/01/08	16	11:30	14:30	180	2	100%	450	10	2	SW	Persistent rain or drizzle, clearing by 1300.
19/01/08	3	10:15	13:15	180	>10	90%	600-800	3	2-3	W	Cool. wind W F2-3. 0 precipitation.
19/01/08	5	13:45	16:45	180	5	90%	600-800	3	1	w	Calm. cold. overcast. 0 precipitation.
19/01/08	13	10:30	13:30	180	7	70%	600	6	1	N	Occ. showers.
20/01/08	12	09:30	12:30	180	5	90%	500	6	0	N/A	Valley mists, dry(just), drizzle by midday.
20/01/08	15	13:00	16:00	180	2-3	90%	550	6	1	WNW	Cloud building, overcast, squally showers, vis 2-3km.
21/01/08	5	15:15	16:30	75	1-3	100%	Unk.	1	2	S	Steady snow falling during watch and sleet at times.
21/01/08	9	12:30	15:00	150	1-5	100%	Unk.	1	2	S	Rain and sleet with low cloud base and snow falling steadily at times.
21/01/08	18	13:20	15:50	150	1	100%	100+	0	5	NIF	Steady snow
21/01/08	19	12:00	13.15	75	1	100%	100+	1	3	SE	Steady snow / sleet
21/01/08	20	09.20	11.50	150	1	100%	100	1	2	S	Steady show 7 steet
22/01/08	5	12.10	14.40	150	1	100%	Link	2	1	SW	Dull cold and overcast with low thick cloud
22/01/08	6	00.30	12.00	150	2_3	100%	Link	1	0-1	SW	Dull and overcast with drizzle at times. Low cloud base
22/01/08	6	12.10	15.55	225	1	100%	Unk	3	2-3	ST.	light drizzle cloud base 10m+
22/01/08	7	15.05	16.20	75	1	100%	Link	1	1	SW/	Dull and overcast micty
22/01/00	,	10.02	12:05	150		100%	50+		2	CE	
22/01/08	10	09:35	12:05	150	5	100%		2	3) SE	טוע, טוועצופ at 1130.

Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes			
22/01/08	17	08:55	11:55	180	5	100%	500-800	2	2-3	SSW	Cold, light covering of snow on ground, 0 precipitation in 1st 1.75hrs, light drizzle off and on for last 1.25hrs. Wind SSW at start of VP then in last hour SW.			
22/01/08	21	12:45	15:45	180	5	100%	500-600	2	2	S	Grey, overcast, some drizzle - light rain in the 3hrs but mostly dry, cold.			
22/01/08	1	09:00	12:00	180	2	100%	400	2	0	N/A	/A Light shower at VP, heavily overcast, dry to 1130 then light wintry drizzle. N Snow down to 250m, overcast, mist, drizzle.			
22/01/08	9	13:30	15:00	90	2	100%	500	4	0	SW	Snow down to 250m, overcast, mist, drizzle. Slightly hazy but dry to start with but light showers coming and going.			
23/01/08	7	09:15	10:30	75	>10	100%	Unk.	10	1-3	Ν	Slightly hazy but dry to start with but light showers coming and going.			
23/01/08	12	10:45	13:15	150	>10	100%	Unk.	10	3	N	Dull and overcast with some light showers.			
23/01/08	13	09:25	11:55	150	5	100%	100	11	1	SE	Dry to start then light drizzle worsening at 1105.			
23/01/08	13	13:30	16:00	150	2	100%	Unk.	10	3	N	Dull and overcast. Visibility down to 2km max during showers. 5km when not raining.			
23/01/08	19	12:20	13:35	75	1	100%	100+	11	1	NE	Steady drizzle, sheltered in deep valley.			
23/01/08	20	13:40	16:10	150	5	100%	100	11	4-5	S	Dry then heavy rain 1415-1420, then rain on and off.			
23/01/08	2	11:45	14:45	180	5	100%	Unk.	Unk.	3-4	WSW	Bright, overcast, occ light showers, wind increasing, cloud / hill fog appearing on Knockman Hill.			
23/01/08	6	08:30	11:30	180	10-5	100%	Unk.	Unk.	3	WSW	Overcast, bright, fresh F3/4, WSW, occ light shower near end of VP, visibility good.			
23/01/08	9	13:00	14:30	90	5	100%	400	12	3	w	Dry then squally after 1345, vis 2km.			
23/01/08	18	09:00	12:00	180	3	100%	450	11	2	w	Heavily overcast, drizzle stop by 0950, vis 4km, cloud lift to 500m, drizzle and close in again 1115.			
24/01/08	6	12:00	13:15	75	>10	80%	Unk.	1	3	w	Frequent hail and snow showers.			
24/01/08	9	09:15	11:45	150	>10	70%	Unk.	2	4	w	Show and sleet showers but mostly dry.			
24/01/08	4	09:30	12:30	180	>10-5	40%	Unk.	Unk.	5-6	w	Bright and sunny periods, occ light showers and hail, gale force winds (west), very cold.			
24/01/08	20	13:00	16:00	180	>10	75%	Unk.	Unk.	5	w	Strong gale force wind, variable overcast, bright sunny periods, cold.			
24/01/08	11	09:50	12:20	150	5	100%	100+	2	5	w	A series of sleet and hail squalls.			
24/01/08	12	12:30	16:15	225	>10	80%	200+	6	4	w	Dry to start, cloud cover to 30% the increasing again.			
25/01/08	11	08:25	10:55	150	5	100%	100	10	4-5	w	Rain at 1010, brief shower, dry to start.			
25/01/08	11	10:55	13:25	150	5	100%	50+	10	4	w	Dry, light rain at 1245, conditions deteriorating.			
25/01/08	19	13:40	14:55	75	2	100%	100	9	3	N	Steady rain. Wind direction in this deep valley consistently different from surrounding open country.			
26/01/08	7	09:45	12:45	180	>10	100%	Unk.	9	2-3	w	Fresh W wind, low cloud, drizzle early afternoon.			
26/01/08	10	13:20	16:20	180	5	100%	Unk.	10	1-2	WSW	Cloud lowers, drizzles and light showers, cloud lifting wind increasing.			
27/01/08	14	09:40	12:40	180	>10	90%	Unk.	9	2-3	NW	Dry.			
27/01/08	16	13:30	16:30	180	>10	80%	Unk.	9.5	Unk.	NW	Cloud lifting, rain.			
28/01/08	15	12:05	15:05	180	5	60%	700-1000	9	2-3	SW	Some sun, 0 precipitation, mild, cool wind.			
28/01/08	19	07:55	10:55	180	>10	90%	800-1000	8	2-3	SW	Cloud cover at start of watch 90% in last 1.5hrs c.60% + some sun, fairly mild, 0 precipitation.			
28/01/08	8	09:20	12:20	180	Unk.	Unk.	Unk.	Unk.	Unk.	SW	N/A			
28/01/08	11	13:30	16:30	180	>10	90+%	Unk.	7	2-3	SW	Cloud cover increasing wind increasing, cool.			
28/01/08	4	11:00	14:00	180	7	50%	Unk.	8	3	w	Scattered cumulus in blue sky, bright.			
28/01/08	5	14:15	16:45	150	3	70%	Unk.	8	2	w	Cumulus building to W, patchy blue sky.			
30/01/08	12	09:00	12:00	180	3	60%	500	3	1	w	Wintry showers and sunshine.			
30/01/08	14	12:30	15:30	180	8	80%	500	3	2	w	Bright spells, snow (light cover) over 450m.			
01/02/08	8	08:45	11:45	180	10	80%	600	4	4	N	Snow lying above 400m, high wind chill, dry with snow flurries.			
01/02/08	16	12:40	15:40	180	8	90%	650	3	4	N	Snow lying over 450m, snow flurries heavy by 1400.			
03/02/08	15	13:00	16:00	180	>10	100%	Unk.	Unk.	4	S-SW	Cloud occ dropping to top of hill. Bright overcast, f4 gusting, light rain near end (showers). Visibility good.			
03/02/08	21	09:30	12:30	180	>10	100%	Unk.	Unk.	4-5	S-SW	Occ light showers, bright, wind f4 gusting, S-SW.			
04/02/08	7	13:25	16:25	180	>10	60%	200	7	3	SW	Dry.			
04/02/08	10	09:50	12:50	180	5	100%	50+	3	3	S	Dry to start, rain at 1100			
04/02/08	1	09:05	12:05	180	5->10	100%	Unk.	Unk.	3-4	S-SW	Bright, occasional sunny periods, occasional light shower, visibility good.			
04/02/08	9	12:35	15:35	180	>10	100%	Unk.	Unk.	3-4	SW	Cloud cover, variable, sunny periods.			
05/02/08	3	09:50	12:50	180	5	100%	100+	4	3	SE	Steady light drizzle, cloud base 100m+ (50m from 1130)			
05/02/08	6	14:10	17:10	180	>10	100%	200	4	4	NW	Dry to start.			
05/02/08	10	14:10	17:10	180	>10	100%	Unk.	Unk.	1-3	SW-W	Bright, overcast, wind speed variable 1-3, clear visibility.			
05/02/08	19	10:05	13:05	180	1-5	100%	Unk.	Unk.	0	N/A	Light drizzle, calm, bright, overcast.			
05/02/08	18	14:20	17:20	180	5	100%	300-500	4	1	w	Cool, grey, overcast, calm, cloud base c. 3-500m for 1st 1.5hrs then 500-700m for last 1.5hrs, 0 precipitation.			
06/02/08	2	14:20	17:20	180	>10	20%	300	7	2	w	Dry.			
06/02/08	13	08:55	11:55	180	>10	30-60%	400	6	3	NW	Dry. Rain at 1150. Visibility compromised by low sun to SE.			





Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
06/02/08	17	11:45	14:45	180	5	75%	600-900	3	3-4	WNW	Showers (sleet / rain) in 1st 45mins, mainly sunny in last 2hrs, cold wind.
06/02/08	20	07:45	10:45	180	>10	70%	600-800	3	3-4	w	Cold, breezy, some sun, hail showers in 1st 1.5hrs
07/02/08	1	10:05	13:05	180	1-5	100%	50+	10	5	SW	Dry to start, cloud base 50m and lifting, visibility not higher, ground to SE (in cloud) only 1km, clear at 1105.
07/02/08	11	13:30	16:30	180	>10	100%	150	10	4	SW	Dry to start.
07/02/08	21	13:45	16:45	180	5	90%	600-800	11	4	SSW	Overcast, mild, 0 precipitation
08/02/08	7	10:05	13:05	180	1-5	100%	100	9	5	S	Rain to start stopped 1020. Rain back briefly at 1055.
08/02/08	10	14:05	17:05	180	1	100%	50+	9	5	S	Dry to start. Visibility to <500m 1530 - 1600 then lifting to 1km again.
08/02/08	6	14:25	17:25	180	1-5	100%	200-500	8	3	SW	Visibility 1-5km though occasionally less (c2-500m), light rain/drizzle off and on in the 3 hrs, mild.
08/02/08	5	14:15	16:15	120	2	100%	250	12	1	SW	Dry, mist close in 1545, 1/5km visibility then 400m or less by 1600, closing further.
08/02/08	12	10:00	13:00	180	5	10%	500-700	9	5	S	Showers, very windy though mild.
09/02/08	2	10:30	13:30	180	1	100%	Unk.	6	0-1	SW	Calm overcast, mist on the hills.
09/02/08	3	14:00	17:00	180	1-5	100%	Unk.		1-2	SW	Low cloud, mist on the hills, wind increasing to lift the gloom a little.
10/02/08	14	14:00	17:00	180	1-5	10%	Unk.	6	0-2	SE→SW	Sun trying to burn through the cloud, no rain, skies clearing to 10% c/c.
10/02/08	16	09:50	12:50	180	1-5	100%	Unk.	5	0-2	SE	Low hill cloud.
11/02/08	15	14:40	17:10	150	>10	0%	Unk.	12	3	S	Dry.
11/02/08	16	11:15	13:45	150	>10	10%	Unk.	11	4	SE	Dry, virtually no cloud.
11/02/08	8	12:35	15:35	180	>10	10%	Unk.	8	0	SW	Clear blue sky, heavy overnight frost.
11/02/08	9	09:00	12:00	180	>10	10%	Unk.	1	0	SW	Cold clear morning.
11/02/08	20	13:45	16:45	180	>10	5%	Unk.	8	2-3	SE	Sunny, clear, cool wind, just a few scattered clouds at v. high heights 0 precipitation.
12/02/08	14	08:50	11:20	150	>10	0%	Unk.	5	2	S	Dry, patchy mist in valley still (until 1100)
12/02/08	14	11:20	13:50	150	>10	0%	Unk.	13	3	S	Dry.
12/02/08	16	14:40	17:10	150	>10	10%	Unk.	13	3	S	Dry, thin high level cloud.
12/02/08	11	08:45	11:45	180	>10	5%	1500+	3	0	N/A	Calm, sunny, clear, cold, only very few clouds, 0 precipitation.
12/02/08	18	12:50	15:50	180	>10	0%	Unk.	10	0-1	SW	Sunny, clear, calm, pleasant, 0 precipitation.
13/02/08	4	09:25	12:25	180	>10	0%	Unk.	0	1	E	Dry.
13/02/08	17	13:10	16:10	180	>10	0%	Unk.	14	1	E	Dry.
13/02/08	6	16:50	17:50	60	>10	0%	Unk.	Unk.	0	N/A	Bright, clear, sunny and calm. Visibility 10km+.
13/02/08	10	15:15	16:15	60	>10	0%	Unk.	Unk.	0	N/A	Clear, bright, sunny and calm. Visibility 10K+.
13/02/08	16	10:00	14:00	240	>10	0-1%	Unk.	Unk.	0-1	E	Visibility 10km+, clear, sunny, hard frost.
13/02/08	13	11:45	14:45	180	>10	15%	1500+	12	0	N/A	Sunny, calm, pleasant, o precipitation.
13/02/08	19	07:45	10:45	180	>10	10%	1500+	1	0-1	SSE	Calm, sunny, cool, 0 precipitation. Temp 1 at start, 6 at end.
14/02/08	5	08:40	09:40	60	>10	100%	Unk.	Unk.	2	E	High cloud, overcast, good visibility, clear, cold, bright.
14/02/08	12	10:15	12:00	105	>10	100%	Unk.	Unk.	1	E	Overcast, clear, bright, light wind, ground frost - wind increasing to f2.
14/02/08	14	13:05	14:05	60	>10	100%	Unk.	Unk.	2-3	E	Overcast, clear, bright periods, cold E wind.
14/02/08	15	14:45	17:15	150	>10	100%	Unk.	Unk.	2-3	E	Very cold, E wind, bright, clear visibility.
18/02/08	1	14:20	17:20	180	>10	0%	Unk.	4	0	N/A	Calm, sunny, clear, cold, 0 precipitation.
18/02/08	3	10:45	13:45	180	10+	0%	Unk.	4	0	N/A	Dry, bright, haze and shimmer building.
18/02/08	6	15:30	18:00	150	5	0%	Unk.	7	0	N/A	Strong sun, mild haze and shimmer
18/02/08	8	07:30	10:30	180	10+	0%	Unk.	-4	0	N/A	Hard frost, bright and dry, -1°c by end of VP
18/02/08	12	10:10	13:10	180	>10	0%	Unk.	4	0	N/A	Calm sunny, cool, 0 cloud cover, 0 precipitation.
20/02/08	13	12:50	15:50	180	5	100%	500-800	4	1	S	Light rain showers in 1 st hr, dry for 2nd & 3rdhrs, grey, overcast calm, cold.
20/02/08	21	08:15	11:15	180	5	100%	600-900	2	1	S	Overcast, cold, 0 precipitation
22/02/08	9	08:15	11:15	180	>10	90%	800-1000	8	4-5	SW/W/NW	Windy, 0 precipitation, wind SW backing NW, a little sun.
22/02/08	15	12:30	15:30	180	>10	100-80%	700-1000	6	5	WNW	Windy, sleet / rain showers, some sun.
23/02/08	5	13:45	16:45	180	1-5	100%	Unk.	Unk.	1-2	SW	N/A
23/02/08	6	10:00	13:00	180	1-5	100%	Unk.	8	1-3	SW	Low cloud, light rain and drizzle.
24/02/08	7	09:30	12:30	180	>10	60%	Unk.	7	2	NW	Odd shower.
24/02/08	14	13:45	17:00	195	>10	70%	Unk.	6	2-3	NW	By 3pm cloud cover <100%, still high cloud base and no precipitation/apart from odd shower.
24/02/08	16	14:00	17:00	180	>10	50%	Unk.	Unk.	4	w	Cloud cover variable, sunny periods. Very cold, west f4 occ light wintery showers.
24/02/08	18	09:15	12:15	180	>10	100%	Unk.	Unk.	4	w	Cloud cover breaking up during morning, sunny periods, and cold f4 west
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Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
25/02/08	2	12:45	15:45	180	1	100%	Unk.	5	2-3	SW	Rain becoming more continuous.
25/02/08	4	09:10	12:10	180	>10	100%	Unk.	5	2	SW	Initially high cloud, blue sky, by 10:00 100 % c/c occasional heavy shower.
25/02/08	11	08:55	11:55	180	>10	100%	Unk.	Unk.	4	SW-W	Cold SW/W; f4, overcast, bright, good clear visibility - light showers - gusting wind.
25/02/08	17	12:50	15:50	180	1-5	100%	Unk.	Unk.	4	SW-W	Gusting winds, vis clear, overcast, occ light showers, merging, cloud height variable.
26/02/08	19	09:20	12:20	180	5->10	100%	Unk.	Unk.	4-5	SW	Occ light showers, overcast, wind very variable in speed, gusting.
26/02/08	20	12:30	15:30	180	>10	100%	Unk.	Unk.	4-7	SW-W	Overcast, sunny periods, occ light-heavy showers, mainly dry.
27/02/08	1	11:20	14:20	180	>10	80%	200+	9	2	SW	Dry to start.
27/02/08	3	14:30	17:30	180	>10	90-30%	200+	9	2	w	Dry to start, improving weather.
28/02/08	12	12:30	15:30	180	>10	75%	700-1000	6	2	SW	0 precipitation, and some sun, calm.
28/02/08	21	08:30	11:30	180	>10	75%	600-900	6	1-2	SW	Cool, 0 precipitation, some sun
28/02/08	10	12:00	15:00	180	>10		200+	8	2	SW	Dry.
28/02/08	13	08:45	11:45	180	>10	90%	200+	10	2	SW	Dry.
01/03/08	2	15:00	18:00	180	>10	90%	Unk.	4.5	1-2	w	c/c <to 100%,="" 1600<="" after="" drizzle="" light="" td=""></to>
01/03/08	8	09:45	12:45	180	>10	30%	Unk.	6	2-4	SWW	Blustery wind, odd squally shower.
02/03/08	15	13:30	16:30	180	>10	70%	Unk.	6.5	3-4	NW	Occasional squall, cloud high.
02/03/08	18	09:50	12:50	180	5		Unk.	4.5	2-3	NW	N/A
03/03/08	5	14:00	17:00	180		70%	Unk.	4	0-1	w	N/A
03/03/08	9	09:30	12:30	180	>10	90%	Unk.	1	1-2	NW	Heavy snow fall early am, stopped by 0800.
04/03/08	17	14:30	17:30	180	>10	30%	1000-1500	5	2-3	WNW	1st hr: sunny, clear, cool, wind F2, 0 precipitation; 2nd hr similar conditions but wind F3, a cold wind; same conditions in 3rd hr, wind F2-3 WNW, cold wind.
04/03/08	19	11:10	14:10	180	>10	30%	1000+	5	1-2	WNW	Calm, sunny, cool, 0 precipitation, light snow on the ground, same conditions for all 3hrs.
05/03/08	4	08:40	11:40	180	>10	100%	Unk.	Unk.	4-5	w	Vis very good, occ sunny period, cold W wind, bright.
05/03/08	11	12:30	15:30	180	>10	80%	Unk.	Unk.	4-5	w	Cold, westerly, bright sunny periods, vis good, occ light drizzle.
06/03/08	6	08:05	11:05	180	>10	90%	600-800	8	3-4	SW-W	At start of 1st hr, cloudy, breezy, 0 precipitation, same conditions at start of 2n hr, 3rd hr showers.
06/03/08	7	08:50	11:50	180	>10	100%	Unk.	Unk.	2-3	SW-W	Overcast, bright, occ sunny periods, mild, occ drizzle, vis good.
06/03/08	16	12:50	15:50	180	>10	100%	Unk.	Unk.	4-5	SW-W	Wind increasing from am, cold fresh wind, sunny periods, occ v. light showers, vis v. good.
06/03/08	14	12:15	15:15	180		80%	750-1000	7	3	SWW	Cool, breezy, dry in 1st hr, light to moderate rain showers in 2nd & 3rd hrs.
11/03/08	13	11:20	14:20	180	>10	80%	400-800	5	2-3	w	1st 2hrs cloud base 5-800m, showers, cool, 3rd hr, light rain, cloud base c.4-500m, wind W, 1st 2 hrs F2-3, last hr F1-2
11/03/08	20	07:40	10:40	180	>10	70%	700-1000	5	3-4	w	1st 2hrs, wind F3-4, W, showers, cool, 3rd hr, 0 precipitation, sunny, wind less, W F2-3, snow patches on the ground.
12/03/08	3	12:15	15:15	180	>10	70%	600-800	6	4-5	WSW	Windy, wind WSW F4-5, showers of rain and hail during all of the 3hrs.
12/03/08	6	15:45	18:45	180	>10	70%	600-800	5	4	w	During the 3hrs several heavy rain and hail showers, windy, cool, some sun, cold, hail shower and windy
15/03/08	1	10:15	13:15	180	>10	100%	Unk.	Unk.	2-3	ESE	Mist on Fell Hill, occ light drizzle, vis good, cool E wind (mist clearing late PM)
15/03/08	2	13:25	16:25	180	>10	100%	Unk.	Unk.	2-3	ESE	Overcast, bright periods, good visibility, cool ESE, F2-3
15/03/08	21	13:50	16:50	180	>10	100%	Unk.	8	2	SW	Very heavy rain started at 1640.
16/03/08	19	11:45	14:45	180	>10	80%	Unk.	8	0-1	SW	N/A
16/03/08	20	14:50	17:50	180	>10	100%	Unk.	7	2	NW	N/A
16/03/08	10	08:50	11:50	180	>10	50%	Unk.	Unk.	2-4	NE	Vis very good, sunny periods, cold NE wind - increasing to F4
16/03/08	12	12:30	15:30	180	>10	50%	Unk.	Unk.	3-4	NE	Clear bright sunny periods. cold NE F3-4.
17/03/08	8	08:25	11:25	180	>10	0%	Unk.	Unk.	2-3	NW	Frost, cold, very clear, sunny, cold NW
17/03/08	9	11:55	14:55	180	>10	0%	Unk.	Unk.	2-3	NW	Bright, clear and sunny, cold NW F2-3, cloud increasing
18/03/08	18	12:25	15:25	180	>10	60%	Unk.	Unk.	2-3	N	Cloud cover variable, sunny bright periods.
18/03/08	15	09:00	12:00	180	>10	100%	Unk.	Unk.	2-3	N	Bright and clear, good vis. Cloud breaking, sunny periods.
20/03/08	17	14:20	17:20	180	5	90%	500-700	7	4-5	NW	Windy, rain showers.
20/03/08	5	15:35	18:35	180	>10	80%	200+	7	5	w	Couple of squalls. Wind speed judged from clouds overhead as VP sheltered.
20/03/08	22	15:00	18:00	180	3	90%	550	12	4	vv Couple of squalls. Wind speed judged from clouds overhead as VP sheltered. NNW Dry after heavy rain with squally showers	
21/03/08	11	08:00	11:00	180	>10	75%	700-1000	6	4-5	NW Some sun, showers in 1st hr windy	
21/03/08	16	12:30	15:30	180	>10	60%	800+	7	4-5	N	Windy, cold wind, mainly sunny, hail showers in 1st + 3rd hrs. 0 precipitation in 2nd hr.
21/03/08	4	14:15	17:15	180	10	40%	900+	Unk.	5	NF	Scattered cumulus, dry bright, snow flurries, moderate wind chill
21/03/08	7	10:15	13.15	180	>10	30-50%	300+	8	5	NW	Dry. light drizzle at 1215 briefly
21/03/08	9	15:10	18:10	180	>10	30%	500	6	5	S N Mostly dry, squall of snow / sleet 1635, at 1625.	
22/02/02		15.15	18.15	180	>10	70%	500	6	2	NF	Drv
22/03/00	<u>+</u>	17.12	10.13	100	/ /10	1070	500	0	4		ן טע.



Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes		
22/03/08	2	12:05	15:05	180	>10	90%	300+	8	4	NE	Very dark snow squalls.		
22/03/08	3	10:25	11:55	90	>10	90%	300+	5	4	NE	Dry except for very thin snow flurries.		
22/03/08	14	11:00	14:00	180	10	60%	800	4	3	NW	/ Cloud building 800m in blue sky, bright, wind chill, snow flurries.		
23/03/08	9	12:55	15:55	180	>10	80%	800-1000	5	2-3	N	Cold wind, single light - moderate sleet shower in the 2nd + 3rd hrs otherwise dry, snow covering on hill / mountain tops.		
23/03/08	21	09:00	12:00	180	>10	75%	800+	6	1-2	N	Cold wind / breeze, clear, mostly sunny, 0 precipitation, snow on surrounding hilltops.		
23/03/08	6	17:00	19:00	120	10	90%	650	3	2	NNW	Squally snow showers, wind variable, windchill to 0°c.		
24/03/08	13	09:30	12:30	180	10	60%	Unk.	4	3	N	Scattered cumulus in blue sky, bright, snow showers, high wind chill.		
26/03/08	20	07:25	10:25	180	5	100%	Unk.	Unk.	2-3	SE	Bright, occ snow showers, clear periods		
26/03/08	19	11:00	14:00	180	>10	100%	Unk.	Unk.	2-3	SE	Overcast, bright, occ drizzle, F2-3, SE, good vis		
27/03/08	14	12:45	15:45	180	>10	50%	Unk.	Unk.	3-4	NW	Good vis, clear, sunny periods, cold F3-4 NW, cloud variable 50%-90%		
27/03/08	12	07:45	10:45	180	>10	55%	Unk.	Unk.	3-4	NW	Good vis, cold NW F3-4, sunny periods		
27/03/08	8	09:30	12:30	180	10	50%	650	8	1	NE-NW	Cumulus in patchy blue sky, dry, moderate wind chill.		
27/03/08	10	12:45	15:45	180	10	60%	700	8	3	NW	Cumulus in blue sky, dry, bright, moderate wind chill. Cloud building after 1430 to 90% cumulus		
29/03/08	18	08:10	11:10	180	>10	100%	800+	6	3	s	1st hr light rain then showers, 2nd hr dry, breezy, cool, a little sun, 3rd hr, mainly dry, 1 light-moderate hail shower.		
29/03/08	5	14:00	17:00	180	>10	100%	500	4	3-4	SW	Low cloud, rain gets < heavy		
29/03/08	6	17:30	19:00	90		90%	Unk.	6	2	SW	N/A		
29/03/08	7	09:30	12:30	180	>10	100%	800	6	2-3	SW	Fresh wind, rain later (after 11am)		
29/03/08	11	09:00	12:00	180	3	100%	550	7	2	SE	Overcast, drizzle occasional to heavy rain after 1110.		
30/03/08	16	09:00	12:00	180	5	100%	800	6	2-3	WNW	Some light rain / drizzle.		
30/03/08	17	13:00	16:00	180	>10	60%	1000+	6	2-3	w	N/A		
31/03/08	11	11:20	14:20	180	>10	80%	800-1000	8	1-2	SSW	Cool, some sun, cloudy, dry in 1st 2 hrs, light rain in 3rd hr.		
31/03/08	13	14:45	17:45	180	>10	70%	1000+	7	2	SSW	Some sun, cool, 0 precipitation.		
31/03/08	4	14:00	17:00	180	>10	60%	Unk.	7	2	w	N/A		
31/03/08	15	11:15	14:15	180	10	70%	700	9	3	SW	Building cumulus in blue sky, dry - cool.		
31/03/08	22	10:30	13:30	180	>10	60-90%	1000	6	1-2	SW	Dry.		
01/04/08	1	12:25	15:25	180	>10	100%	100+	10	5	SW	Regular driving showers.		
01/04/08	2	15:30	18:30	180	5	100%	100+	8	6	NW	Drizzle and showers.		
02/04/08	3	09:30	12:30	180	>10	100%	200+	11	3	w	Dry.		
02/04/08	7	12:50	15:50	180	>10	90-70%	300+	13	3	NW	Dry.		
02/04/08	12	16:00	19:00	180	>10	90-100%	300+	12	2	NW	Dry.		
03/04/08	6	12:35	15:35	180	>10	90%	Unk.	15	2	N	Dry.		
03/04/08	9	09:20	12:20	180	>10	90%	150+	14	3	NW	Dry, cloud base 150m+ over hills to N + W.		
03/04/08	10	15:40	18:40	180	>10	80%	100+	15	2	NW	Dry.		
03/04/08	19	11:30	14:30	180	5	100%	500+	9	2	NW	Overcast, calm, light drizzle off and on in 1st hour, 0 precipitation in 2nd and 3rd hours.		
03/04/08	20	08:00	11:00	180	5	100%	300-500	9	2	w	O precipitation, overcast, calm, mild.		
04/04/08	15	09:20	12:20	180	5	100%	100+	9	4	w	Steady light drizzle, heavier shower 1110-1120, clear spells too.		
04/04/08	16	16:10	19:10	180	>10	60-50%	100+	10	4	NW	Dry, fine but windy evening.		
04/04/08	18	12:35	15:35	180	5-1	100%	50+	10	4	N	Drizzle and heavier showers. Clearing at 1420.		
04/04/08	5	11:40	14:40	180	5	100%	600-700	10	2	WNW	Drizzle off and on in 1st hour, 0 precipitation in 2nd hour, showers in 3rd hour, mild.		
04/04/08	21	07:35	10:35	180	>10	100%	800+	8	3	w	Overcast, 0 precipitation in 1st and 2nd hours, light rain showers in 3rd hour.		
05/04/08	14	11:15	14:15	180	>10	60%	Unk.	Unk.	3-4	NW	Cold northwest wind, bright clear, sunny.		
05/04/08	17	07:30	10:30	180	>10	2%	Unk.	Unk.	3	NW	Sunny, clear, bright, cold northwest F3, cloud building up during VP.		
06/04/08	4	08:50	11:50	180	>10	75%	Unk.	Unk.	3-4	NW	Bright, occasional sunny periods and snow flurries, cold northwest F3 / 4.		
06/04/08	10	16:45	19:45	180	>10	85%	Unk.	Unk.	3-4	NW	Bright clear sunny periods.		
06/04/08	6	16:30	19:30	180	>10	60%	Unk.	Unk.	2-3	NE	N/A		
06/04/08	8	08:50	11:50	180	>10-5	80%	Unk.	0	2-3	NNE	Low cloud, occasional snow showers, wind < in last hour + visibility.		
07/04/08	1	08:00	11:00	180	>10	50%	500+	1	1	N	Dry.		
07/04/08	2	12:10	15:10	180	>10	90%	200+	9	3	NW	Dry, showers after 13:45		
07/04/08	12	09:00	12:00	180	>10	50%	Unk.	Unk.	3-4	WNW	Bright, clear, sunny periods, cold west-northwest.		
07/04/08	20	12:45	15:45	180	>10	95%	Unk.	Unk.	3-4	WNW	Bright, clear, sunny periods, cold west-northwest.		
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Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
07/04/08	9	12:30	15:30	180	>10	100%	Unk.	3	2	N	N/A
07/04/08	13	09:00	12:00	180	>10	60%	1000	2	1-2	NNW	No precipitation.
08/04/08	7	15:00	18:00	180	>10	90%	500+	10	2	NW	Dry.
08/04/08	14	11:30	14:30	180	>10	50%	300+	7	3	NW	Dry.
08/04/08	15	08:05	11:05	180	>10	5%	Unk.	Unk.	2	NW	Sunny, bright, clear frost, good visibility, cold northwest wind.
08/04/08	16	12:15	15:15	180	>10	50%	Unk.	Unk.	2-3	w	Clear, bright and sunny, cold, west F2 / 3, visibility good.
08/04/08	4	10:50	13:50	180	>10	50%	Unk.	6	1	SW	Very high cloud, warm sunny morning.
08/04/08	11	14:30	17:30	180	Unk.	Unk.	Unk.	Unk.	Unk.	NNW	N/A
09/04/08	3	11:55	14:55	180	>10	80%	500+	12	2	w	Dry.
09/04/08	5	08:45	11:45	180	>10		500+	6	1	SW	Dry.
10/04/08	8	07:55	10:55	180	>10	100%	100+	7	2	w	Showers + drizzle.
11/04/08	18	13:05	16:05	180	>10	100%	300	9	1	N	Faintest drizzle.
11/04/08	21	16:20	19:20	180	>10	100%	200+	8	2	w	Very light drizzle, becoming heavier at 1640.
13/04/08	17	12:16	16:16	240	>10	95%	Unk.	17	1	SW	N/A
13/04/08	19	09:05	12:05	180	>10	5%	Unk.	2	0	N/A	Into 3rd hour, cloud increased to 60%
15/04/08	10	14:45	17:45	180	>10	50%	800+	8	1-2	NW	Sleet / rain showers in 1st hour, 0 precipitation in 2nd and 3rd hours, cool.
15/04/08	12	11:15	14:15	180	>10	70%	500+	5	1	N	Sleet showers in 1st hour, 0 precipitation in 2nd hour, one light rain shower in 3rd hour, some sun, cold.

Table D3.2- Season 2, April 2008 – September 2008

Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
16/04/08	15	12:50	15:50	180	>10	80%	Unk.	Unk.	Unk.	Unk.	Sunny periods, clear, bright, cold east-southeast F2 / 3.
16/04/08	18	08:55	11:55	180	>10	50%	Unk.	Unk.	Unk.	Unk.	Ground frost, clear bright sunny, F2 / 3 east-southeast (cold wind), occasional (hill) cloud on hill tops.
17/04/08	14	13:40	16:40	180	>10	25%	Unk.	Unk.	Unk.	Unk.	Sunny, bright and clear, cold east wind.
17/04/08	16	08:45	11:45	180	>10	20%	Unk.	Unk.	Unk.	Unk.	Cold east - southeast F3, bright, sunny, good visibility.
21/04/08	24	14:40	17:40	180	5	100%	700	7	1	E	Grey, overcast, cool, calm, 0 precipitation.
21/04/08	25	11:00	14:00	180	>10	90%	800	8	3-4	NE	Overcast, cloud base 800m+, 0 precipitation, cool wind.
22/04/08	29	09:40	12:40	180	5	80%	600	10	3	E	Overcast at start of watch, cloud base 600m+ then in last 2 hours, 1500m+ plus hazy sun, 0 precipitation, cool wind.
22/04/08	32	11:30	14:30	180	7	50%	Unk.	12	Unk.	Unk.	High scattered cirrus in blue sky, dry after frost (early) wind chill. High shimmer/haze
23/04/08	37	17:15	20:15	180	5	30%	900	12	Unk.	Unk.	Scattered cumulus. 900m in blue sky, strong haze, sunshine dry.
23/04/08	38	13:45	16:45	180	10	60%	Unk.	14	Unk.	Unk.	High scattered cumulus in blue sky, sunshine moderate haze/shimmer dry
24/04/08	33	11:00	14:00	180	>10	90%	600	10	3	SW	Showers, moderate rain, during all 3 hours, cloud base 600m+.
24/04/08	39	09:30	12:30	180	3	100%	Unk.	9	Unk.	Unk.	Cumulus, showers, cloud clear to 7/10 by 11:30 then wintry showers
25/04/08	35	09:45	12:45	180	4	90%	550	9	Unk.	Unk.	Cumulus building 550m turning wet by 10:30 (occasional drizzle) clear by 11:20 cloud thin & lift by 12:30 7/10 700m. Vis. 5km.
25/04/08	36	13:15	16:15	180	4	100%	600	9	Unk.	Unk.	Cumulus 600m building dry (just) wind increasing, drizzle 13:30 steady after 15:00 visibility down to 1km
25/04/08	39	13:20	16:20	180	>10	50%	1500	24	2	SW	N/A
26/04/08	32	11:30	14:30	180	>10-5	100%	Unk.	Unk.	Unk.	Unk.	Overcast, bright periods mild.
26/04/08	33	14:45	17:45	180	>10-5	100%	Unk.	Unk.	Unk.	Unk.	Overcast, warm F3 / 4 SW, bright, cloud breaking.
27/04/08	35	09:30	12:30	180	Unk.	60%	Unk.	Unk.	Unk.	Unk.	Good visibility, clear, bright sunny - mild.
27/04/08	36	13:15	16:15	180	>10	50%	Unk.	Unk.	Unk.	Unk.	Clear bright and sunny, light wind F2 - southwest.
28/04/08	25	11:00	14:00	180	>10	70%	600	10	1-2	SW	Cloud base 600m+, 0 precipitation, sunny, calm.
28/04/08	38	10:30	13:30	180	>10	75%	Unk.	Unk.	0-1	SW	N/A
28/04/08	39	13:45	16:45	180	>10	100%	Unk.	Unk.	0	N/A	N/A
29/04/08	24	09:30	12:30	180	>10	70%	800	9	0-1	w	Cloud base 800m+, 0 precipitation in the 3 hours, calm, some sun.
29/04/08	32	14:00	17:00	180	>10	70%	800	12	2	NE	Thunder during 3rd hour.
29/04/08	24	13:30	16:30	180	>10	100%	Unk.	Unk.	Unk.	Unk.	Bright and sunny, warm, becoming overcast, dark - thunderstorm passing through, brightening up.
29/04/08	29	09:15	12:15	180	>10	50%	Unk.	Unk.	2-3	Unk.	N/A
30/04/08	29	16:35	19:35	180	>10	50%	1000	12	2	S	N/A
30/04/08	33	13:20	16:20	180	>10	80%	700	9	2	SE	N/A
01/05/08	25	10:00	13:00	180	5	90%	600	9	3	w	N/A
01/05/08	35	09:25	12:25	180	>10	90%	900	9	1	NW	N/A



Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Note
01/05/08	36	12:45	15:45	180	>10	90%	800	11	3	SW	N/A
01/05/08	37	10:25	13:25	180	5	100%	650	8	Unk.	Unk.	Cumulus base 650m, showers from 1100-1130, v
02/05/08	38	09:30	12:30	180	>10	50%	900	12	2	S	N/A
02/05/08	39	12:40	15:40	180	>10	80%	800	11	2	S	N/A
02/05/08	24	12:45	15:45	180	10	60%	Unk.	10	Unk.	Unk.	Scattered cumulus in
04/05/08	37	07:10	10:10	180	5	50%	750	9	Unk.	Unk.	N/A
04/05/08	39	11:30	14:30	180	Unk.	80%	700	12	Unk.	Unk.	N/A
05/05/08	18	10:30	13:30	180	>10	20%	800	16	2	SE	N/A
05/05/08	25	13:30	16:30	180	>10	5%	Unk.	21	0	N/A	N/A
05/05/08	25	10:15	13:15	180	>10	5%	Unk.	21	0	N/A	N/A
06/05/08	14	12:30	15:30	180	5	25%	1500	17	3	SE	N/A
06/05/08	10	13:40	16:40	180	>10	10%	Unk.	25	3	S	N/A
06/05/08	12	17:00	20:00	180	>10	10%	1000	23	Unk.	Unk.	N/A
06/05/08	16	13:00	16:00	180	>10	40%	Unk.	18	2	SE	N/A
07/05/08	32	11:10	14:10	180	>10	30%	1500	22	2	SE	N/A
07/05/08	29	10:50	13:50	180	>10	10%	Unk.	19	1-2	SE	N/A
07/05/08	15	18:00	21:00	180	>10	10%	Unk.	Unk.	2	S	N/A
07/05/08	35	14:15	17:15	180	>10	40%	Unk.	Unk.	2-3	SE-SW	N/A
08/05/08	33	13:40	16:40	180	>10	0%	Unk.	20	3	E	N/A
08/05/08	24	13:15	16:15	180	>10	1%	Unk.	Unk.	Unk.	Unk.	N/A
08/05/08	37	06:35	09:35	180	5	nil	Unk.	11	Unk.	Unk.	Strong haze in
09/05/08	36	10:05	13:05	180	>10	100%	1000	15	2	E	N/A
14/05/08	39	11:30	14:30	180	>10	0%	Unk.	13	1	NE	N/A
15/05/08	37	10:15	13:15	180	>10	90%	Unk.	12	2	NE	N/A
15/05/08	38	06:45	09:45	180	>10	20%	Unk.	8	1	NE	N/A
17/05/08	15	06:55	09:55	180	>10-5	100%	Unk.	Unk.	Unk.	Unk.	N/A
17/05/08	33	11:20	14:20	180	>10-5	100%	Unk.	Unk.	2-3	SE	N/A
17/05/08	12	11:05	14:05	180	>10	100%	2000	10	1	NE	N/A
17/05/08	16	15:20	18:20	180	>10	100%	2000	10	1	NE	N/A
18/05/08	35	13:50	16:50	180	>10	60%	Unk.	Unk.	Unk.	Unk.	N/A
18/05/08	36	17:15	20:15	180	>10	95%	Unk.	Unk.	1-2	NE	N/A
18/05/08	10	07:00	10:00	180	>10	0%	Unk.	Unk.	2	NE	N/A
18/05/08	14	12:00	15:00	180	>10	50%	2000	10	1-2	NE	N/A
19/05/08	18	14:00	17:00	180	>10	100%	Unk.	Unk.	2	NE	N/A
19/05/08	38	10:15	13:15	180	>10	60%	Unk.	Unk.	2-3	NE	N/A
20/05/08	29	10:15	13:15	180	>10	60%	Unk.	Unk.	1-2	SW	N/A
20/05/08	32	06:40	09:40	180	>10	95%	Unk.	Unk.	0	N/A	N/A
26/05/08	15	11:00	14:00	180	>10	40%	1000	15	3-4	NE	N/A
26/05/08	24	07:00	10:00	180	>10	70%	1000	8	3-4	NE	N/A
28/05/08	10	13:30	16:30	180	>10	100%	Unk.	Unk.	Unk.	Unk.	N/A
28/05/08	25	07:00	10:00	180	>10	100%	Unk.	Unk.	2-3	E	N/A
28/05/08	18	17:40	20:40	180	5	100%	350	12	0	N/A	N/A
28/05/08	33	14:00	17:00	180	5	100%	600	12	0	N/A	N/A
29/05/08	12	06:45	09:45	180	>10	90%	Unk.	Unk.	1	SW	N/A
29/05/08	14	06:15	09:15	180	>10	75%	Unk.	Unk.	1-2	SW	N/A
30/05/08	35	06:40	09:40	180	>10	100%	650	10	0	N/A	N/A
30/05/08	36	10:25	13:25	180	>10	90%	800	14	0	N/A	N/A
30/05/08	37	07:45	10:45	180	6	Unk.	Unk.	17	0	N/A	Hazı
30/05/08	39	16:00	19:00	180	5	70%	650	15	1	Ŵ	N/A
31/05/08	29	14:00	17:00	180	>10	30%	2000	20	1	NW	N/A

nd turn to west by 1215 and steady force 2.
ue sky, sunshine.
1st hour.

Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
31/05/08	32	17:30	20:30	180	>10	20%	2000	24	1-2	NW	N/A
01/06/08	15	11:20	14:20	180	>10	80%	2000	10	Unk.	NNE	N/A
01/06/08	16	07:00	10:00	180	>10	30%	2000	10	1-2	N	N/A
02/06/08	18	07:00	10:00	180	5	100%	1500	10	1	NE	N/A
02/06/08	38	11:40	14:40	180	>10	100%	Unk.	10	1	NE	N/A
02/06/08	28	09:30	12:30	180	5	100%	450	13	1	SW	N/A
02/06/08	31	14:30	17:30	180	8	100%	600	15	Unk.	Unk.	N/A
03/06/08	10	10:15	13:15	180	2-3	100%	550	14	2	SW-NW	N/A
03/06/08	39	06:45	09:45	180	2	100%	Unk.	14	1	SW	N/A
03/06/08	40	15:30	18:30	180	10	60%	Unk.	17	2	NW	N/A
04/06/08	12	11:00	14:00	180	>10	40%	1500	15	3	SSE	N/A
04/06/08	25	07:00	10:00	180	>10	10%	1500	10	2-3	SE	N/A
04/06/08	35	13:30	16:30	180	3	90%	Unk.	16	3	SW	N/A
04/06/08	36	10:00	13:00	180	5	40%	Unk.	16	4	SW	N/A
07/06/08	31	14:00	17:00	180	>10	40%	2000	20	Unk.	Unk.	N/A
07/06/08	33	10:00	13:00	180	>10	80%	2000	15	0-1	SW	N/A
07/06/08	16	10:05	13:05	180	>10	75%	Unk.	Unk.	2-3	SW	N/A
07/06/08	29	14:00	17:00	180	>10	50%	Unk.	Unk.	1-2	SW	N/A
08/06/08	28	16:00	19:00	180	>10	70%	2000	15	2	NW	N/A
08/06/08	32	11:00	14:00	180	>10	90%	1500	15	2	SW	N/A
08/06/08	31	11:15	14:15	180	>10	100%	Unk.	Unk.	2-3	w	N/A
08/06/08	40	15:50	18:50	180	>10	25%	Unk.	Unk.	2-3	NW	N/A
09/06/08	35	09:30	12:30	180	>10	100%	Unk.	14	2	NW	N/A
09/06/08	36	09:15	12:15	180	>10	99%	Unk.	14	3	SE	N/A
09/06/08	14	15:55	18:55	180	>10	80%	Unk.	Unk.	3-4	NW	N/A
09/06/08	24	07:45	10:45	180	>10	100%	Unk.	12	3-4	Unk.	N/A
09/06/08	25	13:00	16:00	180	7	90%	800	19	2	SW	N/A
10/06/08	15	12:00	15:00	180	>10	70%	800	14	4	w	N/A
10/06/08	38	09:35	12:35	180	>10	60%	Unk.	15	2-3	NW	N/A
10/06/08	37	09:50	12:50	180	>10	75%	<5k	13	Unk.	Unk.	N/A
10/06/08	31	09:30	12:30	180	>10	50%	Unk.	Unk.	3-4	NW	N/A
11/06/08	10	09:00	12:00	180	>10	100%	Unk.	12	2-3	NW	N/A
11/06/08	12	09:30	12:30	180	>10	95%	<5k	12	3	NW	N/A
12/06/08	40	10:30	13:30	180	>10	96%	<2k	12	2	NW	N/A
13/06/08	18	06:45	09:45	180	>10	60%	2k	8	3	Unk.	N/A
13/06/08	28	10:15	13:15	180	>10	100%	<5k	12	2	NW	N/A
15/06/08	16	14:30	17:30	180	8	60%	850	15	2	NW	N/A
15/06/08	37	10:00	13:00	180	7	90%	700	15	1	NW	N/A
16/06/08	29	10:45	13:45	180	>10	30%	Unk.	19	1	SW	N/A
16/06/08	33	14:00	17:00	180	>10	30%	Unk.	16	Unk.	Unk.	N/A
18/06/08	18	10:30	13:30	180	>10	95%	Unk.	12	2	Unk.	N/A
18/06/08	26	08:00	11:00	180	>10	75%	800	8	2	SW	N/A
18/06/08	28	12:20	15:20	180	>10	80%	800+	13	3	SE	N/A
18/06/08	38	06:30	09:30	180	>10	75%	Unk.	Unk.	2-3	w	N/A
18/06/08	39	16:15	19:15	180	>10	100%	Unk.	Unk.	2	w	N/A
19/06/08	28	10:30	13:30	180	>10	60%	Unk.	Unk.	4	WNW	N/A
19/06/08	35	05:30	08:30	180	>10	95%	Unk.	Unk.	3	w	N/A
22/06/08	10	16:30	19:30	180	>10	100%	1000	10	Unk.	SW	N/A
23/06/08	28	15:30	18:30	180	>10	40%	3000	14	1-2	NW	N/A
23/06/08	31	05:15	08:15	180	>10	40%	1500	4	0	NW	N/A



Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Note
23/06/08	32	11:05	14:05	180	>10	70%	2000	10	1-2	NW	N/A
28/06/08	12	11:30	14:30	180	>10	100%	Unk.	Unk.	2-3	SW	N/A
28/06/08	29	14:40	17:40	180	>10	100%	Unk.	Unk.	Unk.	Unk.	N/A
29/06/08	31	08:45	11:45	180	>10	50%	Unk.	Unk.	2-3	SW	N/A
30/06/08	14	06:30	09:30	180	>10	95%	Unk.	Unk.	3	Unk.	N/A
01/07/08	33	16:00	19:00	180	>10	100%	>5000	16	3	S	N/A
01/07/08	40	12:00	15:00	180	5	100%	>2000	15	4	S	N/A
01/07/08	15	16:00	19:00	180	>10	100%	Unk.	Unk.	3	Unk.	N/A
02/07/08	36	15:45	18:45	180	>10	95%	>2500	16	Unk.	Unk.	N/A
03/07/08	18	10:45	13:45	180	>10	100%	>2500	17	Unk.	Unk.	N/A
03/07/08	25	18:10	21:10	180	>10	100%	800	16	0	N/A	N/A
04/07/08	24	09:00	12:00	180	>10	75%	1000	12	1	SW	N/A
04/07/08	26	12:50	15:50	180	>10	80%	1000	17	1	SW	N/A
04/07/08	37	08:00	11:00	180	>10	95%	>2000	10	3	SW	N/A
04/07/08	38	11:15	14:15	180	>10	100%	1000	9	3	SW	N/A
04/07/08	16	13:00	16:00	180	Unk.	70%	700	14	1	SW	N/A
07/07/08	14	09:30	12:30	180	>10	100%	<1000	12	3	Unk.	N/A
07/07/08	31	13:30	16:30	180	>10	96%	>1500	15	3	Unk.	N/A
08/07/08	16	12:00	15:00	180	>10	97.5%	1500	14	2	w	N/A
08/07/08	26	14:00	17:00	180	>10	80%	800+	15	3	w	N/A
09/07/08	24	13:30	16:30	180	>10	60%	1000	16	1	SSW	N/A
09/07/08	37	12:12	15:12	180	>10	95%	2000	15	3	Unk.	N/A
09/07/08	38	15:30	18:30	180	>10	75%	2000	17	3	Unk.	N/A
09/07/08	27	15:30	18:30	180	>10	40%	Unk.	Unk.	3	SW	N/A
09/07/08	28	09:45	12:45	180	>10	95%	Unk.	Unk.	2-3	SW	N/A
10/07/08	12	12:30	15:30	180	5	98%	1500	14	2	NE	N/A
10/07/08	33	09:00	12:00	180	5	100%	<1000	14	Unk.	Unk.	N/A
10/07/08	10	06:30	09:30	180	5-1	100%	Unk.	Unk.	1	w	N/A
10/07/08	32	10:00	13:00	180	5-1	100%	Unk.	Unk.	2-3	E	N/A
11/07/08	29	13:00	16:00	180	>10	100%	600	14	2	NW	N/A
11/07/08	35	07:40	10:40	180	>10	100%	<2000	12	Unk.	N	N/A
11/07/08	36	11:00	14:00	180	>10	100%	1500	14	3	N	N/A
12/07/08	32	16:40	19:40	180	>10	80%	2000	12	2	NE	N/A
13/07/08	31	17:15	20:15	180	>10	60%	2000	15	1	w	N/A
13/07/08	39	09:30	12:30	180	>10	88%	2000	Unk.	1-2	Unk.	N/A
13/07/08	40	13:00	16:00	180	>10	80%	2000	15	2	w	N/A
14/07/08	16	12:05	15:05	180	>10	100%	Low	14	3	NW	N/A
14/07/08	18	15:20	18:20	180	>10	95%	Low	14	2	NW	N/A
14/07/08	15	08:45	11:45	180	5	10%	700	12	0-1	Unk.	N/A
14/07/08	25	12:05	15:05	180	1	100%	300	14	2	SW	N/A
14/07/08	26	06:00	09:00	180	5	100%	400	10	1	SW	N/A
14/07/08	29	10:30	13:00	150	5	100%	500	Unk.	2	NW	N/A
14/07/08	12	11:45	14:45	180	7	90%	600	18	1	NW	N/A
14/07/08	31	15:15	18:15	180	8	Unk.	Unk.	20	0	w	N/A
15/07/08	26	12:00	15:00	180	>10	70%	High	Unk.	2	NW	N/A
15/07/08	27	08:45	11:45	180	>10	90%	Low	14	2	NW	N/A
15/07/08	26	15:30	18:30	180	>10	100%	Unk.	13	1-2	SW	N/A
15/07/08	27	12:00	15:00	180	>10	80%	Unk.	12	1	SW	N/A
16/07/08	10	13:00	16:00	180	>10	80%	High	15	Unk.	NW	N/A
16/07/08	33	13:10	16:10	180	>10	80%	Unk.	14	2	SW	N/A

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Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
17/07/08	14	15:50	17:50	120	>10	95%	Mid	14	Unk.	Unk.	N/A
17/07/08	26	12:35	15:35	180	>10	100%	Low	14	2	NW	N/A
17/07/08	27	09:30	12:30	180	>10	100%	Low	14	1	NW	N/A
17/07/08	24	15:15	18:15	180	>10	100%	4-500	16	2	SNW	N/A
17/07/08	25	11:30	14:30	180	1	100%	2-300	16	2	w	N/A
17/07/08	37	09:15	12:15	180	>10	Unk.	Unk.	12	1	SW	N/A
17/07/08	39	12:35	15:35	180	>10	Unk.	Unk.	14	2	SW	N/A
18/07/08	29	13:00	16:00	180	>10	95%	Unk.	14	2	w	N/A
18/07/08	32	09:50	12:50	180	>10	100%	Unk.	14	1	w	N/A
18/07/08	35	15:15	18:15	180	5	100%	5-700	16	1	WSW	N/A
18/07/08	36	11:15	14:15	180	5	100%	6-700	16	0-1	W	N/A
18/07/08	40	12:15	15:15	180	5	100%	500	16	1	W	N/A
21/07/08	15	08:00	11:00	180	>10	30%	800	12	3	NW	N/A
21/07/08	18	11:45	14:45	180	>10	10%	2000	17	3	NW	N/A
22/07/08	10	07:40	10:40	180	5	90%	5-600	15	1	w	N/A
22/07/08	16	11:45	14:45	180	>10	90%	5-600	16	2	w	N/A
23/07/08	28	15:10	18:10	180	>10	100%	5-600	17	3	SE	N/A
23/07/08	31	10:40	13:40	180	5	100%	4-500	16	1	S	N/A
25/07/08	40	09:15	12:15	180	5	50%	1500	20	2	ESE	N/A
26/07/08	37	14:30	17:30	180	5	90%	800	21	0	w	N/A
27/07/08	12	09:00	12:00	180	1	100%	5000	14	0	N/A	N/A
27/07/08	31	16:30	19:30	180	>10	30%	2000	Unk.	Unk.	Unk.	N/A
27/07/08	33	13:00	16:00	180	>10	25%	2000	23	1	SW	N/A
28/07/08	14	11:55	14:55	180	>10	35%	2000	20	2	SE	N/A
28/07/08	38	16:00	19:00	180	>10	35%	2000	24	2-3	Unk.	N/A
30/07/08	15	10:30	13:30	180	5	100%	300	17	3	SW	N/A
30/07/08	24	14:30	17:30	180	5	100%	450	18	2-3	SW	N/A
31/07/08	26	05:30	08:30	180	>10	100%	1000	Unk.	2-3	Unk.	N/A
31/07/08	27	14:00	17:00	180	>10	100%	3000		3	SW	N/A
01/08/08	28	09:00	12:00	180	5	10%	5-600	16	2	S	N/A
01/08/08	29	13:00	16:00	180	>10	90%	600	18	2	S	N/A
01/08/08	35	06:00	09:00	180	>10	100%	Unk.	Unk.	2-3	SW	N/A
01/08/08	36	14:45	17:45	180	>10	100%	500	Unk.	3	Unk.	N/A
02/08/08	35	12:30	15:30	180	>10	65%	1500	20	1-2	SW	N/A
02/08/08	36	16:00	19:00	180	>10	65%	1500	20	1-2	SW	N/A
03/08/08	25	14:00	17:00	180	>10	50%	1000	17	2	W	N/A
03/08/08	26	09:45	12:45	180	>10	60%	1000	14	1-2	Unk.	N/A
04/08/08	39	14:35	17:35	180	>10	30%	Unk.	20	2	W	N/A
04/08/08	40	11:00	14:00	180	>10	30%	>1000	18	1	Unk.	N/A
05/08/08	14	10:15	13:15	180	>10	95%	<1000	14	2	SW	N/A
05/08/08	15	14:30	17:30	180	>10	98%	1000	15	Unk.	SW	N/A
06/08/08	10	13:00	16:00	180	5	100%	750	15	Unk.	Unk.	N/A
06/08/08	12	09:35	12:35	180	1	100%	<500	13	Unk.	Unk.	N/A
06/08/08	18	13:15	16:15	180	>10	100%	5-600	17	1	SW	N/A
06/08/08	25	09:30	12:30	180	5	100%	3-500	16	2	SW	N/A
07/08/08	32	10:35	13:35	180	5	98%	c.1000	15	1	NE	N/A
07/08/08	27	11:15	14:15	180	10	100%	650	17	0	N/A	N/A
07/08/08	33	13:45	16:45	180	>10	98%	1000	16	3	Unk.	N/A
08/08/08	37	13:20	16:20	180	>10	100%	1000	14	2	N	N/A
08/08/08	38	10:00	13:00	180	>10	90%	1500	17	1	Unk.	N/A



Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Note
08/08/08	16	08:30	11:30	180	>10	100%	1000	13	1	SW	N/A
08/08/08	24	12:30	15:30	180	>10	100%	800	15	1	NW	N/A
09/08/08	29	09:30	12:30	180	5	100%	1000	10	2	w	N/A
09/08/08	31	16:30	19:30	180	>10	100%	1000	20	1	SW	N/A
09/08/08	25	13:30	16:30	180	>10	100%	Unk.	Unk.	2-3	SSW	N/A
09/08/08	26	17:30	20:30	180	>10	95%	3000	Unk.	2-3	SSW	N/A
10/08/08	27	14:10	17:10	180	>10	70%	1500	18	3	w	N/A
10/08/08	28	10:15	13:15	180	5	100%	1000	12	1-2	w	N/A
10/08/08	10	09:30	12:30	180	3	100%	550	16	2	SW	N/A
10/08/08	14	14:00	17:00	180	>10	95%	2000	Unk.	2-3	SSW	N/A
11/08/08	35	13:15	16:15	180	5	100%	5-700	13	3	SW	N/A
11/08/08	36	09:30	12:30	180	5	100%	3-500	14	2	SW	N/A
12/08/08	18	11:30	14:30	180	5	100%	400	14	3	E	N/A
12/08/08	33	07:30	10:30	180	5	100%	400	13	2	NE	N/A
13/08/08	12	10:00	13:00	180	>10	65%	Unk.	19	0	N/A	N/A
13/08/08	31	13:10	16:10	180	>10	100%	Unk.	20	0	N/A	N/A
13/08/08	28	08:00	11:00	180	5	100%	4-500	14	1	N	N/A
13/08/08	32	12:00	15:00	180	>10	100%	7-800	18	0		N/A
16/08/08	15	07:00	10:00	180	>10-5	100%	800	Unk.	Unk.	Unk.	N/A
19/08/08	38	11:00	14:00	180	>10	95%	Unk.	15	2	SW	N/A
19/08/08	39	14:10	17:10	180	>10	78%	Unk.	Unk.	1	SW	N/A
20/08/08	24	13:00	16:00	180	10	90%	650	16	1	w	N/A
20/08/08	27	16:45	19:45	180	10	100%	650	16	1	w	N/A
21/08/08	16	12:45	15:45	180	15	80%	650	19	2	NW	N/A
21/08/08	40	16:45	19:45	180	15	40%	Unk.	18	1	w	N/A
22/08/08	10	07:15	10:15	180	>10	10%	Unk.	10	Unk.	Unk.	N/A
22/08/08	26	07:00	10:00	180	>10	30%	400-1000+	12	3	NW	N/A
22/08/08	28	11:00	14:00	180	>10	60%	800	14	2	NW	N/A
25/08/08	32	12:45	15:45	180	2	100%	550	16	0	w	N/A
26/08/08	29	08:50	11:50	180	>10	100%	Unk.	13	0	N/A	N/A
26/08/08	37	12:30	15:30	180	200m	100%	Unk.	12	Unk.	Unk.	N/A
26/08/08	18	12:30	15:30	180	5	100%	2-400	14	1	SW	N/A
26/08/08	25	08:45	11:45	180	5	100%	800	14	2	SW	N/A
27/08/08	31	08:00	11:00	180	5	100%	600	17	0	SW	N/A
27/08/08	35	13:00	16:00	180	3	100%	550	17	1	W	N/A
27/08/08	12	10:15	13:15	180	5	100%	350	14	1	SW	N/A
27/08/08	15	14:15	17:15	180	5	100%	300	14	1	NW	N/A
29/08/08	26	10:00	13:00	180	>10	100%	Unk.	17	0	Unk.	N/A
29/08/08	27	13:20	16:20	180	>10	100%	Unk.	17	2	SW	N/A
29/08/08	24	13:00	16:00	180	>10	100%	800	16	2	WSW	N/A
29/08/08	40	08:30	11:30	180	5	100%	350-500	16	1	SW	N/A
30/08/08	28	08:25	11:25	180	5	100%	Unk.	12	3	SW	N/A
30/08/08	33	10:30	13:30	180	5	100%	750	Unk.	2-3	SSE	N/A
30/08/08	36	15:00	18:00	180	5	100%	750	Unk.	3	SSE	N/A
31/08/08	27	16:15	19:15	180	7	60%	800	15	1	SW	N/A
31/08/08	38	16:00	19:00	180	>10	100%	1000	Unk.	Unk.	Unk.	N/A
31/08/08	39	09:30	12:30	180	5	100%	500	Unk.	Unk.	Unk.	N/A

Table D3.3 - Season 3, September 2008 – May 2009

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Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
01/09/2008	10	16:00	19:00	180	>10	85%	1000+	Unk.	2-3	SW	N/A
01/09/2008	12	11:45	14:45	180	>10	60%	1000+	Unk.	2-3	w	N/A
01/09/2008	37	06:30	09:30	180	2	100%	450	10	1	SW	N/A
02/09/2008	16	11:15	14:15	180	>10	50%	1000+	Unk.	2	Unk.	N/A
02/09/2008	40	06:30	09:30	180	5	70%	Unk.	9	1	SW	N/A
02/09/2008	14	11:15	14:15	180	>10	100%	750	14	1	Unk.	N/A
02/09/2008	32	16:20	19:20	180	>10	100%	800	Unk.	0	SE	N/A
06/09/2008	40	12:30	15:30	180	7	100%	850	13	3	NE	N/A
08/09/2008	18	08:30	11:30	180	>10	90%	6-700	12	1	NE	N/A
08/09/2008	26	12:15	15:15	180	>10	800%	800+	15	3	SSE	N/A
10/09/2008	24	14:00	17:00	180	>10	100%	4-600	10	4	SW	N/A
10/09/2008	28	09:45	12:45	180	>10	90%	6-700	13	3	SW	N/A
10/09/2008	14	08:00	11:00	180	>10	70%	Unk.	17	2-3	SW	N/A
10/09/2008	25	11:50	14:50	180	>10	100%	Unk.	13	3	SW	N/A
11/09/2008	12	14:00	17:00	180	5	95%	5-700	15	3	S	N/A
11/09/2008	33	10:30	13:30	180	5	90%	4-600	13	5	S	N/A
11/09/2008	38	09:50	12:50	180	5	100%	Unk.	10	4	SW	N/A
11/09/2008	39	13:00	16:00	180	Unk.	100%	Unk.	12	4	SW	N/A
12/09/2008	27	09:10	12:10	180	>10	70%	Unk.	12	1	SW	N/A
12/09/2008	29	12:30	15:30	180	>10	80%	Unk.	15	1	SW	N/A
12/09/2008	16	08:30	11:30	180	5	600%	700-1000	17	0	N/A	Cloud base 1500m+ in 1st hour (generally clear blue skies), low mist though initially in the valley before clearing. In 2nd hour, mist in valley still WSW of VP.
12/09/2008	28	12:30	15:30	180	>10	90%	700	16	1	NNE	N/A
14/09/2008	35	09:50	12:50	180	>10	90%	Unk.	Unk.	0-1	SW	N/A
14/09/2008	36	13:10	16:10	180	>10	90%	Unk.	14	1	SW	N/A
15/09/2008	42	13:00	16:00	180	5	100%	<1000	11	2	SE	N/A
15/09/2008	43	16:15	19:15	180	Unk.	100%	<1000	10	2	SE	N/A
16/09/2008	29	10:00	13:00	180	5	100%	<500	12	Unk.	Unk.	N/A
16/09/2008	10	14:15	17:15	180	3	100%	400	Unk.	0	S	N/A
16/09/2008	24	10:30	13:30	180	3	100%	450	12	1	SSW	N/A
16/09/2008	32	13:15	16:15	180	3	100%	<300	12	1	SE	N/A
17/09/2008	18	13:30	16:30	180	3	70%	650	15	1	S	N/A
17/09/2008	31	13:30	16:30	180	>10	95%	>1000	15	2	Unk.	N/A
17/09/2008	41	10:15	13:15	180	5	95%	Unk.	13	2	SE	N/A
17/09/2008	43	17:00	20:00	180	>5	80%	Unk.	13	0	S	N/A
18/09/2008	27	09:40	12:40	180	>10	100%	800+	12	3	SW	N/A
18/09/2008	41	14:00	17:00	180	>10	100%	6-800	14	3	SSW	N/A
18/09/2008	15	10:05	13:05	180	>10	98%	>1000	13	3	SW	N/A
18/09/2008	12	07:15	10:15	180	3	80%	500	12	0-2	S-W	N/A
18/09/2008	14	13:00	16:00	180	7	90%	Unk.	15	2	SW	N/A
18/09/2008	40	14:00	17:00	180	>10	100%	>1000	13	3	Unk.	N/A
18/09/2008	43	17:35	18:35	180	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	N/A
19/09/2008	3/	06:55	9:55	180	1	100%	<500	11	1	SW	N/A
19/09/2008	39	10:15	13:15	180	5	100%	<1000	13	1	SW	N/A
20/09/2008	32	12:10	15:10	180	>10	80%	M	16	1	SE NY	N/A
20/09/2008	35	07:50	10:50	180	5	100%	3-400	Unk.	1-2	W	N/A
20/09/2008	36	12:15	15:15	180	5	100%	200	Unk.	1-2	5	N/A
21/09/2008	14	09:25	12:25	180	>10	60%	н	16	1	NW NW	N/A
21/09/2008	2/	12:35	15:35	180	>10	60%	H 1000	16	2	NW NV	N/A
21/09/2008	40	11:30	14:30	180	>10	50%	1000+	Unk.	2	W	N/A
21/09/2008	42	07:00	10:00	180	5	70%	500+	Unk.	0-1	SE	N/A



Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Note
22/09/2008	24	13:00	16:00	180	>10	75%	1000+	15	1	NE	N/A
22/09/2008	25	16:30	19:30	180	>10	30%	1000+	12	0	Unk.	N/A
22/09/2008	39	08:00	11:00	180	3	100%	650	14	1	SW	N/A
23/09/2008	16	10:30	13:30	180	>10	15%	н	17	1	w	N/A
23/09/2008	26	15:40	18:40	180	>10	90%	Unk.	14	2	SE	N/A
23/09/2008	27	11:30	14:30	180	>10	50%	1000+	13	2-3	ENE	N/A
23/09/2008	29	07:45	10:45	180	>10	5%	1500+	12	1	E	N/A
23/09/2008	43	13:45	16:45	180	>10	75%	Unk.	16	1	w	N/A
24/09/2008	10	12:20	15:20	180	>10	70%	м	Unk.	2	NW	N/A
26/09/2008	41	07:20	10:20	180	5	90%	4-500	8	1-2	S	N/A
26/09/2008	42	11:30	14:30	180	5	100%	4-500	12	2	SE	N/A
27/09/2008	33	12:00	15:00	180	8	50%	750	14	2	w	N/A
28/09/2008	27	12:45	15:45	180	>10	70%	700	11	2	NW	N/A
28/09/2008	40	08:30	11:30	180	>10	40%	1000	6	1	NW	N/A
30/09/2008	40	16:15	19:15	180	>10	60%	Unk.	17	1	SW	N/A
01/10/2008	26	08:00	11:00	180	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	N/A
01/10/2008	27	11:45	14:45	180	>10	70%	800	Unk.	4	NW	N/A
02/10/2008	14	11:45	14:45	180	>10	70%	6/100	Unk.	2-3	WNW	N/A
02/10/2008	32	06:50	9:50	180	>10	10%	1000	Unk.	0	Unk.	N/A
03/10/2008	18	09:30	12:30	180	>10	50%	800	10	23	NNW	N/A
03/10/2008	24	13:15	16:15	180	>10	60%	800	8	2	NNW	N/A
06/10/2008	10	13:00	16:00	180	3	100%	500	9	2	S	N/A
06/10/2008	15	09:00	12:00	180	>5	100%	500	9	2	S	N/A
08/10/2008	12	07:30	10:30	180	>10	50%	7-800	9	2	WNW	N/A
08/10/2008	26	11:30	14:30	180	>10	75%	700	13	1	w	N/A
08/10/2008	42	11:15	14:15	180	>10	50%	650	8	1	S	N/A
08/10/2008	43	08:00	11:00	180	8	20%	Unk.	7	0	Unk.	N/A
09/10/2008	16	08:00	11:00	180	>5	80%	650	9	2	S	N/A
09/10/2008	38	09:45	12:45	180	>10	100%	Unk.	11	3	SW	N/A
09/10/2008	39	12:52	15:52	180	>10	100%	Unk.	11	3-4	SW	N/A
11/10/2008	18	10:30	13:30	180	>10	60%	500	Unk.	3	W	N/A
11/10/2008	28	15:00	18:00	180	>10	80%	Unk.	10	2-3	w	N/A
12/10/2008	31	08:00	11:00	180	5	100%	400	8	0-1	S	N/A
12/10/2008	40	12:00	15:00	180	>10	70%	600	10	Unk.	Unk.	N/A
14/10/2008	35	09:20	12:20	180	>10	85%	Unk.	7	0	Unk.	N/A
14/10/2008	36	12:30	15:30	180	>10	100%	Unk.	9	0-1	SW	N/A
16/10/2008	27	14:15	17:15	180	>10	75%	800	8	3	NW	N/A
16/10/2008	29	09:50	12:50	180	>10	50%	800	10	3	NW	N/A
16/10/2008	33	14:00	17:00	180	10	40%	700	9	1	NW	N/A
16/10/2008	41	08:00	11:00	180	8	20%	700	5	0	NW	N/A
19/10/2008	10	13:15	16:15	180	Unk.	100%	500	9	4	SW	N/A
19/10/2008	43	10:00	13:00	180	5	100%	500	9	4	SW	N/A
22/10/2008	24	10:45	13:45	180	>10	70%	800	9	2	w	N/A
22/10/2008	26	15:15	18:15	180	>10	90%	800	8	2	W	N/A
22/10/2008	32	11:30	14:30	180	>10	50%	700	8	2	SW	N/A
22/10/2008	40	12:00	15:00	180	>10	50%	Unk.	Unk.	3	W	N/A
22/10/2008	43	07:55	10:55	180	>10	30%	1000		1-2	SW	N/A
23/10/2008	42	07:45	10:45	180	5	100%	4-500	Unk.	3-4	Unk.	N/A
24/10/2008	35	13:15	16:15	180	>10	60%	Unk.	8	3	SW	N/A
24/10/2008	36	10:07	13:07	180	>10	80%	Unk.	7	3	SW	N/A

Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
25/10/2008	38	08:05	11:05	180	2	100%	600	9	5	SW	N/A
26/10/2008	10	14:15	17:15	180	5	95%	Unk.	6	3	w	N/A
26/10/2008	16	10:45	13:45	180	>10-5	100%	Unk.	5	4	w	N/A
26/10/2008	39	13:10	16:10	180	>5	90%	650	8	2	w	N/A
26/10/2008	41	13:15	16:15	180	>10	70%	700	10	3	NW	N/A
28/10/2008	12	11:15	14:15	180	>2	100%	500	Unk.	4-5	SSW	N/A
28/10/2008	14	09:15	12:15	180	>10	85%	c.750	6	3	NW	N/A
28/10/2008	15	13:00	16:00	180	>10	15%	c.500	6	3	NW	N/A
28/10/2008	27	13:15	16:15	180	20	30%	800	5	1	NW	N/A
28/10/2008	28	07:45	10:45	180	>10	80%	700	5	2	N	N/A
28/10/2008	32	08:45	11:45	180	15	90%	800	3	1	N	N/A
29/10/2008	12	13:45	16:45	180	5	95%	<300	6	2	SW	N/A
29/10/2008	42	10:15	13:15	180	Unk.	100%	<400	5	2	SW	N/A
30/10/2008	35	09:30	12:30	180	>10	50%	c.400	4	2	NE	N/A
30/10/2008	36	13:00	16:00	180	>10	50%	c.400	8	Unk.	NE	N/A
31/10/2008	28	13:30	16:30	180	>10	65%	>400	9	4	N	N/A
31/10/2008	31	09:30	12:30	180	>10	15%	>500	8	3	N	N/A
01/11/2008	40	08:15	11:15	180	12	20%	Unk.	2	1	N	N/A
02/11/2008	18	08:15	11:15	180	20	0%	Unk.	2	0	E	N/A
03/11/2008	16	13:05	16:05	180	>10	10%	Н	12	1	W	N/A
03/11/2008	33	09:50	12:50	180	>10	10%	Unk.	12	1	W	N/A
04/11/2008	24	10:00	13:00	180	>10	90%	800-1000	6	1	NE	N/A
04/11/2008	39	08:50	11:50	180	>10	80%	Unk.	6	1	W	N/A
04/11/2008	41	14:00	17:00	180	5	100%	600	7	0	Unk.	N/A
04/11/2008	43	12:05	15:05	180	>10	90%	H	6	2	W	N/A
04/11/2008	3/	09:10	12:10	180	>10	95%	Unk.	7	1	SW	N/A N/A
04/11/2008	38	12:20	15:20	180	>10	100%	Unk.	6	1-2	SW	N/A N/A
04/11/2008	15	12:45	15:45	180	10	100%	650	9	1	L	N/A N/A
04/11/2008	25	00.50	12:00	180	10 Upk	80%	030 L	0 0	1	INE W	N/A
05/11/2008	25	14.00	12:00	180	>10	80%	н	6	1	W	N/A
07/11/2008	20	08.30	11:30	180	>10	80%	500	8	3	SSE	Ν/Δ
07/11/2008	29	12:30	15.30	180	5	100%	4-500	9	3	S	N/A
08/11/2008	12	09.35	12:35	180	>10	Link	Link	11	2	SW	Ν/Δ
08/11/2008	14	13:05	16:05	180	Unk	Unk	Unk	7	4	SW	N/A
09/11/2008	32	12:30	15:30	180	>10	80%	6-700	6	3	WSW	N/A
09/11/2008	42	09:00	12:00	180	>10	80%	700	6	3-4	SSW	N/A
12/11/2008	10	12:50	15:50	180	15	70%	700	9	0	NW	N/A
12/11/2008	15	09:30	12:30	180	15	60%	750	10	1	NW	N/A
12/11/2008	18	10:00	13:00	180	>10	80%	800	7	1	N	N/A
12/11/2008	28	13:30	16:30	180	>10	80%	700	6	1	NW	N/A
13/11/2008	39	13:00	16:00	180	>5	100%	450	12	0	Unk.	N/A
14/11/2008	38	08:45	11:45	180	>5	100%	500	13	1	SW	N/A
15/11/2008	35	09:30	12:30	180	>10	60%	1000	9	2	Unk.	N/A
15/11/2008	36	11:20	14:20	180	>10	60%	1000	9	3	NW	N/A
16/11/2008	31	09:30	12:30	180	>10	20%	2000	10	1	Unk.	N/A
16/11/2008	40	13:30	16:30	180	>10	50%	1500		1	NW	N/A
17/11/2008	24	12:30	15:30	180	>10	100%	450	7	2	SSW	N/A
18/11/2008	26	13:40	16:40	180	>10	50%	800-1000	7	2	NW	N/A
18/11/2008	41	10:00	13:00	180	>10	90%	600	8	1-2	NW	N/A



Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Note
19/11/2008	16	07:15	10:15	180	5-0.5	100%	450	10	Unk.	Unk.	N/A
19/11/2008	37	13:00	16:00	180	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	N/A
21/11/2008	14	13:20	16:20	180	>10	80%	1000	5	1	N	N/A
21/11/2008	25	08:50	11:50	180	>10	90%	600	6	2	NW	N/A
21/11/2008	27	12:30	15:30	180	>10	70%	700	6	3	N	N/A
23/11/2008	12	09:30	12:30	180	5	100%	500	3	2-3	NW	N/A
23/11/2008	43	13:30	16:30	180	>10	80%	1000	3	2-3	Unk.	N/A
23/11/2008	29	13:30	16:30	180	>10	90%	700	Unk.	3	WNW	N/A
23/11/2008	33	09:30	12:30	180	>10	80%	700	Unk.	3	WNW	N/A
23/11/2008	42	11:45	14:45	180	7	90%	600	8	2	NW	N/A
24/11/2008	16	08:10	11:10	180	5	100%	<250	5	2	Unk.	N/A
24/11/2008	28	12:10	15:10	180	>10	40%	>500	6	Unk.	N	N/A
24/11/2008	32	09:30	12:30	180	>10	70%	2000	3	Unk.	Unk.	N/A
24/11/2008	35	12:15	15:15	180	>10	50%	Unk.	3	3	N	N/A
24/11/2008	36	09:05	12:05	180	>10	60%	Unk.	4	3	N	N/A
24/11/2008	10	13:15	16:15	180	>10	70%	1000	Unk.	2-3	N	N/A
24/11/2008	15	09:35	12:35	180	>10	70%	500	Unk.	3	N	N/A
25/11/2008	12	12:45	15:45	180	>10	Unk.	н	5	1	N	N/A
25/11/2008	14	09:10	12:10	180	>10	Unk.	н	0	1	N	N/A
25/11/2008	35	13:15	16:15	180	>10	80%	>400	6	2	N	N/A
25/11/2008	36	09:45	12:45	180	>10	10%	c.400	6	2	N	N/A
25/11/2008	10	09:10	12:10	180	20	10%	600	2	1	NW	N/A
25/11/2008	18	13:15	16:15	180	>10	90%	600	6	1	N	N/A
25/11/2008	28	09:30	12:30	180	>10	25%	700	4	1	NNE	N/A
25/11/2008	39	12:30	15:30	180	>10	50%	1000	Unk.	1	NW	N/A
25/11/2008	33	12:50	15:50	180	15	70%	650	4	1	NW	N/A
25/11/2008	38	09:20	12:20	180	>10	0%	Unk.	Unk.	2-3	NW	N/A
26/11/2008	15	12:30	15:30	180	5	95%	330	11	2	w	N/A
26/11/2008	16	12:10	15:10	180	>10	80%	н	8	3	w	N/A
26/11/2008	24	13:15	16:15	180	>10	96%	>200	12	Unk.	Unk.	N/A
26/11/2008	41	09:45	12:45	180	1	100%	Unk.	12	Unk.	w	N/A
26/11/2008	42	08:50	11:50	180	>10	90%	м	8	2	W	N/A
26/11/2008	31	08:45	11:45	180	>10	90%	500	10	1	w	N/A
26/11/2008	40	13:00	16:00	180	>10	80%	500	8	1	WNW	N/A
27/11/2008	18	08:45	11:45	180	5	98%	c.250	6	3	W	N/A
27/11/2008	26	08:55	11:55	180	>10	100%	Unk.	6	3	SW	N/A
27/11/2008	27	12:15	15:15	180	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	N/A
27/11/2008	32	11:30	14:30	180	5	45%	500	9	3	SW	N/A
27/11/2008	37	12:50	15:50	180	>10	75%	>300	7	4	W	N/A
27/11/2008	29	11:00	14:00	180	10	60%	700	8	3	NW	N/A
28/11/2008	24	12:30	15:30	180	>10	20%	800	6	1	W	N/A
28/11/2008	25	09:00	12:00	180	>10	60%	700	6	1	SW	N/A
29/11/2008	31	11:45	14:45	180	5	80%	650	3	Unk.	Unk.	N/A
29/11/2008	41	12:30	15:30	180	>10	50%	500	4	0	Unk.	N/A
29/11/2008	43	08:00	11:00	180	>5	20%	650	0	Unk.	Unk.	N/A
30/11/2008	38	12:00	15:00	180	20	20%	700	-1	1	NW	N/A
30/11/2008	39	08:30	11:30	180	15	10%	Unk.	-2	0	Unk.	N/A
01/12/2008	42	08:40	11:40	180	15	1%	750	1	1	NW	N/A
03/12/2008	12	09:05	12:05	180	>10	80%	Unk.	2	3	SW	N/A
05/12/2008	25	12:25	15:25	180	>10	100%	Unk.	3	3	SW	N/A

Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
06/12/2008	33	13:00	16:00	180	>10	0%	Unk.	0	0	Unk.	N/A
06/12/2008	43	09:30	12:30	180	>10	Unk.	Unk.	-1	0	NE	N/A
07/12/2008	28	09:25	12:25	180	>10	30%	Unk.	-1	1-2	NW	N/A
07/12/2008	39	09:35	12:35	180	>10	60%	1500	3	1	w	N/A
07/12/2008	40	13:00	16:00	180	>10	100%	800	4	1-2	NW	N/A
08/12/2008	12	10:00	13:00	180	10	80%	800	8	0	Unk.	N/A
08/12/2008	14	13:45	16:45	180	15	100%	650	8	Unk.	Unk.	N/A
08/12/2008	16	12:30	15:30	180	>10	100%	c.350	4	1	SW	N/A
08/12/2008	32	10:10	13:10	180	>10	90%	Unk.	3	1	w	N/A
08/12/2008	42	08:45	11:45	180	>10	15%	c.500	2	1	Unk.	N/A
09/12/2008	24	08:30	11:30	180	>10	30%	500	2	1	NNW	N/A
09/12/2008	25	12:00	15:00	180	>10	20%	700	4	1	NNW	N/A
09/12/2008	32	08:30	11:30	180	15	20%	650	8	1	NW	N/A
09/12/2008	35	09:10	12:10	180	>10	10%	c.400	2	3	NW	N/A
09/12/2008	36	12:30	15:30	180	>10	2%	>400	2	2	N	N/A
09/12/2008	43	12:00	14:00	180	15	10%	Unk.	8	Unk.	Unk.	N/A
10/12/2008	18	08:45	11:45	180	>10	5%	>300	1	1	Unk.	N/A
10/12/2008	28	12:15	15:15	180	>10	2%	>400	4	Unk.	Unk.	N/A
10/12/2008	29	12:30	15:30	180	>10	10%	Unk.	5	1	N	N/A
10/12/2008	41	10:30	13:30	180	15	0%	Unk.	6	0	NW	N/A
10/12/2008	42	18:00	21:00	180	1	0%	Unk.	3	0	Unk.	N/A
11/12/2008	25	12:30	15:30	180	>10	90%	800	0	0	Unk.	N/A
12/12/2008	18	12:30	15:30	180	>10	100%	500	2	2-3	SSE	N/A
12/12/2008	24	08:50	11:50	180	>10	80%	4-500	3	2	SSE	N/A
12/12/2008	10	13:00	16:00	180	5	100%	300	3	Unk.	Unk.	N/A
12/12/2008	15	13:00	16:00	180	7	100%	650	8	2	SSW	N/A
12/12/2008	26	09:15	12:15	180	>10-5	100%	Unk.	2	3-4	SW	N/A
12/12/2008	27	12:35	15:35	180	>10	100%	Unk.	3	4	SW	N/A
12/12/2008	37	09:00	12:00	180	5	100%	>250	3	3	S	N/A
13/12/2008	16	09:20	12:20	180	>10-5	100%	200/500	Unk.	Unk.	Unk.	N/A
13/12/2008	32	13:00	16:00	180	>10	100%	8-1000	Unk.	0	Unk.	N/A
14/12/2008	38	12:10	15:10	180	>10	100%	Unk.	6	1	SW	N/A
14/12/2008	39	09:20	12:20	180	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	N/A
14/12/2008	40	12:50	15:50	180	>10	100%	600+	Unk.	0	Unk.	N/A
15/12/2008	29	17:45	20:45	180	1	80%	Unk.	3	0	SW	N/A
15/12/2008	31	10:00	13:00	180	300m	100%	Unk.	1	0	Unk.	N/A
15/12/2008	26	12:45	15:45	180	>10	100%	1000+	Unk.	2-3	SW	N/A
15/12/2008	27	08:55	11:55	180	>10	100%	1000+	Unk.	1	SW	N/A
15/12/2008	37	12:20	12:30	180	250m	100%	Unk.	3	0	VV	N/A
15/12/2008	41	09.10	10:30	180	7	10%	400	4	1	VV SSW/	N/A N/A
16/12/2008	10	08:10	11.10	180	4 >10 F	100%	400	10	2	5500	N/A
16/12/2008	21	12:20	11:45	180	>10-5	100%	300+	Unk.	2	SW	N/A N/A
16/12/2008	22	12.50	15.50	190	5 7	100%	450	10	1	5VV C\A/	۱۷/۸ NI/۸
17/12/2008	15	08.20	11.50	180	, \10	60%	500	10	1	300	Ν/Α Ν/Λ
17/12/2000	20	12.40	15.40	180	5	100%	4-500	6	+ 2	\vv	Ν/Α Ν/Δ
18/12/2008	14	12.40	15.40	180	7	90%	650	9	Link	Link	Ν/Δ
18/12/2008	38	08.15	11.15	180	>5	100%	500	9	3	SW	Ν/Δ
18/12/2008	28	12:30	15.30	180	5	100%	4-500	5	4	w	Ν/Δ
19/12/2008	42	11.00	14.00	180	3	100%	550	2 2	3	Link	Ν/Δ
13/12/2000	74	11.00	14.00	100		10070	550	0	,		iy/n



Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Note
20/12/2008	15	13:45	16:15	180	5	100%	Unk.	Unk.	0-1	SW	N/A
20/12/2008	26	09:45	12:45	180	>10	70%	Unk.	Unk.	1	NW	N/A
20/12/2008	27	13:15	16:15	180	>10	100%	Unk.	6	1	NW	N/A
20/12/2008	31	09:35	12:35	180	>10	50%	Unk.	7	0	NW	N/A
20/12/2008	35	12:10	15:10	180	15	80%	650	6	1	WSW	N/A
20/12/2008	36	08:40	11:40	180	15	40%	Unk.	6	0	w	N/A
21/12/2008	16	08:50	11:50	180	>5	90%	550	10	2	SW	N/A
22/12/2008	28	13:15	16:00	180	>10	100%	400	8	1	SW	N/A
22/12/2008	29	09:30	12:30	180	>10	100%	400	7	0	NW	N/A
22/12/2008	37	09:30	12:30	180	>5	100%	Unk.	7	1	w	N/A
22/12/2008	39	12:45	15:45	180	>5	100%	Unk.	7	1	w	N/A
22/12/2008	40	09:35	12:35	180	Unk.	60%	н	6?	1	NW	N/A
22/12/2008	42	13:15	16:15	180	>10	80%	н	6	1	NW	N/A
22/12/2008	12	13:15	16:15	180	5	90%	3-500	7	1	SW	N/A
22/12/2008	25	09:40	12:40	180	>10	100%	4-500	8	1	SW	N/A
23/12/2008	18	09:40	12:40	180	5	100%	500	4	1	w	N/A
23/12/2008	32	13:20	16:20	180	>10	90%	6-700	4	1	WSW	N/A
27/12/2008	41	12:00	15:00	180	>10	10%	1500+	1	1	SE	N/A
28/12/2008	10	13:00	16:00	180	Unk.	30%	Unk.	2	Unk.	NE	N/A
28/12/2008	14	09:40	12:40	180	>10	30%	н	2	1	NE	N/A
30/12/2008	38	08:15	11:15	180	01-Feb	Unk.	Unk.	-3	Unk.	Unk.	N/A
30/12/2008	43	12:00	15:00	180	5	20%	Unk.	-2	1	SE	N/A
30/12/2008	24	13:20	16:20	180	5	90%	500+	0	1	S	N/A
30/12/2008	33	09:30	12:30	180	5	70%	500+	0	0	Unk.	N/A
31/12/2008	31	10:55	13:55	180	5	100%	4-500	1	0	Unk.	N/A
03/01/2009	16	12:50	15:50	180	>10	75%	Unk.	Unk.	2	SW	N/A
03/01/2009	18	09:15	12:15	180	>10	50%	1000+	Unk.	1	Unk.	N/A
04/01/2009	32	13:05	16:05	180	>10	25%	1000+	Unk.	2-3	w	N/A
04/01/2009	35	09:00	12:00	180	15	10%	Unk.	0	1	SW	N/A
04/01/2009	36	13:00	16:00	180	15	20%	Unk.	0	0	SW	N/A
04/01/2009	40	09:25	12:25	180	>10	25%	1000	Unk.	1-2	Unk.	N/A
06/01/2009	25	09:30	12:30	180	>10	90%	700	-1	1	S	N/A
06/01/2009	26	13:15	16:15	180	>10	100%	700	-2	0	Unk.	N/A
06/01/2009	28	13:30	16:30	180	>10	100%	500/1000	Unk.	2	w	N/A
06/01/2009	29	09:25	12:25	180	>10	100%	500+	Unk.	Unk.	Unk.	N/A
06/01/2009	31	12:00	15:00	180	20	90%	800	-3	0	Unk.	N/A
06/01/2009	43	08:15	11:15	180	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	N/A
08/01/2009	24	10:00	13:00	180	>10	50%	500+	3	2	SW	N/A
08/01/2009	41	13:30	16:30	180	>10	50%	700	2	0	Unk.	N/A
08/01/2009	10	12:45	15:45	180	15	60%	700	4	1	SW	N/A
08/01/2009	42	08:45	11:45	180	15	30%	650	0	2	SW	N/A
09/01/2009	12	13:15	16:15	180	5	90%	3-400	3	1	SW	N/A
09/01/2009	15	09:30	12:30	180	>10	100%	Apr-50	4	1	SW	N/A
09/01/2009	33	13:00	16:00	180	3	100%	450	1	1	S	N/A
12/01/2009	18	19:35	22:35	180	3	20%	Unk.	Unk.	1	S	N/A
13/01/2009	28	08:50	11:50	180	>10	80%	400+	6	1	SSW	N/A
13/01/2009	29	12:45	15:45	180	>10	50%	600+	5	1	SW	N/A
13/01/2009	37	08:50	11:50	180	>10	70%	Unk.	1	0-1	NW	N/A
13/01/2009	38	12:05	15:05	180	>10	60%	Unk.	2	Unk.	Unk.	N/A
13/01/2009	10	20:00	23:00	180	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	N/A

Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
14/01/2009	18	08:20	11:20	180	500m	100%	Unk.	0	1	SW	N/A
14/01/2009	27	11:40	14:40	180	500m	100%	Unk.	0	1	SW	N/A
16/01/2009	35	09:00	12:00	180	>10	100%	Unk.	5	2	SW	N/A
16/01/2009	36	12:20	15:20	180	>10	100%	Unk.	4	4	SW	Very heavy rain started at 1409, lasted until 1422. & 1430 until end of watch.
16/01/2009	25	09:30	12:30	180	>10	90%	600	5	3	SW	N/A
17/01/2009	16	09:30	12:30	180	>10	40%	1000	5	2-3	SW	N/A
17/01/2009	32	13:15	16:15	180	>10	100%	600	5	3-4	SW	N/A
18/01/2009	39	10:35	13:35	180	>10	100%	Unk.	3	3	SW	N/A
18/01/2009	40	10:00	13:00	180	>10	80%	800	3	2-3	SW	N/A
19/01/2009	27	09:35	12:35	180	>10	60%	Unk.	1	2	NW	Small amount of wet snow for just 30mins.
19/01/2009	39	13:05	16:05	180	>10	30%	Unk.	0	2	NW	N/A
19/01/2009	10	09:30	12:30	180	5	98%	<350	3	1	SW	N/A
19/01/2009	12	13:15	16:15	180	>10	95%	>500	4	1	SW	N/A
19/01/2009	33	13:05	16:05	180	>10	100%	Unk.	0	1	SW	N/A
19/01/2009	43	09:30	12:30	180	5	100%	500	0	0	SW	N/A
20/01/2009	14	10:10	13:10	180	5	100%	Unk.	0	Unk.	NW	N/A
20/01/2009	33	09:10	12:10	180	>10	Unk.	Unk.	1	3	SW	N/A
20/01/2009	42	12:15	15:15	180	>10	90%	Unk.	0	2	SW	N/A
20/01/2009	35	12:45	15:45	180	1	100%	<300	3	2	SW	N/A
20/01/2009	36	09:30	12:30	180	5	100%	>300	3	3		N/A
21/01/2009	10	13:15	16:15	180	>10	90%	500+	3	3	SE	N/A
21/01/2009	15	09:30	12:30	180	5	100%	2-300	2	2	SE	N/A
21/01/2009	24	13:30	16:30	180	>10	55%	>500	2	3	SW	N/A
21/01/2009	41	10:15	13:15	180	1	98%	c.250	40	3	Unk.	N/A
22/01/2009	14	13:25	16:25	180	>10	70%	М	0	3	SW	N/A
22/01/2009	35	13:30	16:30	180	>10	70%	600+	5	3	SW	N/A
22/01/2009	36	09:45	12:45	180	>10	70%	600	5	3	SW	N/A
22/01/2009	37	13:15	16:15	180	>10	85%	>500	5	4	SW	N/A
22/01/2009	38	10:00	13:00	180	5	95%	c.500	6	3	SW	N/A
23/01/2009	15	09:20	12:20	180	>10	40%	М	1	1	SW	N/A
23/01/2009	40	13:10	16:10	180	>10	60%	М	1	2	SW	N/A
23/01/2009	25	11:30	14:30	180	5	100%	c.500	6	1	SW	N/A
23/01/2009	29	08:00	11:00	180	>10	80%	c.500	3	1	Unk.	N/A
24/01/2009	16	09:10	12:10	180	>10	60%	М	0	3	SW	N/A
24/01/2009	28	13:00	16:00	180	>10	60%	н	4	2	SW	N/A
24/01/2009	31	09:25	12:25	180	>10	40%	L	4	1	SW	N/A
24/01/2009	14	09:25	12:25	180	>10	60%	500	2	1	SW	N/A
24/01/2009	39	13:30	16:30	180	>10	60%	600	3	1	SW	N/A
25/01/2009	18	13:00	16:00	180	>10	40%	н	4	1	SW	N/A
25/01/2009	26	08:45	11:45	180	>10	90%	L	3	2	SW	N/A
25/01/2009	31	13:00	16:00	180	>10	7000%	800	4	2-3	SW	N/A
26/01/2009	12	09:15	12:15	180	>10	20%	Unk.	2	0	Unk.	N/A
26/01/2009	27	12:40	15:40	180	>10	90%	1000+	Unk.	1-2	Unk.	N/A
26/01/2009	42	09:05	12:05	180	5	90%	Unk.	-5	0	SW	N/A
27/01/2009	26	12:30	15:30	180	2	100%	200	7	2	S	N/A
27/01/2009	32	08:30	11:30	180	>5	100%	150	8	1	SW	N/A
27/01/2009	37	07:45	10:45	180	>5	100%	0-300		1-2	w	N/A
27/01/2009	38	11:50	14:50	180	>5	100%	0-100	Unk.	Unk.	Unk.	N/A
28/01/2009	24	13:00	16:00	180	>10	60%	5-600+	3	2	S	N/A
28/01/2009	41	09:15	12:15	180	>10	40%	600+	5	2	SSW	N/A





Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Note
30/01/2009	43	13:00	16:00	180	>5	100%	600	5	3	S	N/A
31/01/2009	26	12:30	15:30	180	10	40%	800	4	3	SE	N/A
31/01/2009	26	13:20	16:30	180	>10	70%	700+	4	3-4	SSE	N/A
01/02/2009	10	10:30	13:30	180	>10	30%	1000	2	2	SE	N/A
01/02/2009	39	14:00	17:00	180	>10	90%	1000	2	Unk.	Unk.	N/A
02/02/2009	14	14:15	17:15	180	Unk.	40%	800	1	3	Unk.	N/A
02/02/2009	16	11:00	14:00	180	>10	85%	>600	2	3	SE	N/A
02/02/2009	43	14:30	17:30	180	>10	70%	700	3	Unk.	SE	Temps not factoring in wind chi
02/02/2009	6	14:30	17:30	180	20	50%	750	1 (-4)	2	NE	N/A
02/02/2009	15	10:30	13:30	180	>10	80%	800	0	3	SE	N/A
03/02/2009	18	14:15	17:15	180	>10	5%	1000	2	1	SE	N/A
03/02/2009	43	09:45	12:45	180	>10	80%	700	3	3	SE	N/A
03/02/2009	33	09:50	12:50	180	5	98%	350	3	3	Unk.	N/A
03/02/2009	35	14:00	17:00	180	>10	0%	Unk.	2	3	SE	N/A
04/02/2009	26	09:45	12:45	180	>10	10%	Unk.	0	0	Unk.	N/A
04/02/2009	28	14:00	17:00	180	>10	60%	800	2	1	NW	N/A
04/02/2009	37	13:00	16:00	180	>10	40%	>600	3	1	Unk.	N/A
04/02/2009	38	09:30	12:30	180	>10	15%	>100	2	1	SE	N/A
04/02/2009	12	07:45	10:45	180	>10	5%	1000+	Unk.	0	Unk.	N/A
04/02/2009	27	14:20	17:20	180	>10	70%	1000+	-4	0	Unk.	N/A
05/02/2009	33	09:00	11:30	180	5	100%	600	3	1	NE	N/A
05/02/2009	39	12:05	15:05	180	1	100%	400	1.5	1	NE	N/A
05/02/2009	18	13:30	16:30	180	>5	100%	<300	2	2-3	N	N/A
05/02/2009	25	10:00	13:00	180	1	100%	<250	2	2	NE	N/A
05/02/2009	31	07:50	10:50	180	>10	100%	1000+	-2	1	NW	N/A
05/02/2009	32	12:05	15:05	180	>10-5	100%	1000+	-2	0	Unk.	N/A
06/02/2009	14	07:40	10:40	180	>10	20%	300	-2	1-2	N	N/A
06/02/2009	29	11:00	14:00	180	>10	25%	350	1	3	Unk.	N/A
07/02/2009	12	20:00	23:00	180	3	Unk.	Unk.	-3	1	N	N/A
08/02/2009	40	08:10	11:10	180	15	90%	800	-3	0	Unk.	N/A
09/02/2009	38	20:00	23:00	180	3	20%	Unk.	-2	1	N	Regland loch and much o
10/02/2009	27	12:40	15:40	180	>10	70%	н	-1	0	Unk.	N/A
10/02/2009	15	13:55	15:55	180	>10	70%	7-800	0	Unk.	Unk.	N/A
10/02/2009	25	08:15	11:15	180	>10	30%	800+	0	0	Unk.	N/A
11/02/2009	14	11:00	14:00	180	>10	60%	н	1	0	Unk.	N/A
11/02/2009	16	14:35	17:35	180	>10	40%	н	1.5	0	Unk.	N/A
11/02/2009	14	15:45	16:45	180	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	N/A
11/02/2009	15	13:15	14:45	180	>10	30%	800+	4	Unk.	Unk.	N/A
11/02/2009	24	09:00	12:00	180	>10	30%	800m+	2	1	NNE	N/A
12/02/2009	12	13:30	16:30	180	>10	90%	н	1	2	NW	N/A
12/02/2009	32	10:00	13:00	180	>10	90%	н	0	2	NW	N/A
12/02/2009	41	10:00	13:00	180	3	100%	600	1	2	S	N/A
13/02/2009	25	13:05	16:05	180	>10	100%	м	1.5	0	Unk.	N/A
13/02/2009	28	09:50	12:50	180	>10	100%	м	1.5	0	Unk.	N/A
14/02/2009	36	09:20	12:20	180	0.7	100%	Unk.	2	2	S	N/A
14/02/2009	42	12:50	15:50	180	>5	100%	Unk.	4	3	SW	N/A
14/02/2009	26	09:30	12:30	180	5	100%	м	4	0	Unk.	N/A
14/02/2009	31	13:05	16:05	180	Unk.	100%	м	5	0	Unk.	N/A
15/02/2009	37	08:55	11:55	180	>10	100%	Unk.	5	3	SW	N/A
15/02/2009	38	12:05	15:05	180	>10	100%	Unk.	6	2	SW	N/A

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Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
15/02/2009	40	09:40	12:40	180	>10	35%	н	6	3	NW	N/A
15/02/2009	16	07:45	10:45	180	>5	100%	200	Unk.	4	w	N/A
15/02/2009	26	14:05	17:05	180	>10	100%	7-1000	Unk.	3-4	w	N/A
16/02/2009	10	11:45	14:45	180	>10	100%	Unk.	10	Unk.	SW	N/A
16/02/2009	18	08:15	11:15	180	>10	100%	Unk.	9	2	SW	N/A
17/02/2009	33	10:25	13:25	180	5	100%	Unk.	10	1	SW	N/A
17/02/2009	43	09:10	10:10	60	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Watch suspended after 1 hr due to fog.
17/02/2009	43	13:45	15:45	180	5	100%	Unk.	11	Unk.	Unk.	N/A
18/02/2009	28	14:00	17:00	180	>10	100%	700	7	1	SW	N/A
18/02/2009	24	10:00	13:00	180	>10	90%	700	7	1	SWW	N/A
20/02/2009	27	12:50	15:50	180	>10	100%	Unk.	8	3	SW	N/A
20/02/2009	41	09:15	12:15	180	>10	100%	Unk.	10	1	SW	N/A
20/02/2009	39	08:45	11:45	180	>10	100%	600+	5	1	SW	N/A
20/02/2009	40	12:45	15:45	180	>10	100%	600+	5	2	w	N/A
22/02/2009	41	12:50	15:50	180	8	90%	650	9	2	Unk.	N/A
25/02/2009	15	09:45	12:45	180	>10	40%	700+	6	3-4	WNW	N/A
25/02/2009	38	14:00	17:00	180	>10	70%	700+	7	3	w	N/A
25/02/2009	36	08:00	11:00	180	>10	50%	1000	Unk.	3-4	SWW	N/A
25/02/2009	37	14:00	17:00	180	>10	60%	1000+	Unk.	4-5	W	N/A
26/02/2009	24	14:00	17:00	180	>10	100%	4-500	6	Unk.	Unk.	N/A
26/02/2009	35	13:30	16:30	180	>10	100%	1000+	Unk.	3	WNW	N/A
26/02/2009	38	07:45	10:45	180	>10	90%	1000+	Unk.	3-4	WNW	N/A
02/03/2009	16	13:00	16:00	180	Unk.	50%	Unk.	12	2-3	SW	N/A
02/03/2009	31	09:30	12:30	180	>10	80%	Unk.	12	2	SW	N/A
03/03/2009	38	09:20	12:20	180	>10	100%	Unk.	4	4	SW	N/A
03/03/2009	40	12:50	15:50	180	>10	Unk.	<u>Unк.</u>	4	4	SW	N/A
04/03/2009	18	13:05	10:05	180	>10	50%	н	1.5	1	SW	N/A
04/03/2009	12	09.40	12.40	180	>10	60%	700	0	1	510/	N/A
04/03/2009	27	13.30	16.30	180	>10	70%	Unk	3	1	SW	Cold with snow
05/03/2009	33	14.00	17:00	180	>10	20%	800	4	0-1	NF	Snow belt cleared suppy afternoon
05/03/2009	43	08:30	11:30	180	Unk	100%	500	2	0-1	SW	N/A
06/03/2009	14	13:45	16:45	180	>10	100%	400	3	2	SW	N/A
06/03/2009	35	09:40	12:40	180	>10	100%	Unk.	4	0-1	SW	N/A
06/03/2009	37	08:15	11:15	180	2	100%	400	2	1	W	Mist drifting in and out throughout last 2 hours, 5cm snow at VP up to 10cm on tack drive in.
06/03/2009	43	12:15	13:45	180	7	90%	600	3	Unk.	Unk.	Low cloud / mist lifted, breaking blue sky. 5cm snow at VP.
07/03/2009	28	13:00	16:00	180	>10	100%	Unk.	5	3	SW	N/A
07/03/2009	36	09:30	12:30	180	>10	100%	М	7	3	SW	N/A
08/03/2009	26	07:30	10:30	180	>10	80%	М	0	4	SW	N/A
08/03/2009	29	11:15	14:15	180	>10	40%	н	3.5	4	SW	N/A
08/03/2009	25	08:15	11:15	180	>10	100%	600+	2	3	WSW	N/A
08/03/2009	42	12:00	15:00	180	>10	80%	700+	5	2-3	SW-W	N/A
09/03/2009	32	14:30	17:30	180	Unk.	60%	600	5	2-3	NW	N/A
09/03/2009	39	08:55	11:55	180	5	80%	400	4	2-3	w	N/A
09/03/2009	33	19:45	22:45	180	1	40%	Unk.	3	1	Unk.	N/A
09/03/2009	10	13:30	16:30	180	>10	70%	500	7	3	NW	N/A
09/03/2009	18	08:45	11:45	180	Unk.	80%	500	2	3	NW N/A	
12/03/2009	43	19:30	23.:30	180	1-0.5	30%	Unk.	6	Unk.	W Moon out but hazy by 21:30. visibility poor despite clear sky overhead.	
13/03/2009	41	09:00	12:00	180	5	90%	550	7	3	S	N/A
13/03/2009	15	10:00	13:00	180	1	100%	2-300	5	2	SSE	N/A



Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Note
13/03/2009	24	14:00	17:00	180	5	100%	500	7	2	S	N/A
15/03/2009	12	15:15	18:15	180	Unk.	85%	>750	9	Unk.	Unk.	N/A
15/03/2009	31	11:35	14:35	180	>10	90%	>600	9	Unk.	Unk.	N/A
16/03/2009	33	15:30	18:30	180	>5	95%	<500	8	2	SW	N/A
16/03/2009	42	11:20	14:20	180	Unk.	100%	>500	8	Unk.	Unk.	N/A
16/03/2009	41	12:45	15:45	180	>5	100%	500	9	1	w	N/A
16/03/2009	29	14:35	17:35	180	>10	100%	500	9	1	SW	N/A
17/03/2009	39	15:20	18:20	180	>10	90%	>750	8	2	SW	N/A
17/03/2009	40	11:30	14:30	180	>10	20%	>600	12	2	SW	N/A
17/03/2009	27	10:00	13:00	180	>10	25%	Unk.	10	3	SW	N/A
17/03/2009	37	13:55	16:55	180	>10	70%	Unk.	9	4	SW	N/A
17/03/2009	16	17:30	20:30	180	>10	40%	600+	6	2	SE	N/A
17/03/2009	25	15:00	18:00	180	>10	100%	600+	11	1	SW	N/A
18/03/2009	25	12:05	15:05	180	>10	10%	>500	12	2	SW	A/N
18/03/2009	29	15:30	18:30	180	5	1%	Unk.	9	1	SW	N/A
18/03/2009	24	08:15	11:15	180	3	60%	Unk.	8	1	SE	Mist the length of the survey area
18/03/2009	38	13:00	16:00	180	2	70%	Unk.	9	1	SE	N/A
18/03/2009	10	08:15	11:15	180	>10	100%	200	Unk.	2-3	SW	N/A
18/03/2009	15	14:30	17:30	180	>10-5	60%	1000+	Unk	2	Unk.	N/A
19/03/2009	14	07:15	10.15	180	5	5%	700	6	2	SW	N/A
19/03/2009	28	06:45	10:10	180	>10	1%	Unk	7	2-3	SW	N/A
19/03/2009	12	08:30	10:30	180	5	50%	Unk.	7	Link	Unk	N/A
19/03/2009	26	07:30	10:30	180	>10	5%	1000+	, Link	2-3	SSE	N/A
19/03/2009	16	11:00	12:00	180	Unk	Link	Link	Unk.	Link	Unk	N/A
20/03/2009	10	06:40	09.43	180	>5	100%	Unk.	3	1	SW/	N/A
22/03/2009	43	1/1.15	17.15	180	>10	90%	500+	7	2_3	NW	N/A
22/03/2009	14	11.15	17.15	180	>10	70%	700+	6	2-5	NIW/	
23/03/2009	14	15:00	19.00	180	>10	70%	700+	7	3		
23/03/2009	31	11.00	14.00	180	>10	100%	100+	, 0	4	Link	
24/03/2009	25	11.25	14.23	180	>10	100%	Unk.	9	3	NIW/	
24/03/2009	27	14.50	17.50	180	>10	100%	500	6	2	IN VV SSE	
24/03/2009	27	00:25	10.25	180	>10	100%	Junk	Upk	2 Upk	Junk	
25/03/2009	22	10:00	12:00	180	>10	75%	Unk.	011K.	Unk.	Unk.	
26/03/2009	27	14.15	17.15	180	>10	05%	Unk.	0		OTIK.	
26/03/2009	15	14.15	17.13	180	>10	60%	800	4	2		
26/03/2009	26	14.50	17.50	180	>10	60%	800	4 r	3		
26/03/2009	12	12.20	16.20	180	>10	80%	600	7	3		
26/03/2009	24	14:10	17.10	180	>10	100%	100+	/	4-5		
26/03/2009	24	14.10	17.10	180	>10	200/	2004		4-5		
20/03/2009	10	14.00	12:20	180	>10	0.0%	>000	4	4 F		Less vis. duffi
27/03/2009	10	11:00	12.00	180	>10 E >10	90%	c 700	2	Junk	link	
27/03/2009	10	11:00	13:00	180	5->10	90%	0.700	3	011K.		N/A
27/03/2009	29	15:30	18:30	180	>10	100%	1000	Опк.	3	VVINVV	N/A
27/03/2009	32	13:30	16:30	180	>10	95%	0.500	3	3	Unk.	N/A
29/03/2009	38	14:15	17:15	180	>10	60%	Unk.	10	4	SW	N/A
29/03/2009	15	14:50	17:50	180	Uпк.	UNK.	Unk.	Опк.	<u>Uпк.</u>	UNK.	N/A
30/03/2009	10	10.05	9:35	180	>10	100%		0	3	SW	N/A
30/03/2009	43	10:05	13:05	180	>10	100%	Unk.	11	2	SW	N/A
30/03/2009	14	17:00	20:00	180	>10	/0%	1000+	Unk.	2-3	W	N/A
30/03/2009	31	08:25	11:25	180	>10	100%	1000+	Unk.	0-1	W	N/A
31/03/2009	14	14:30	17:15	180	>10	60%	1000+	Unk.	2-3	Unk.	N/A

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sun trying to break through.	
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showers	

Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Notes
01/04/2009	35	15:55	18:55	180	>10	90%	>1000	10	2	Unk.	N/A
01/04/2009	36	12:30	15:30	180	>10	60%	1000+	13	Unk.	Unk.	N/A
01/04/2009	42	15:35	18:35	180	>10	35%	Unk.	13	2	SW	N/A
02/04/2009	27	14:55	17:55	180	>10	10%	Unk.	15	2	SE	N/A
02/04/2009	24	10:00	13:00	180	10	50%	Unk.	12	2	SW	N/A
02/04/2009	39	11:40	14:40	180	>10	25%	Unk.	14	1	SW	N/A
02/04/2009	40	12:00	15:00	180	>10	15%	1000+	13	2	S	N/A
02/04/2009	40	15:00	18:00	180	>10	10%	Unk.	12	2	S	N/A
03/04/2009	33	10:10	13:10	180	1	100%	<500	5	2	SE	More mist cover
03/04/2009	32	08:50	11:50	180	1	100%	300	6	1	SE	N/A
07/04/2009	26	14:00	17:00	180	Unk.	100%	700	10	2	SW	N/A
08/04/2009	15	15:20	18:20	180	>10	70%	700	7	2	w	N/A
08/04/2009	29	11:30	14:30	180	>10	80%	500+	6	4	WSW	N/A
08/04/2009	24	11:20	14:20	180	>10	100%	400	5.5	3	SW	N/A
08/04/2009	25	13:50	16:50	180	>10	80%	400	10	2	SW	N/A
08/04/2009	31	11:00	14:00	180	>10	90%	500+	Unk.	3	Unk.	N/A
09/04/2009	12	10:30	13:30	180	5	100%	300	9	3	SW	N/A
09/04/2009	28	15:30	18:30	180	>10	100%	600	9	3	S	N/A
09/04/2009	41	13:00	16:00	180	10	100%	600	10	4	S	N/A
09/04/2009	18	09:10	12:10	180	5	100%	500	Unk.	3	Unk.	N/A
14/04/2009	10	14:15	17:15	180	>10	100%	Unk.	12	1	E	N/A
14/04/2009	43	Unk.	Unk.	180	>10	100%	Unk.	10	1	E	N/A
15/04/2009	33	12:30	15:30	180	>10	95%	>1000	Unk.	2	Unk.	N/A
15/04/2009	24	15:45	18:45	180	>10	100%	100	12	2	SE	N/A
15/04/2009	25	12:05	15:05	180	>10	90%	1000	12	2	SE	High thin cloud over with hazy sunshine
15/04/2009	37	12:55	15:55	180	>10	100%	Unk.	14	2	E	N/A
15/04/2009	38	09:25	12:25	180	>10	100%	Unk.	12	3	SE	N/A
15/04/2009	39	16:00	19:00	180	>10	95%	1000+	9	2	E	N/A
16/04/2009	35	10:15	13:15	180	5	20%	>1000	9	4	E	N/A
16/04/2009	26	10:25	13:25	180	>10	60%	1000	10	3	Unk.	N/A
16/04/2009	27	14:30	17:30	180	>10	20%	1000	12	2	10	N/A
16/04/2009	36	13:45	16:45	180	>10	10%	1000	12	4	Unk.	N/A
16/04/2009	42	10:00	13:00	180	>10	50%	Unk.	12	2	SW	N/A
17/04/2009	28	08:30	11:30	180	>10	90%	600	8	3	SE	N/A
17/04/2009	41	09:30	12:30	180	>10	90%	Medium-High	10	2	SW	N/A
17/04/2009	24	13:00	16:00	180	>10	40%	Very High	12	Unk.	Unk.	N/A
20/04/2009	33	11:15	14:15	180	>10	15%	Unk.	16	0-1	S	N/A
20/04/2009	14	11:45	14:45	180	>10	Unk.	Unk.	Unk.	Unk.	Unk.	N/A
20/04/2009	39	16:40	19:40	180	>10	35%	Unk.	16	0-1	S	Excellent viewing conditions
23/04/2009	10	15:00	18:00	180	>10	100%	<250	9	3	5	N/A
23/04/2009	18	09:45	12:45	180	>10	100%	400+	10	2	5-SW	N/A
23/04/2009	29	13:30	16:30	180	Unk.	100%	350	11	1	5	N/A N/A
23/04/2009	42	11:30	14:30	180	UIIK. 1	100%	>300	10	3) Junk	IV/A
23/04/2009	43	12:00	9.20	180	L L	100%	UIIK.	10		UIIK.	N/A
24/04/2009	26	10.00	12.00	100	5	70%	~750	10	2	5VV E	۱۷/۸ NI/۸
25/04/2009	12	14.00	17.00	120	5 \\10	100%	c 700	0	S	S14/	N/A
26/04/2009	35	10.30	13.30	180	>10	100%	c 750	<u> </u>			N/A
26/04/2009	14	10.00	13.00	180	>10	100%	600+	9	2-3	с с	Ν/Δ
26/04/2003	16	1/1-15	17.15	180	>10	100%	600+	10	2-5		N/A
20/04/2003	10	1.17	11.13	100	>10	10070	0001	10			iv/n



Date	VP	Start	Finish	Duration (Mins)	Visibility (km)	Cloud Cover (%)	Cloud Base (c. m)	Temp (°C)	Wind Speed (BS)	Wind Direction	Note
26/04/2009	38	10:10	13:10	180	>10	100%	Unk.	13	Unk.	SE	N/A
27/04/2009	27	08:20	11:20	180	5	90%	550	9	1	NW	N/A
27/04/2009	26	12:45	15:45	180	5	100%	600	9	1	NW	N/A
28/04/2009	32	10:45	13:45	180	10	95%	Unk.	12	3	SE	N/A
28/04/2009	15	07:35	10:35	180	>10	85%	1000+	Unk.	2	E	N/A
28/04/2009	31	17:05	20:05	180	>10	100%	1000+	Unk.	2	SE	N/A
28/04/2009	37	06:55	9:55	180	>10	100%	Unk.	12	3	SE	N/A
29/04/2009	28	11:00	13:00	180	>10	100%	High	12	Unk.	NW	N/A
06/05/2009	25	11:55	13:00	180	>10	100%	400	13	Unk.	w	N/A
07/05/2009	40	09:25	12:25	180	>10	Unk.	High	10	3	SW	N/A
09/05/2009	40	14:20	17:20	180	>10	80%	High	9	1	w	N/A
26/05/2009	16	08:45	11:45	180	>10	85%	<600	11	3	Unk.	N/A
26/05/2009	41	14:00	17:00	180	20	50%	150	10	3	SW	N/A
26/05/2009	42	15:00	18:00	180	>10	85%	750	12	4	Unk.	N/A
27/05/2009	32	15:00	18:00	180	>10	95%	600	13	3	NW	N/A
28/05/2009	28	12:45	15:45	180	>10	98%	<500	13	3	Unk.	N/A
30/05/2009	16	06:50	9:50	180	>10	0%	Unk.	Unk.	3	SW	N/A
30/05/2009	41	15:00	18:00	180	>10	0%	Unk.	22	3	SW	N/A

D.4 Status of Bird Species Recorded During the 2007-09 Survey Programme

Table D4.1 - Bird Species Recorded During the 2007-09 Survey Programme

Common Name	Latin Name	Survey Area Status (i)	Sch. 1 ⁽ⁱⁱ⁾	Ann. I 📖	BAP ^(iv)	SBL ^(v)	BoCC ^(vi)
Little Grebe	Tachybaptus ruficollis	В		x			
Great Crested Grebe	Podiceps cristatus	u					amber ^{11, 12}
Cormorant	Phalacrocorax carbo	NB					
Grey Heron	Ardea cinerea	В					
Whooper Swan	Cygnus cygnus	NB	x	x		x	amber ^{17, 20}
Mute Swan	Cygnus olor	u					
Greylag Goose	Anser anser	NB (Feral greylag geese breed in the wider area)					amber ^{20, 22}
Pink-footed Goose	Anser brachyrhynchus	NB					amber ^{20, 22}
Canada Goose	Branta canadensis	u					
Wigeon	Anas penelope	u					amber ^{20, 22}
Teal	Anas crecca	u					amber 22
Mallard	Anas platyrhynchos	В					amber ^{13, 14}
Tufted Duck	Aythya fuligula	u					amber ⁹
Scaup	Aythya marila	NB	x			x	amber ^{6, 9, 20}
Goldeneye	Bucephala clangula	NB					amber 17
Goosander	Mergus merganser	В					
Red Kite	Milvus milvus	NB	x	x		x	amber ⁹
Hen Harrier	Circus cyaneus	NB	x			x	red ^{2, 9}
Common Buzzard	Buteo buteo	В					
Rough-legged Buzzard	Buteo lagopus	NB					
Goshawk	Accipiter gentilis	В	x				
Sparrowhawk	Accipiter nisus	В					
Osprey	Pandion haliaetus	NB	х	x		x	amber 9, 17
Common Kestrel	Falco tinnunculus	В				x	amber ⁹
Merlin	Falco columbarius	В	х	x		x	amber 10
Peregrine Falcon	Falco peregrinus	В	х	х		Х	

Common Name	Latin Name	Survey Area Status ⁽ⁱ⁾	Sch. 1 ⁽ⁱⁱ⁾	Ann. I ⁽ⁱⁱⁱ⁾	BAP ^(iv)	SBL ^(∞)	BoCC ^(vi)
Red Grouse	Lagopus lagopus	В					amber 11, 12
Black Grouse	Tetrao tetrix	U		x	x	x	red ^{2, 3, 9}
Pheasant	Phasianus colchicus	В					
Water Rail	Rallus aquaticus	u					
Moorhen	Gallinula chloropus	U					
Coot	Fulica atra	U					
Oystercatcher	Haematopus ostralegus	В					amber ^{20, 21, 22}
Golden Plover	Pluvialis apricaria	NB		x			amber 22
Ringed Plover	Charadrius hiaticula	u					amber ^{11, 22}
Lapwing	Vanellus vanellus	В				x	red ^{3, 9, 12}
Common Snipe	Gallinago gallinago	В					amber ⁹
Woodcock	Scalopax rusticola	U				x	amber ⁹
Common Redshank	Tringa totanus	В					amber ^{9, 11, 12, 22}
Curlew	Numenius arguata	В				x	amber ^{9, 11, 12, 21, 22}
Common Sandpiper	Actitis hypoleucos	В					amber ^{9, 11}
Common Gull	Larus canus	u					amber ^{9, 22}
Great Black-backed Gull	Larus marinus						amber ¹³
Black-beaded Gull	Larus ridibundus					×	amber ^{6, 13, 22}
Wood Pigeon	Columba balumbus	B					
Collared Dove	Strebtobelia decaoto	<u> </u>					
Cuckoo	Cuculus caporus	B			×		red ^{3, 4}
Barn Owl	Tyto alba	B	×		^	×	amber ⁹
	Strix aluco	B	^			^	
		B					
Short cared Owl	Asia flammeus						ambor ⁹
Short-eared Owi	Asio jiammeus	ŭ		X		X	amper -
		В		X	X	X	red (), 3
Common Swift	Apus apus	u				×	amber
	Aicedo attriis	0	X			×	amber 5
Great Spotted Woodpecker		В					k 9
Swallow		В					amber 9
Sand Martin	Riparia riparia	В					amber 3
House Martin	Delichon urbica	В					amber ^{9, 11, 12}
Skylark	Alauda arvensis	В			X	X	red 4, 9, 11
Tree Pipit	Anthus trivialis	В					red ^{3, 4}
Meadow Pipit	Anthus pratensis	В					amber 11, 12
Pied Wagtail	Motacilla alba yarrelli	В					
Grey Wagtail	Motacilla cinerea	В					amber ¹²
Starling	Sturnus vulgaris	В					red ^{3, 4, 9}
Magpie	Pica pica	В					
Jay	Garrulus glandarius	В					
Jackdaw	Corvus monedula	В					
Carrion Crow	Corvus corone corone	В					
Raven	Corvus corax	В					
Dipper	Cinclus cinclus	В					
Wren	Troglodytes troglodytes	В					
Dunnock	Prunella modularis	В					amber ¹²
Grasshopper Warbler	Locustella naevia	В			x		red ^{3, 4}
Sedge Warbler	Acrocephalus schoenobaenus	В					
Garden Warbler	Sylvia borin	В					
Blackcap	Sylvia atricapilla	В					
Common Whitethroat	Sylvia communis	В					amber ¹²





Common Name	Latin Name	Survey Area Status ⁽ⁱ⁾	Sch. 1 ⁽ⁱⁱ⁾	Ann. I ⁽ⁱⁱⁱ⁾	BAP ^(iv)	SBL ^(v)	BoCC ^(vi)
Wood Warbler	Phylloscopus sibilatrix	В				x	red ^{3, 9}
Willow Warbler	Phylloscopus trochilus	В					amber ^{11, 12}
Chiffchaff	Phylloscopus collybita	В					
Goldcrest	Regulus regulus	В					
Pied Flycatcher	Ficedula hypoleuca	В					amber 11
Spotted Flycatcher	Muscicapa striata	В			x	x	red ^{3, 4, 9}
Whinchat	Saxicola rubetra	В					amber 11
Stonechat	Saxicola torquata	В					
Northern Wheatear	Oenanthe oenanthe	В					amber ⁹
Common Redstart	Phoenicurus phoenicurus	В					amber ⁹
Robin	Erithacus rubecula	В				x	
Blackbird	Turdus merula	В					
Song Thrush	Turdus philomelos	В			x	x	red ⁴
Mistle Thrush	Turdus viscivorus	В					amber ^{11, 12}
Long-tailed Tit	Aegithalos caudatus	В					
Coal Tit	Parus ater	В					
Blue Tit	Parus caeruleus	В					
Great Tit	Parus major	В					
Nuthatch	Sitta europaea	В					
Common Treecreeper	Certhia familiaris	В					
House Sparrow	Passer domesticus	В		x			red ^{3, 4, 9}
Chaffinch	Fringilla coelebs	В					
Goldfinch	Carduelis carduelis	В					
Greenfinch	Carduelis chloris	В					
Lesser Redpoll	Carduelis flammea	В					red ^{3, 4}
Siskin	Carduelis spinus	В				x	
Common Crossbill	Loxia curvirostra	u	x				
Bullfinch	Pyrrhula pyrrhula	В			x	x	amber ^{11, 12}
Reed Bunting	Emberiza schoeniclus	В			x	x	amber 12

i – Breeding status within the survey area: B = confirmed breeding, U = unconfirmed but possibly breeding in the Study Area, u = unconfirmed but possibly breeding in surrounding area, NB = not

breeding.

ii – Species listed on Schedule 1 to the Wildlife and Countryside Act 1981, as amended.
iii – Species listed on Annex 1 of the Council Directive 79/409/ECC on the conservation of wild birds (the 'EC Birds Directive')
iv – UK Biodiversity Action Plan Priority Species
v - Scottish Biodiversity List species

vi – Birds of Conservation Concern (BoCC) in the UK (Eaton et al. 2009)

BoCC Red List Criteria:

(HD) A severe decline in the UK between 1800 and 1995, without substantial recent recovery.
(BDp1) Severe decline in the UK breeding population size, of more than 50%, over 25 years.

 (BDp2) Severe decline in the UK breeding population size, of more than 50%, over the entire period used for assessments since the first BoCC review, starting in 1969 ("longer-term").

6. (WDp2) Severe decline in the UK non-breeding population size, of more than 50%, over the

longer-term.

8. (BDr2) Severe decline in the UK range, of more than 50%, as measured by number of 10km squares occupied by breeding birds, over the longer-term.

BoCC Amber List Criteria:

- 9. (SPEC) Categorised as a Species of European Conservation Concern (SPEC 1, 2 or 3).
- 10. (HDrec) Red listed for Historical Decline in a previous review but with substantial recent recovery (more than doubled in the last 25 years).
- 11. (BDMp1) As for red list criteria BDp1, but with moderate decline (by more than 25% but less than 50%) over 25 years.
- 12. (BDMp2) As for red list criteria BDp2, but with moderate decline (by more than 25% but less than 50%) over the longer-term.

13. (WDMp1) As for red list criteria WDp1, but with moderate decline (by more than 25% but less than 50%) over 25 years.

14. (WDMp2) As for red list criteria WDp2, but with moderate decline (by more than 25% but less than 50%) over the longer-term.

17. (BR) UK breeding population of less than 300 pairs.

19. (BL) At least 50% of the UK breeding population found in 10 or fewer sites.

20. (WL) At least 50% of the UK non-breeding population found in 10 or fewer sites.

21. (BI) At least 20% of the European breeding population found in the UK.

22. (WI) At least 20% of the European non-breeding population found in the UK.

Flight Activity Survey Results D.5

Table D5.1 - Flight Activity Survey Season 1 – Target Species Records October 2007 to April 2008

	Defale	Dete	вто	81-	6	A = -	VP	Start	Fli	ight Heigh	t Recordi	ng Band (m)	Dur.	Natas
	Ref NO	Date	Code	NO.	Sex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	Notes
	FAS(1) 1762	04/10/2007	SN	1			15					6		6	Rise SN off Myrica bog / flush area 56719 / 92213 flight off at 5-10m to NE
	FAS(1) 2	04/10/2007	К.	1			1	12:37			30			30	
	FAS(1) 475	04/10/2007	КТ	1			6	12:57			27			27	KT hunting drift circle and soar at 10-20m
	FAS(1) 5	04/10/2007	К.	1	м	Juv.	1	13:15				300		300	(M)K. hunting up Blackmark Burn.
	FAS(1) 479	04/10/2007	КТ	1			6	13:21				11		11	KT rise and fly at 5m over field, settle by ephemeral post by river. Disturbs 120+RO forage
	FAS(1) 6	04/10/2007	К.	1	м	Juv.	1	13:26			120	120		240	(M) young K. probably above again hunting up valley towards VP.
	FAS(1) 482	04/10/2007	КТ	1			6	14:01				11		11	KT as at (6) rise and fly into next field drops out of view behind trees (assume same ground forage
	FAS(1) 16	04/10/2007	К.	1	м	Juv.	1	14:36			30	45		75	(M)K. Juv. Hunting in valley in front of VP then crossed valley towards plantation and attacked a C. twice and la
	FAS(1) 484	04/10/2007	BZ+K	1+1			6	14:41			11	11		22	BZ + K harrying chasing interaction K on BZ at 5-20m.
	FAS(1) 485	04/10/2007		1+1			6	14:44		37				37	KT+BZ soar and drift with BZ following KT at 30-50m over and beside mature policies and fields
	FAS(1) 17	04/10/2007	К.	1	м	Ad.	1	15:01				90		90	(M)K. Ad. Hunting over valley in front of VP. Continued along forest edge and then into trees
	FAS(1) 967	05/10/2007	К.	1	м	Ad.	9					180		180	(M)K. hunting over ridge behind VP.
	FAS(1) 1766	05/10/2007	К.	1	F		15	17:43			387			387	K.(F) hunting hover at 20m, gliding soar over rough grazings around tower how
	FAS(1) 1767	05/10/2007	К.	1	F		15	18:11			48			48	K.(F) (assume same bird as (3)) hunting soar and hover over rush pastures 10-3
	FAS(1) 1980	06/10/2007	SE	1			18	10:47				3		3	SE lifts to 3-5m and drifts down slope out of view into M23 rush pasture - SV
	FAS(1) 1501	09/10/2007	К	1	М		13				47			47	K (M) hover and soar at 20m disappear out over / into plantation
	FAS(1) 968	09/10/2007	К.	1	м	Ad.	9	10:41				120		120	(M)K. hunting over fields in front of VP above Tod Hill and lost behind plantation
	FAS(1) 971	09/10/2007	К.	1	м	Ad.	9	12:30			180			180	(M)K. hunting over fields looked to come from edge of plantation then circled back and over plantation
	FAS(1) 1380	10/10/2007	GI	1	м		12				16			16	GI(M) direct flight across conifers E-W then along plantation edge - S and into planta
	FAS(1) 1502	10/10/2007	К	1	м		13				286			286	K (M) (assume same bird as (4)) hover and soar at 20-30m along river margins. Note: hear but unse
	FAS(1) 253	10/10/2007	КТ	1			4	14:52	180					180	
	FAS(1) 254	10/10/2007	КТ	1			4	15:00		120				120	KT slow gliding across hillside
	FAS(1) 257	10/10/2007	КТ	2			4	15:31	240					240	KT 2 in thermal, circling, slowly gliding away
	FAS(1) 2226	10/10/2007	WS	2		AD	21	15:46	300					300	2 Ad whooper swans came in high from the N then off to SW
	FAS(1) 260	10/10/2007	КТ	1			4	15:56	360					360	
	FAS(1) 261	10/10/2007	КТ	1			4	16:01			135			135	KT - glides to in and hunting / gliding along OHL, then thermals up out of vie
	FAS(1) 263	10/10/2007	PE	1			4	16:32		105				105	PE flying from Corriedoo forest and across to Bogue Moor
	FAS(1) 264	10/10/2007	КТ	2			4	16:45	60	60	30			150	KT - 2 KT slowly flying through area following part of OHL then out across val
	FAS(1) 266	10/10/2007	КТ	1			4	17:11		45	30			75	KT landed on fence post
	FAS(1) 267	10/10/2007	К.	1			4	17:25		45				45	K flying fast through area
	FAS(1) 268	10/10/2007	КТ	1			4	17:38			45			45	KT left fence post then lost to view
	FAS(1) 2231	10/10/2007	WS	2			21	18:29		30				30	2 whooper swans flew back over the loch to NW
	FAS(1) 1513	11/10/2007	к	2			13				149			149	K x 2 hover and soar at 10-20m over rough grazings and plantation marging
	FAS(1) 973	11/10/2007	К.	2			9	12:52	40	120	36			196	K.x2 (ad (F) + juv) spiralling rise off mature oak by boat house. Juv rise and drifts in lazy spiral along loch at 40m. Adu
	FAS(1) 1503	11/10/2007	К.	1			13	14:51			510			510	K. hunting, hovering and gliding up riverside then quartering back down field side landed on N
	FAS(1) 1504	11/10/2007	К.	1			13	15:23		75				75	K. left tree, circled round and headed over plantation
	FAS(1) 1507	11/10/2007	К.	1			13	15:44		15	15			30	K. 1 from high to M height fast glide over river
	FAS(1) 763	11/10/2007	T.	8			8	16:04				4		4	T.x8 flight on water 10m.
	FAS(1) 765	11/10/2007	К.	1			8	16:51		20	20			40	K. hover and soar over rush pasture and wood rough grazings 20-40m. Drop to groun
	FAS(1) 1510	11/10/2007	LG	2			13	17:15						510	LG - 2 little grebes swimming and feeding in river, moved back down river out of
	FAS(1) 144	12/10/2007	КТ	1		Ad.	3	10:37				135		135	KT into view drifting along ridge from Bogue moor and over Milnmark and onto Bogue Fell and lo
	FAS(1) 145	12/10/2007	К.	1	м	Ad.	3	11:02				120		120	(M)K. hunting to NE of VP and across road near summit of hill and followed ridge hovering regularly u
	FAS(1) 146	12/10/2007	КТ	1		Ad.	3	12:14				90	30	120	KT Ad. Into view over ridge at Bogue Fell and hunting along ridge over fields towards radio mast then turned
	FAS(1) 1985	12/10/2007	К.	1			18	14:11		60				60	K. stopped once to hover then continued high and long glide.
ĺ	FAS(1) 776	16/10/2007	RK	2		Ad	8	11;07					240	240	2 red kites up again below Barlaes Hill flying low and landing on ground frequently 2 BZ and 4 RN now on Ba
	FAS(1) 769	16/10/2007	К.	1	F		8	09:23			30	30	15	75	K. in low flight over plantation mobbed by 2 CC, on loch grey heron, 10 malla
							-								



ing in pastures.

ging bird) ground - 5m.

anded in mature conifers next to road.

s around former hotel.

and lost from view.

ouse.

-30m.

W.

tion.

tation and lost from view.

ation 15m.

een RN x 3 behind VP to N

ew

lley

ult (F) rise to 200+m into sun also heading S.

Norway spruce tree.

nd near OHL.

fsight

ost from view over ridge.

until lost from view in valley.

I west and lost from view over ridge

arlaes Hill, 2 Red Kites still present

ard

DefNe	Data	вто	No	Corr	1.50	VP	Start	Fli	Flight Height Recording Band (m)		Dur.	Notes		
Ref NO	Date	Code	NO.	Sex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	Notes
FAS(1) 770	16/10/2007	RK	1		Ad	8	10:14			284			284	Red kite flies W over loch and lands in small wood, W of the A713. Remains here in a
FAS(1) 773	16/10/2007	RK	1		Ad	8	10:29				75	30	105	
FAS(1) 774	16/10/2007	RK	1		Ad	8	10:29				75	30	105	
FAS(1) 604	16/10/2007	КТ	1			7	10:46		17				17	KT soaring spiral at 50m drifting NW.
FAS(1) 607	16/10/2007	кт	1			7	11:26		207				207	KT Spiralling soar at 50-80m moving NW over Kendoon drop into valley out of view
FAS(1) 778	16/10/2007	RK	1			8	12:24			180	150	120	450	
FAS(1) 487	17/10/2007	К.	2	M, F	1MM	6	10:42			90			90	2 kestrels circle together over St John and flew off NE
FAS(1) 613	17/10/2007	GJ	10			7	16:13	60					60	SH, 10 Greylags high SE off the Map S of Dalry, 2 BZ circling over woods
FAS(1) 614	17/10/2007	КТ	1		Ad	7	16:33	700					700	KT circling VH then circled / thermalled SE 6 BZ up circling over woodland
FAS(1) 617	17/10/2007	WS	7		3 Ad	7	18:29	120					120	7 Whoopers (3 Ad SE)
FAS(1) 986	18/10/2007	WS	8			9	11:23	60					60	9 whopper swans heading high SSE
FAS(1) 2069	18/10/2007	К.	2			19	13:32				15		15	k. X2 - briefly low over pines south of A713, south east of VP. Landed on
FAS(1) 271	18/10/2007	PE	1			4	14:07	220					220	
FAS(1) 2070	18/10/2007	К.	1			19	14:13		15	90	<15		105	K. 14:13 - 14:15 south east - north-west then crossed west to east over A713, landed in cle
FAS(1) 272	18/10/2007	ML	1			4	14:35				15		15	Merlin low NE Barscobe Hill
FAS(1) 273	18/10/2007	GJ	14			4	15:13		45				45	14 greylag geese W on S end of Bogue fell, same party? Pushed up WH headin
FAS(1) 1939	18/10/2007	К.	1	м	Ad.	17	15:26				15	15	30	(M)K. hunting in front of VP and then landed on telegraph wires. Stayed for 1min 20secs then moved
FAS(1) 2395	18/10/2007	К.	1	м	Ad.	23	16:36			15	75		90	(M)K. hunting along edge of plantation above Cockclay across valley from VP. Then headed
FAS(1) 2388	18/10/2007	во	1			22	18:28				60		60	BO - hunting low to ground over willow / marsh area on north side of River Doon,
FAS(1) 2389	18/10/2007	во	1			22	18:30				75		75	BO - same bird as above, hunting / quartering low to the ground, again dropped
FAS(1) 2390	18/10/2007	ws	19			22	18:45		105				105	WSx19: 19 birds came from direction of Bogton Loch flew north the
FAS(1) 1389	19/10/2007	L.	19			12		33					33	L.x19 direct flight at 150m+ - S out of view into sun.
FAS(1) 1402	19/10/2007	ML	1	F		12				3			3	ML (F) on top branch pole stage SS overlooking pylon way leave, lift and turn ba
FAS(1) 1653	19/10/2007	к	1			14				10			10	K rise off tree into fast flight at 10-20m
FAS(1) 2073	19/10/2007	К.	1	м	Ad.	19	11:06				60	30	90	(M)K. hunting down valley to NW of VP on east side of valley towards VP until lost or
FAS(1) 2075	19/10/2007	К.	1	м	Ad.	19	12:21				90		90	(M)K. into view from Glenmuck Craig and past VP to north on steep bank towards (
FAS(1) 82	21/10/2007	К.	1			2	10:22		9				9	K. direct flight at 30m over open space and young plantation. Note: occasiona
FAS(1) 1864	21/10/2007	К.	1	F		16	15:24			348			348	K.(F)hover and soar at 20-30m, repeat route several times. Settle in trees nex
FAS(1) 1866	21/10/2007	К.	1	F		16	16:11			130	19		149	K.(F) (assume same bird as (3)) hover and soar in same area. 20m
FAS(1) 1940	22/10/2007	SN	1			17	11:48			15	15		30	SN - disturbed from roadside by passing car northeast of Lambford Hi
FAS(1) 147	22/10/2007	К.	1	F		3	12:43			12			12	K(F) direct flight at 10-15m.
FAS(1) 148	22/10/2007	К.	1	м		3	12:52				10		10	K(M) direct flight at 5-10m
FAS(1) 149	22/10/2007	К.	1			3	12:53		23				23	K. mobbed KT
FAS(1) 150	22/10/2007	кт	1			3	12:53		23				23	KT mobbed by K. 30-100m
FAS(1) 1942	22/10/2007	К.	1			17	13:49			30			30	K over clearfell and just over tops of trees at near edge of forestry s
FAS(1) 993	22/10/2007		1+3			9	15:10		200	376			576	KT + 3BZ soaring drifts and spirals 20-50m over summit ridge. KT drifts at 30m across dam and into polic
FAS(1) 995	22/10/2007		1+2			9	15:38			150			150	KT + 2BZ soaring drifts at 10-30m. In and out of view over ridge and plateau. Note: us
FAS(1) 1000	22/10/2007	К.	1	м		9	16:29				11		11	K.(M) direct flight at 10m - N.
FAS(1) 1001	22/10/2007	кт	1			9	16:50			3	2		5	KT lift off tree and direct flight across scattered woodland pasture at 15r
FAS(1) 2234	22/10/2007	К.	1			21	17:46				15		15	K east of VP over far side (east side) of Bogton Loch, low height, lande
FAS(1) 277	23/10/2007	К.	1	F		4	12:14			23			23	K.(F) direct flight over pasture to woodland edge, hover and soar 10-20n
FAS(1) 1105	23/10/2007	GJ	6			10	15:58		291				291	GJx6 flight up valley circle and back down at 60-100m.
FAS(1) 2397	24/10/2007	К.	1			23	09:48		15	15			30	K. south of B741 southwest of VP, east to west, crossed to north s
FAS(1) 2398	24/10/2007	PG	20			23	10:48	270					270	PG(20) - flock of 20, south to north
FAS(1) 2399	24/10/2007	К.	1			23	11:16			30	15		45	K. over opencast area north of VP, briefly chased by 2x0
FAS(1) 2392	24/10/2007	К.	1	F		22	14:12			15			15	K.(F) direct flight at 10m.
FAS(1) 2393	24/10/2007	К.	1	F		22	14:50				17		17	K.(F) direct flight at 15m (assume same bird as (2)).
FAS(1) 1768	25/10/2007	SN	1			15	10:22				15		15	SN - just southeast of VP.
FAS(1) 1769	25/10/2007	GD	1	F		15	11:17				15		15	GD(1) - (F), briefly in flight along Carsphain Lane, landed out of view
FAS(1) 497	25/10/2007	кт	1			6	11:32				11	İ	11	KT flight in at 5-10m, land on hawthorn tree, lift and drop out o

in a tree and still sat in tree at 12:30
view Assume same hird as (6)
NE
nc edge of St John (3)
land at some time 2 K
on nines I ow heights
on pines. Low neights.
cleared area of forestry I-M-H beights
ading SW over new Galloway
auing swy over new Galloway
and over trees on huge and lost from view.
then head south
then back south.
back into plantation 10-15m.
st on way towards Glenmuck Craig.
ds Glenmuck and lost from view.
onal movements WP, ST & B.
next to Lambford Steading.
20m to ground.
d Hill, landed again.
try southeast of VP.
policy trees at Nether Cleugh. BZ drift out of view - W.
using ridge top hawthorns as roost.
15m (canopy height).
nded in a tree, 17:46.
20m drop out of view.
0m.
th side of road.
2xC.
)).
view, low height.
ut of view - S.

		BTO				VP	Start	Fli	ght Heigh	t Recordi	ng Band (m)	Dur	
Ref No	Date	Code	No.	Sex	Age	No.	time	+100	30-100	10-30	<10	, <5	(secs)	Notes
FAS(1) 498	25/10/2007	К.	1	Μ		6	11:46				6		6	K(M) flight into Hawthorn KT had vacated, lift to 5m - SE
FAS(1) 1770	25/10/2007	WS	10		6 Ad. + 4 Juv.	15	11:53	180	60				240	WS(10) - 6 adults and 4 juvs in one flock flying north to south down valley
FAS(1) 499	25/10/2007	КТ	2			6	12:08			12	26		38	KT same wing tagged bird as (3) back into Hawthorn at 3-5m
FAS(1) 500	25/10/2007	КТ	1			6	13:07		204	80			284	KT in rising spiral harried by C.x3 drifting over VP at 70m dropping to 25m - N.
FAS(1) 368	25/10/2007	К.	1			5	15:23			27			27	K.(M) hunting hover and soar at 10-20m along dyke lines.
FAS(1) 369	25/10/2007	КТ	1			5	16:15		114				114	KT soaring drift at 50-80m over mixed mature woodland, grazed pasture and scrub.
FAS(1) 1515	26/10/2007	GD	1	F		13	09:41				15		15	GD(1) (F), along Water of Deugh, just by VP southeast to northwest.
FAS(1) 1519	26/10/2007	К.	1			13	11:48			15	15		30	K.(1) - briefly southeast of VP, chased by a C.
FAS(1) 1216	26/10/2007	к.	1			11	11:57			43			43	K (F) drifting glide at 30m over plantation to pastures -> SE
FAS(1) 1870	30/10/2007	PE	1	F	Ad.	16	10:45		60				60	(F)PE flying east high over valley beyond power station, gliding and lost from view beyond trees.
FAS(1) 1658	30/10/2007	WS	16		5 Juv, 10 Ad	14	12:08		180	30			210	16 WS flying down valley over Carsphairn and over east side of Water of Deugh, continued past bridge and landed in water beyond bridge and lost from view, 12 x 15 sec, high, 2 x 15 sec med and lost
FAS(1) 1660	30/10/2007	КТ	1			14	14:10		30	135			165	KT seen following edge of plantation and road to SE of VP, continued along until Bardunnoch where bird flew over trees and lost from view, 9 x 15 sec med, 2 x 15 sec high
FAS(1) 2401	31/10/2007	к.	1	М	Ad.	23	12:08				90	90	180	(M)K. hunting on opposite side of valley along edge of plantation below skyline, until lost from view in valley across dismantled railway.
FAS(1) 2140	01/11/2007	PE	1	F	Ad.	20	09:21	60	45	60			165	(F)PE flew across from Bellsbank Plantation and flew across in front of VP and across towards Little Shalloch area where lost from view.
FAS(1) 2141	01/11/2007	К.	1	F	Ad.	20	10:16				90		90	(F)K. hunting along edge of Bellsbank Plantation and across road and then cut into plantation and lost lower down hill.
FAS(1) 1405	01/11/2007	К.	1	М	Ad.	12	13:06				165	15	180	(M)K. hunting along edge of plantation towards VP then up and over trees and lost from view across from VP.
FAS(1) 2077	02/11/2007	К.	1	М	Ad.	19	09:51			45	90		135	(M)K. hunting along ridge above VP from Mossdale area dropped down valley silently above VP and then crossed valley medium height and continued southeast over trees till lost from view.
FAS(1) 1219	06/11/2007	кт	1			11	10:32		90	45	45		180	KT(1) north to south drifted towards Mackilston Hill where mobbed by a C., initially low heights then medium then high.
FAS(1) 1221	06/11/2007	WS	3		Ad	11	11:00	45					45	WS(3) - 3 adults west to east, from direction of Dundeugh Hill, passed over just north of VP.
FAS(1) 1222	06/11/2007	TD	2	PR		11	11:05				15		15	TD(2) - briefly in flight on Kendoon Loch, landed with 18 further TD already on the water, ie, 20xTD in total; also a LG on the water in same area.
FAS(1) 1223	06/11/2007	нн	1	М	Ad	11	11:12				90		90	HH - (M), low to ground quartering just to the northeast of VP, disturbing flock of FF and SG present there.
FAS(1) 1224	06/11/2007	кт	1		2nd Winter	11	11:28			120	330		450	KT - east of VP, green wing-tagged bird (on both wings), soaring at medium - low heights, eventually lost to view below Shiel Hill.
FAS(1) 1227	06/11/2007	кт	1		2nd Winter	11	12:00			45			45	KT(1) - green wing-tagged bird again, east-northeast of VP, medium height.
FAS(1) 1989	06/11/2007	К.	1	М		18	14:28				15		15	K.(1) (M) just east of VP, east of A713, landed on pylon, low height, 1428.
FAS(1) 1990	06/11/2007	К.	1			18	15:40			45			45	K.(1) - hovering / hunting just NW of VP, flew east over A713, medium height 1540 - 1541.
FAS(1) 1991	06/11/2007	К.	1	М		18	16:23			15	15		30	K.(1) - pres same bird as above, just N of VP landed on pylon, medium - low heights 1623.
FAS(1) 21	07/11/2007	к.	1	М	Ad	1	10:51			48			48	(M)K. hunting and hovering near Fell Hill. 30-60m high.
FAS(1) 28	07/11/2007	к.	1	М	Ad	1	12:26		5	37			42	K. hunting very high 150 - 200m high, then down to 30m over Fell Hill.
FAS(1) 374	07/11/2007	нн	1	F	Ad.	5	14:35					300	300	(F)HH hunting on slopes off to north of VP in area between plantations. Activity hunting along edge of woodland and across grips and streams and then circled back and lost in same area where first picked up.
FAS(1) 784	07/11/2007	КТ	1			8	15:12	880	242	18			1140	KT flew and slowly circled high then lower over VP, then height to very high then away northwest
FAS(1) 786	07/11/2007	КТ	1			8	15:42			19	7		26	KT over Ardoch Hill 25m high, came down over trees.
FAS(1) 788	07/11/2007	КТ	1			8	15:58		11	19	3		33	KT 40m high, 25m over trees, then down into trees.
FAS(1) 1527	07/11/2007	К.	1			13	16:22			225	150		375	K.(1) - hunting / hovering over rough grazing by Water of Deugh just SSE of VP, medium - low heights 1622 - 1627
FAS(1) 1528	07/11/2007	SN	1			13	16:49		15	15			30	SN(1) - just before dusk, E-W over road just SE of VP, calling, medium - high heights 1649.
FAS(1) 84	08/11/2007	К.	1	М	Ad	2	10:12				27		27	(M)K. hunting low 3-8m high along Knockman Hill.
FAS(1) 620	08/11/2007	кт	1			7	11:40		255	270			525	KT into view over White Cottage opposite VP and then across towards Ardoch Hills and circled over summit then continued down past Mill Quarter, over plantation and over trees towards Earlstoun Loch and lost from view.
FAS(1) 159	08/11/2007	К.	1	М	Imm	3	13:08			6	18		24	Imm (M)K. hunting low 3-8m then up to 25m, then dived to ground.
FAS(1) 160	08/11/2007	К.	1	М	Imm	3	13:10				32		32	Imm (M)K. (same bird as flight 1), flew off south 5-6m high.
FAS(1) 161	08/11/2007	К.	1	F	Ad	3	14:52			47			47	(F)K. hunting 20-25m high, flew north.
FAS(1) 86	09/11/2007	К.	1			2	11:37			19			19	K. 15-20m high fast over rise.
FAS(1) 1875	09/11/2007	BK	2	М		16	12:42				30		30	BK(2) - both (M)(M), N-S, flew behind (just E) of VP towards forestry at Brockloch Craig (possibly / presumably flushed by farmer / shepherd with dog N of VP during last 1.5hr)
FAS(1) 2240	09/11/2007	WS	4		Ad	21	14:07			45	60		105	WS(4) - the 4 adults on Bogton Loch, took off, headed off NE towards Bogton Moss, low-medium heights, 1407-1409.
FAS(1) 2242	09/11/2007	К.	1			21	14:58				30		30	K.(1) - N-S just by VP, low height 1458. Also in 1430-1500 period, BL(6+) with CH flock in Beech trees along road, low heights.
FAS(1) 2243	09/11/2007	GN	1	F		21	15:38				30		30	GN(1) (F), along Bogton Loch at new edge then along River Doon, low height 1538.
FAS(1) 2244	09/11/2007	К.	1	М	Ad	21	15:49				30		30	K.(1) ad (M), just N of VP, landed in trees 1549, low height.
FAS(1) 2246	09/11/2007	GN	3	F	Imm	21	16:05				15		15	GN(3) - SE-NW along Bogton Loch, landed, low heights 1605.
FAS(1) 2248	09/11/2007	WN	1	F		21	16:11				15		15	MA(2) pr + WN - all together as Map no. 8 as flying together in one flock.
FAS(1) 2249	09/11/2007	GN	3	F	Imm	21	16:14				15		15	Also GN(3) - W-E along Bogton Loch, landed on loch, low heights 1614.
FAS(1) 2251	09/11/2007	WS	2	•	hA	21	16:44		15	30	15		60	WS(2) - both adults, came from NF direction, landed on Bogton Loch, high - medium - low heights 1644-1645
	55, 11, 2007				1.00	L	-0.77	I	1.12		1. 1.			



Define	Data	вто	Nie	Carr		VP	Start	Fli	ght Heigh	nt Recordi	ng Band (I	m)	Dur.	ur. Notes		
KET NO	Date	Code	NO.	Sex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	Notes		
FAS(1) 2144	10/11/2007	GJ	11			20	10:22				15		15	Shooting disturbs birds off Bogton Loch, 11 greylag geese, 3 whooped swans, flew off towards Dalmellington		
FAS(1) 2143	10/11/2007	WS	2		AD	20	10:37		120				120	2 whooper swans in from W over Craigengillan towards Dalmellington - Bogton Loch joined the 3 = 5,		
FAS(1) 2145	10/11/2007	GJ	15			20	10:39				15		15	Approx 15 greylag geese, flew off from Bogton loch at same time		
FAS(1) 2146	10/11/2007	GD	1	М	AD	20	11:17			60			60	(M) goosander, flew along high towards Loch Doon		
FAS(1) 502	10/11/2007	нн	1	М	Ad	6	15:16					45	45	Ad (M) HH S down towards gorse.		
FAS(1) 503	10/11/2007	нн	1	м	Ad	6	15:33					30	30	Ad (M) HH (same bird?) flew SW off west side of Craigencorr Hill		
FAS(1) 504	10/11/2007	нн	1	М	Ad	6	16:05					15	15	HH Ad (M) located on rock 200m SE of VP at 16:05 flew up, drifted off low to S/SW		
FAS(1) 789	11/11/2007	КТ	2			8	09:56		130	507			637	KTx2 soaring spirals 10-40m over perm. Pasture. 2nd bird going to ground briefly twice.		
FAS(1) 1407	11/11/2007	GJ	13			12	10:11	120					120	13 Greylag geese flying high N to the E of Dundeugh Hill		
FAS(1) 1408	11/11/2007	GJ	5			12	10:18	60					60	5 greylag geese flying N over plantation W of VP, 5 Crossbills W over VP		
FAS(1) 1411	11/11/2007	К.	2			12	11:26			60			60	v. distant RN. NW of VP, 2 K south past VP, 3 + crossbills over SE (17 crossbills together by VP at 11:33)		
FAS(1) 794	11/11/2007		1+1			8	11:38			27			27	Interaction GI(M) and RN. GI rising spiral, harried and harrying RN which breaks off at 30m and heads NNE after (5).		
FAS(1) 795	11/11/2007	кт	1			8	11:50		114				114	KT steady drift at 40m. NW - SSE		
FAS(1) 1944	11/11/2007	К.	1			17	13:04			11			11	K. hover and soar at 10-15m.		
FAS(1) 1772	11/11/2007	GJ	11			15	13:32	2100					2100	11 greylag geese heading NNW form E of Dundeugh Hill		
FAS(1) 1946	11/11/2007	К.	1			17	13:49			28			28	K. hover and soar at 10-20m same bird as (2)		
FAS(1) 1544	12/11/2007	GJ	2			13	10:48	60					60	2 GJ SW		
FAS(1) 1561	12/11/2007	GI	1			13	12:39		205				205	Goshawk flew high SW from Marbrack Burn mobbed by 6 RN and Carrion crow		
FAS(1) 1109	12/11/2007	нн	1	м	Ad	10	14:17				1800		1800	Ad (M) HH hunting over rough grass trail drifted N off Culmarks Hill, also RN and BZ on Culmark Hill		
FAS(1) 376	12/11/2007	GA	1	м		5	14:40				15		15	GA(1) (M) + WN(13) - together in one flock over Lochinvar, landed on loch, low heights 1440.		
FAS(1) 377	12/11/2007	WN	13	2M,		5	14:40				15		15	GA + WN(13) - both no 3 as same flight line (GA in with WN flock).		
FAS(1) 1110	12/11/2007	кт	1	21	Ad	10	15:00			600	60		660	Ad Red Kite circling low at Marksaig, 2 RN, BZ, CC and magpie around carrion, kite buzzed the bird and stole carrion from RN, flew off SSW		
FAS(1) 379	12/11/2007	GD	1	м	bA	5	15:24			15	30		45	GD(1) - (M) - N-S landed on Lochinvar. 1523-1524. medium-low heights.		
FAS(1) 279	12/11/2007	GL	- 48			4	16.14		20	28			48	Glx48 lift (first note) and flight off - SW. Been disturbed - ground - 40m. Think lifted off riverside flats by river near waterside. Lost to view		
FAS(1) 505	13/11/2007	к 0,	1			6	11:00		20	20			297	K hover and soar 10-20m land on roadside trees v2		
FAS(1) 2082	13/11/2007	к.	1			19	11.00			15	15		30			
EAS(1) 508	13/11/2007	к.	1			6	11.12			13	15		17	K hower and soar $20m$ (same as (1))		
FAS(1) 500	13/11/2007	RE	1			6	12.15		10/	47			10/	RE soar and rising hover / stall over nlantation 30-80m		
FAS(1) 510	13/11/2007	ĸ	1			6	13.15		104	128			104	K hover and soar 10-20m (assume same as (1) (A))		
EAS(1) 21E0	12/11/2007	к. И	1			20	14.01			120	60		60	K (1) inst N of VD low boints 1401 1402		
FAS(1) 2150	12/11/2007	N. DE	1			20	14.01		60	100	125		275	K_{1} - Just IN OF VP, IOW Height 1401-1402		
FA3(1) 512	12/11/2007		1			20	14.01		00	190	125		00	Kriazy unit, lot of short soal and protoinged nover 5-50m night action similar to (5) inst thought to be 62 / Ki.		
FAS(1) 2155	12/11/2007	к. К	1		1 ct Wintor	20	14.50			45	45		30	K.(1) - number of 1455 (housing hybrid to be stated in the state of the source of the state of the source of the s		
FAS(1) 2154	13/11/2007	К.	1		1st Winter	20	15:00		20	120	255		3/5	K.(1) - presumably same as 1455-1500, nunting / novering by roadside just SW of VP, caught a vole, low-medium neights 1500-1506		
FAS(1) 2155	13/11/2007	К.	1		1st winter	20	15:20		30	150	195		3/5	K.(1) - presumably same bird as above, nunting / novering again in same area as before by roadside just Sw of VP, low - medium - nigh neights 1526-1532.		
FAS(1) 2159	13/11/2007	GJ	27			20	16:28				30		30	GJ(27) - low heights, new in and landed on Bogton Loch, presumed teral birds, nock containing hair a dozen white birds. 1628-1629.		
FAS(1) 1950	15/11/2007	К.	1			1/	11:22				15		15	K.(1) - took off from top of conifer at small plantation N of road, NE of VP, low height 1122.		
FAS(1) 2253	15/11/2007	К.	1			21	14:46		90	15	15		120	K.(1) - distant hunting / hovering bird NE of VP above Burnton, high - medium - low heights 1444-1446		
FAS(1) 2255	15/11/2007	К.	1			21	15:13		225				225	K.(1) 1513-1516, hunting. Hovering S of Bogton Loch SE of VP, flew across the loch, hunting / hovering ENE of VP, moved off W, high height.		
FAS(1) 2256	15/11/2007	К.	1			21	15:14		30				30	K.(1) - 2nd bird briefly in same field of view as above bird 1514, high height, hunting / hovering also.		
FAS(1) 516	18/11/2007	К.	1			6	10:10				15		15	K.(1) - took off from roadside telegraph pole, mobbed BZ that was on another pole, landed again on pole, vocal, low height, 1010		
FAS(1) 518	18/11/2007	нн	1	M		6	11:06				45		45	After end of watch a HH((M)) seen by roadside N of VP, low height, 1106, lost behind mound after quartering over wet / marshy area by roadside. Not seen from VP but after end of watch.		
FAS(1) 1413	18/11/2007	К.	1	M		12	12:03			180	120		300	K.(1) - (M) took off from telegraph wires S of VP then hunting / hovering 1203-1207		
FAS(1) 87	19/11/2007	GJ	5			2	09:39		45				45	5 greylag geese, flew SE over VP, crossbill (5), siskin (28), redpoll (21), fieldfare (21 SW), redwing (3 SW)		
FAS(1) 90	19/11/2007	нн	1	F?		2	09:52			23			23	HH ringtail rise off Knockman Hill, soaring drift over plantation, drop into wood out of view 5-25m.		
FAS(1) 385	19/11/2007	GN	2	F	Ad.	5	16:13					45	45	2x(F)GN flew across loch and over dam and continued down valley and lost from view.		
FAS(1) 1122	20/11/2007	WS	1		Ad.	10	09:12				120		120	WS, single adult bird up off small river in valley bottom and flew NW roughly following river then headed north and flew around conifer shelter belt and lost from view.		
FAS(1) 1879	20/11/2007	WΚ	1			16	09:29				7		7	WK alarm call then rise off fast flight at 10m, drop into extensive juncus.		
FAS(1) 1778	20/11/2007	BK	1	М	Ad	15	09:43				30		30	BK(1)(M) perched on top of stone wall at N side of Garyhorn Rig. At 0943, took off, flew S, low height.		
FAS(1) 519	20/11/2007	К.	1	F	Ad.	6	09:45			55	25		80	K(F) circling.		

DefNe	Data	вто	No	Con	A.50	VP	Start	Fli	ight Heigh	t Recordi	ng Band (m)	Dur.	Notes
KET NO	Date	Code	NO.	Sex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	Notes
FAS(1) 1880	20/11/2007	BK	4	М		16	09:48			15			15	BKx4(M) flight over / out of thicket plantation and rush pasture 10-20m.
FAS(1) 520	20/11/2007	К.	1	F	Ad.	6	10:45			51	11		62	K(F) circling and hunting
FAS(1) 1780	20/11/2007	К.	1	М		15	10:47				30		30	K.(1) - (M), S of VP along pylon ride, landed on wires, lo
FAS(1) 798	20/11/2007	КТ	1			8	13:50			12			12	KT rising spiral then direct flight at 20-30
FAS(1) 799	20/11/2007	КТ	4			8	14:04		10	9			19	KTx4 casual drift and soar 20-80m possibly swung around Waterside Hill of
FAS(1) 1232	20/11/2007	К.	1			11	15:11				15		15	K.(1) - W-E over road just N of VP, low height
FAS(1) 803	20/11/2007	GN	1	М		8	15:24			23			23	GN(M) direct flight 15-30m.
FAS(1) 2257	21/11/2007	T.	1	М	Ad	21	13:06				10		10	Teal 10 seconds all low
FAS(1) 627	22/11/2007	GD	1	F, M		7	10:53			18			18	GD (redhead, (F) or 1st winter (M)), all med height
FAS(1) 1416	22/11/2007	К.	1		Ad	12	14:40			15			15	K (M) circling 15 seconds all medium
FAS(1) 1417	22/11/2007	К.	1		Ad	12	14:51			12			12	K (M) (probably same) flying and hovering all medium
FAS(1) 281	25/11/2007	GJ	8			4	09:19			30			30	8 greylag geese NE
FAS(1) 283	25/11/2007	нн	1	м	Ad	4	10:14			60	180		240	Ad (M) hen harrier, Barscobe Hill
FAS(1) 284	25/11/2007	GJ	2			4	11:42		120				120	2 greylags geese NE towards Loch Invar
FAS(1) 526	25/11/2007	К.	1			6	14:28				160		160	kestrel number 3 hunting SW of VP
FAS(1) 2261	25/11/2007	WS	1		Juv	21	14:40				12		12	Whooper swan 12 seconds all low circling and lan
FAS(1) 1562	27/11/2007	GN	2	M, F	Ad	13	11:34				4		4	GN (2)4 seconds all low (M/F)
FAS(1) 1566	27/11/2007	К.	1	M	Ad	13	14:03					5	5	K ((M)) 5 seconds all very low
FAS(1) 1125	28/11/2007	к.	1	м		10	09:31				8		8	K low 8 seconds ((M)).
FAS(1) 163	28/11/2007	кт	1			3	11:02			150			150	KT into view from summit of knockman hill heading downhill. Continues slowly down flanks until lost fro
FAS(1) 1127	28/11/2007	GD	2	M.F		10	11:11			8	3		11	GD (2 (M)(M) and (F)). 3 seconds low increasing fo
FAS(1) 36	28/11/2007	_	3+1	,		1	12:21			30			30	RNx3 (assume same birds as (4)) and K.(F) (assume (1) (2)) in air 20-30m. K. same are as (1) and (2) working on margin of margin.
FAS(1) 1237	28/11/2007	GN	2	F	Ad	11	14:22				30		30	2 x GN flew from out of view on loch below VP and flew low up loch an
FAS(1) 32	28/11/2007	К.	1	F		1	14:22			87			87	K.(F) hover and soar at 20m - drop to grou
FAS(1) 33	28/11/2007	К.	1	F		1	15:04			34			34	K.(F) hover and soar at 20-30m. Occasional drop to 10m. Move out of view fro
FAS(1) 37	28/11/2007	К.	1	F		1	15:33			21			21	K.(F) ((1) etc) back over area of M25 20-30m turn and drift down burn glen at 10
FAS(1) 1884	29/11/2007	вк	2	м	Ad	16	10:58					15	15	2 x BK flew from south of VP towards brockloch craig area and lost on w
FAS(1) 1781	29/11/2007	PG	180+			15	11:19	186					186	Party (3 skeins) of 180+ PG high direct flight 500m+ N-SSW over Sh
FAS(1) 1782	29/11/2007	К.	1	м		15	12:08			19			19	K.(M) out shelter block into hover and soar flight at 10-20m. swi
FAS(1) 805	29/11/2007	К.	3	M/F	Ad.	8	13:04			7			7	K 2 (M)(M) and (F), all medium height 7 sec
FAS(1) 2163	29/11/2007	к.	1	M	Ad	20	13:05				45		45	(M) K hunting over rough ground in front of VP. flew west and lost behind sma
FAS(1) 392	29/11/2007	к.	1	F		5	13:54			34			34	K.(F) hover and soar over rough grazing and plantation edge at 10
FAS(1) 2168	29/11/2007	ĸ	1	M	hΑ	20	14.26				195		195	(M) K hunting over rough ground in front of V
FAS(1) 286	29/11/2007	к.	1		710	4	14.45			7	133		7	K direct flight at 20m then dron turn out of
FAS(1) 393	29/11/2007	к.	1	F		5	14.46			23			23	K (E) hover and soar over same area 15-20
FAS(1) 39/	29/11/2007	w/s	2			5	14.40			1/	7		23	WSv2 direct flight in at 15m dronning to 10m circling over 10
FAS(1) 304	29/11/2007	ĸ	1	F		5	15.00			2/17	80		327	K (E) hover and soar over acid grassland 5.2
FAS(1) 307	29/11/2007	K.	1	-		5	16.17			12	00		12	K rising soar and hover 10-20m. Note large party of EE and
EAS(1) 1672	20/11/2007	K.	1			14	10.17			20	7		27	K. Holing sour and sour 10 20m drop to ground to
EAS(1) 1674	20/11/2007	K.	1			14	10.20			24			24	K. hover and soar 10-50m drop to ground to
EAS(1) 1677	20/11/2007	K.	1			14	12:40			24	20		24	K haver and soar at 20m land in mature
FAS(1) 1077	20/11/2007	<u>к.</u>	1			14	12.49				660		660	K. Hover and soar over plantations or and on and off OHL PTXA circle and coar over plantations or
FAS(1) 1000	01/12/2007		4+2			14	12.49			21	000		21	462 and K.X2 in all same time. K.X2 hover and solar and on and on Ohc. 62X4 circle and solar over plantations an
FAS(1) 95	01/12/2007		1+1			2	10.52			52			52	BZTK. Uniting Soar out of plantation and over him ground at 13-2010
FAS(1) 38	01/12/2007	K.					12:18			23			23	K.(F) nover and soar over rougn pasture M25 gie
FAS(1) 39	01/12/2007	к. v	1				12:33			20			20	K, (r) (assume same as (1)) over bracken grassland and thicke
FAS(1) 104	02/12/2007	K.				3	10:04			21	20		2/	K. novers and soars along valley plantation, rough margins drop out
FAS(1) 165	02/12/2007	К. К				3	10:04				26		26	K. soars onto telephone wires - 10m. Assume same bird seen over this period with bi
FAS(1) 166	02/12/2007	К. И				3	10:22			20	9		9	
FAS(1) 527	02/12/2007	К.		IVI		6	11:00			20	/		2/	K.(IVI) direct gliding flight settle on roadside tree 15-5m. Flight off



May	have	come	off	young	Larch.	

ow height 1047.

m.

or rose off mixed policy woodland.

t 1511

(18 seconds)

n for 12 seconds

nding again

om view in valley obscured by milnmark hill, 10 x 15 seconds med

or 8 seconds

of thicket plantation / M25 margin. RN over clear fell and mature plantation / hill

nd over bridge and lost from view und. om thicket margins to mature plantation. Om, turning back over thicket plantation. oodland edge, 1 x 15 sec very low halloch Burn and Big Meaul. ung and drop out of view. conds all hillocks in front of VP, 3 x 15 sec low -20m, drift ESE out of view. /P again view. 0m. och, landing at N end. 20m. SG rise behind lodge. wice. -20m SP. nd wayleave rough grazings at 20-40m. At least 1BZ comes down on OHL. , K. bank away over hill - NW. en at 20m. et plantation. 10-20m. of view into margins 10-20m. rief flight and back roost / prey watch of wires. toward Mackilston 10-20m.

PofNo	Data	вто	No	Sov	A.c.o.	VP	Start	FI	light Heigh	nt Recordi	ng Band ((m)	Dur.	Notos
Keino	Date	Code	NO.	Sex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	notes
FAS(1) 528	02/12/2007	К.	2			6	11:38			41			41	K.x2 hover and soar at 10-20m, foraging over semi-improved p
FAS(1) 531	02/12/2007	нн	1	F?		6	13:41			6	10		16	HH ringtail quartering flight at 5-15m.
FAS(1) 629	03/12/2007	WS	5			7	08:37				45		45	WS - 2ad. + 3 juvs flying at tree height dropping into loc
FAS(1) 1128	03/12/2007	GN	3	2F, 1M	Ad	10	08:47				60		60	3xGN up off river below VP and flew low W up valley and continued around shel
FAS(1) 1129	03/12/2007	нн	1	М	Ad	10	08:51				195		195	(M)HH into view near Butterhole Bridge in valley bottom and past Marskaig plantation and contin
FAS(1) 633	03/12/2007	КТ	1			7	10:51			60	15		75	KT 1 flying slowly - gliding across open area dropping to ground,
FAS(1) 1025	03/12/2007	PE	1	м	Ad	9	13:06			45	75	15	135	(M) PE circling over ridge above quarry behind VP then swooped very low over road and circled up and flew ba
FAS(1) 2263	04/12/2007	К.	1			21	12:14			23			23	K. hover and soar at 15-20m over willow carr flats, drop to g
FAS(1) 2266	04/12/2007	WS	12			21	13:38				19		19	WSx12 (party of 7 and party of 5 - assume 2 families) flight down loch at 5-10m. Land
FAS(1) 43	04/12/2007	К.	1			1	14:16				120		120	K. hunting in cleared forest area, crossed back into planta
FAS(1) 44	04/12/2007	к	2			1	15:10				30		30	K. flying fast through area (wind assisted)
FAS(1) 398	05/12/2007	GN	2	F	Ad	5	09:17					45	45	2 x (F) GNs flew into loch from south of VP came in low over dam and landed to
FAS(1) 2084	05/12/2007	К.	1			19	10:06		105				105	K.(1) - distant hovering bird towards Glenmuck Farm SE o
FAS(1) 2085	05/12/2007	К.	1			19	10:29				15		15	K.(1) - perched on pine at plantation on W side of A713 SE of V
FAS(1) 2086	05/12/2007	К.	1			19	11:01			30			30	K.(1) by A713 NW of VP, E-W then E.
FAS(1) 1953	05/12/2007	К.	1			17	11:56		1		45		45	K.(1) - hovering / hunting low to ground at clear fell E of VP, appea
FAS(1) 1954	05/12/2007	К.	1			17	12:38			30	60		90	K.(1) - hovering / hunting again at clear fell E of VP
FAS(1) 168	05/12/2007	PE	1	м	Ad	3	13:32		45				45	(M) PE dashed across valley in strong direct flight from over plantation, over Garple burn, across road, below VP an
FAS(1) 1995	06/12/2007	К.	1	м	Ad	18	11:00				135		135	(M) K. hunting over rough ground to soar up VP, crossed road and lost around trees
FAS(1) 1955	06/12/2007	К.	1			17	12:07				165		165	(F) K. hunting along road towards VP. Then out over rough ground to eat of VP continued down to waterhe
FAS(1) 812	08/12/2007	WS	5			8	12:16			120	15		135	WS - moved from shore area to open water, airborne following river valle
FAS(1) 813	08/12/2007	К.	1			8	12:47			75			75	K. 1 flying fast through area, disappearing near power sta
FAS(1) 288	10/12/2007	К.	1			4	10:10				14		14	K. direct flight at 5-10m.
FAS(1) 1683	10/12/2007	К.	1	F		14	12:46		1	51			51	K(F) hover and glide at 20m.
FAS(1) 1685	10/12/2007	GD	1	м		14	13:20		1	5	4		9	GD(M) flight onto water at 20m - ground.
FAS(1) 1687	10/12/2007	PE	1	м		14	13:51			21			21	PE(M) direct flight at 30m. Disturbs BZ on pole which lifts and drops b
FAS(1) 1688	10/12/2007	SN	3			14	15:04			12			12	SNx3 rise and direct chasing flight at 15-20m.
FAS(1) 532	12/12/2007	нн	1	м	Juv	6	10:09		1		19		19	HH juv(M) quartering flight and land on bracken slope briefly
FAS(1) 533	12/12/2007	нн	1	м	Juv	6	10:10				12		12	HH juv(M) (not (1)) flight in and over bracken slope in quartering
FAS(1) 45	12/12/2007	К.				1	10:15			180			180	K. circling around open area and plantation edge, hovering at times - no food
FAS(1) 46	12/12/2007	К.				1	11:06		1	60			60	K. Flying through open area, crossing into plantation.
FAS(1) 1571	12/12/2007	PE	1			13	12:51				45		45	PE flying fast and low in open area to plantation.
FAS(1) 1132	12/12/2007	К.	1	м		10	13:01				15		15	K. took off from telegraph pole just NE of VP. (M)
FAS(1) 1574	12/12/2007	К.	1			13	14:26				90		90	K. flying low from plantation across river then back lost to view
FAS(1) 1133	12/12/2007	К.	1			10	14:27			60	30		90	K. hovering N of Butterhole Bridge N of VP
FAS(1) 1576	12/12/2007	GD	1	м		13	15:31				45		45	GD flying down river course.
FAS(1) 820	13/12/2007	GD	1	PR		8	09:51			14			14	GD(M) rising direct flight off loch climbing to 50m - SE
FAS(1) 171	13/12/2007	К.	1			3	10:11				75		75	K. 1 flying low and hovering, caught small rodent and moved away
FAS(1) 822	13/12/2007	L.	1			8	10:16				6		6	L. flight in to small rushy promontory at 3m. Assume off bankside roost near for
FAS(1) 173	13/12/2007	КТ	1			3	10:50		255				255	KT up high wheeling and gliding or hanging in wind lost to
FAS(1) 1243	13/12/2007	К.	1			11	10:57			14			14	K. hover and soar at 15-20m.
FAS(1) 174	13/12/2007	КТ	1			3	11:03		15	15	15		45	KT 1 from high up to ground (obscured by ground contou
FAS(1) 1245	13/12/2007	К.	1	м		11	12:04			18			18	K.(M) hover and soar over fields by VP 10-15m (assume same b
FAS(1) 1886	13/12/2007	ВК	3	м		16	15:40			15	15		30	BK(3) all (M)(M), picked up WNW of VP flying SW-NE
FAS(1) 2269	14/12/2007	Т.	5	4M, 1F		21	10:30				30		30	T.(5) - 4(M)(M), (F), over Bogton Loch, landed.
FAS(1) 2087	14/12/2007	К.	1			19	13:18			135	90		225	K hovering / hunting bird over clear fell just N of VP, medium - low heights, dropped down on to ground, 1318-1322
FAS(1) 2169	17/12/2007	WS	4		Ad.	20	09:51		30	<15	<15		45	WS(4) - over N end of Bogton Loch, moved off NW, appeared to be landing, H-
FAS(1) 2171	17/12/2007	WS	2		Ad.	20	10:22		1	30			30	WS(2) - in flight along R. Doon at N end of Bogton Loch, flew N-S over B741 brid
FAS(1) 2172	17/12/2007	WN	8			20	10:33		1		30		30	WN(8) - in flight at Bogton Loch, landed, 1033 low heigh

ed pastures.
loch.
shelter belt and lost from view.
ntinued up hill and lost over ridge, hunting low
nd, lost to view
w back to ridge and continued over ridge and lost from view.
to ground.
anding on water at sheltered S end.
ntation.
d to north of VP, 3 x 15 v. low
SE of VP
of VP, flew E
opeared to land.
VP
P and on towards Milnmark farm and lost in valley 3 x 15 sec high
ees at lamford farm, 9 x 15 sec low
rifed and lost from view in valley bottom 11 x 15 set Low
station
Station.
os back to tree roost.
iefly 3-5m.
ring flight 5m.
ood catch, flying out of view.
on.
۱.
1)
view at trees.
- SE.
way to consume.
r former hotel at S end of loch.
t to view.
ntours)
ne bird as (2))
NE
322, hovering over same area throughout, v. little distance covered.
g, H-M-L heights 0951-0952.
bridge, medium height 1022.
eight.

D (N)	Data	вто				VP	Start	Fli	ght Height	Recordin	ng Band (r	m)	Dur.	
Ket No	Date	Code	NO.	Sex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	Notes
FAS(1) 2174	17/12/2007	WS	6			20	10:58		30	45	15		90	WS(6) - took off from Bogton Loch, flew off NW towards Bogton Moss, L-M-H heights 1058-1059.
FAS(1) 1787	17/12/2007	SN	1			15	13:26				30		30	SN(1) - W of VP along A713, landed on N side of road, low height.
FAS(1) 1788	17/12/2007	К.	1			15	13:40		105				105	K.(1) - by roadside plantations S of VP
FAS(1) 1789	17/12/2007	WК	2			15	14:04				15		15	WK(2) - 2 birds flew SW-NE over VP, appeared to be landing near summit of hill
FAS(1) 1790	17/12/2007	нн	1	м		15	14:10				15		15	HH(1) (M) - briefly at summit of hill behind (N) of VP, moving N
FAS(1) 1791	17/12/2007	К.	1	F		15	15:20		150	90	30		270	K.(1)(F) - hunting / hovering bird S of A713 S of VP. Also GD pr in Carsphairn Lane S of VP.
FAS(1) 1689	18/12/2007	ML	1	F		14			15	15	15		45	ML(1) - (F), initially E-S of VP flew N typical direct flight / fast flight, lost low to ground N of VP
FAS(1) 636	18/12/2007	кт	1			7	09:55			11			11	KT direct flight at 15-20m
FAS(1) 638	18/12/2007	GJ	23			7	10:29		20	9			29	Two parties GJ 7 & 16. flight in at 50-70m respectively, circling to land on Earlstoun Loch. May have come from Kendoon.
FAS(1) 1997	18/12/2007	ML	1	F		18	11:13		15	15			30	ML(1) - (F). N of VP, along pylon line on E side of VO. landed on top of pylon
														ML(1) - (F), bird from above took off from pylon, 1118, flew N but dropped down low very quickly + lost to view. Same bird in both sightings, 3 birds were at high - medium - low height in same 15sec.
FAS(1) 1998	18/12/2007	ML	1	F		18	11:18		<15	<15	<15		15	interval, at high height at the start of the 15sec interval.
FAS(1) 1577	19/12/2007	GD	1	F		13				15	30		45	GD(1) - (F) along Water of Deugh, initially just by VP, low-medium heights
FAS(1) 1579	19/12/2007	К.	1			13				30			30	K.(1) SE of VP, landed on top of tree, vocal, medium height.
FAS(1) 1580	19/12/2007	SN	1			13					15		15	SN(1) - one seen briefly in flight S of VP, landed
FAS(1) 1581	19/12/2007	GD	1	F		13					30		30	GD(1) - (F) NE-SW along Water of Deugh low height.
FAS(1) 48	20/12/2007	К.	1			1	12:45			23			23	K. hovers and soars at 25-15m.
FAS(1) 536	20/12/2007	К.	1			6	13:59			15	15		30	K.(1) - E of VP N-S, landed at isolated group of trees SE of VP low-medium heights 1359
FAS(1) 50	20/12/2007	К.	2			1	14:29		27				27	K.x2 direct flight at 80-100m respectively along valley out of view over plantation.
FAS(1) 538	20/12/2007	К.	1			6	15:28		90	30	<15		120	K.(1) - hunting / hovering just E of VP high - medium - low heights, dropped down on to ground 1528 - 1530
FAS(1) 539	20/12/2007	нн	1	F?	Imm?	6	15:57			15	30		45	HH(1) - ringtail. S of VP flew NE-SW over road by junction then continued SE over flat, mostly long grass area, low to ground in typical harrier flight, 1557 medium - low heights.
FAS(1) 1961	21/12/2007	GL	200+			17	10:48	214					214	Several small skeins of GL at 500m, estimate 280-300 total to the S of Carinmore of Carsphairn / Willeanna heading roughly -SSW.
FAS(1) 2088	21/12/2007	K.	1	м		19	12:10				6		6	Note: On arrival, K (M) rise off roadside fence and flight up to plantation 1-10m - N.
	==, ==, =00,		-		Ad +1st									
FAS(1) 2274	25/12/2007	WN	4	M	winter.	21	13:54				15		15	WN(4) - all ad+ 1st(M)(M), in flight over Bogton Loch, landed 1354. low heights.
FAS(1) 2278	25/12/2007	Т.	3			21	15:17				15		15	T.(3) - 2(M)(M), (F), over Bogton Loch, landed 1517, low heights.
FAS(1) 2279	25/12/2007	WS	3		Ad.	21	15:37			15	45		60	WS(3) - all adults, flew from N end of Bogton Loch to S end, landed 1537 L-M heights.
FAS(1) 2281	25/12/2007	MS	3		Ad.	21	16:05				15		15	MS(3) - all adults in flight over Bogton Loch, landed, low heights 1605.
FAS(1) 52	27/12/2007	К.	1	м		1	16:10			7			7	K.(M) flew across all at med height
FAS(1) 102	28/12/2007	К.	1	м		2	09:09			24			24	K.(M) flew over forest and out on to open ground where it hovered (without dropping) then continued. All med height for total of 24 seconds including the hover.
FAS(1) 103	28/12/2007	нн	1	F	Ad	2	11:02			7			7	HH (definitely ad (F)) ringtail suddenly appeared floated across road total of 7secs all at med height.
FAS(1) 1140	28/12/2007	RF	1			10	12:02		200	427			627	RF stalling soar and glide at 15-10m, then 60-30m. Pick up light plumage areas against Conifers. Note Legs kept down throughout.
FAS(1) 181	29/12/2007	нн	1	F?		3	10:09			5	14		19	HH ringtail fast glide at 10-3m out of view into woodland cleuch - SW. 2nd show of bird at 15m - SW.
FAS(1) 182	29/12/2007	К.	1	м		3	10:34				7		7	K.(M) flight in and land on telephone line. Drop off line to ground on prey 10m - ground. Rise again and back on pole by VP on Milnmark Hill.
FAS(1) 184	29/12/2007	К.	1	F		3	11:04			29			29	K. (F) drift in and hover soar foraging flight at 10-20m. Note: Continues to forage and sit, agitated, assume partner of (2).
FAS(1) 187	29/12/2007	ML	1	F		3	11:28			14			14	ML(F) stoop flushing 30-10m along field margin / wood edge.
FAS(1) 188	29/12/2007	К.	1	F		3	11:41		27				27	K.(F) foraging soars and hover at 30-40m.
FAS(1) 189	29/12/2007		1+1			3	12:01			48			48	BZ assume same as (3) and (6), harried by K.(M), assume (2), this pair hanging around pole line on Milnmark Hill 10-30m.
FAS(1) 191	29/12/2007	КТ				3	12:17		14				14	KT drifts over hill face at 30-50m.
FAS(1) 1692	29/12/2007	К.	1	F		14	13:45			38			38	K.(F) hover and soar foraging flight at 20-30m. Landing on top of pylon before off to resume hover and soar hunting.
FAS(1) 2180	29/12/2007	К.	1	F	Ad	20	13:50			90			90	K. 90 seconds all med
FAS(1) 1696	29/12/2007	К.	1			14	15:08			52			52	K. hover and soar at 10-15m.
FAS(1) 639	30/12/2007	К.	1			7	08:24			15	30		45	K. just E of VP, landed on telegraph wires
FAS(1) 642	30/12/2007	КТ	1			7	09:05		60	30			90	KT(1) - wing -tagged bird, soaring / circling by Barchock Wood S+E of VP, eventually moved off E and appeared to be coming down SE side of Earlstoun Wood
FAS(1) 645	30/12/2007	К.	1			7	11:03			15			15	K E of VP, landed on pylon
FAS(1) 1794	30/12/2007	К.	1	F	Ad	15	11:18			12			12	K. Ad (F) mid height
FAS(1) 1251	30/12/2007	К.	1	F		11	14:41			<15	<15		0	K.(1) - (F), just S of VP, landed on telegraph pole.
FAS(1) 1255	30/12/2007	К.	1			11	15:26				15		15	K. (1) - S of VP, W-E
FAS(1) 2282	01/01/2008	К.	1			21	13:23			43			43	K. hover and soar at 15-20m along river margins and scrub mire.
FAS(1) 2284	01/01/2008	MS	2	PR		21	14:46			19			19	MS pair direct flight down loch at 10-15m.
FAS(1) 194	02/01/2008	К.	1	м		3	10:32			87			87	K.(M) drift off line foraging hover at 15m before return to perch on line - Note: brief foraging flights off the line throughout the VP.
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		вто				VP	Start	Fİ	ight Heigh	t Recording Band (m)			Dur.	
Ref No	Date	Code	No.	Sex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	Notes
FAS(1) 195	02/01/2008	К.	1	м		3	10:54				37		37	K.(M) hover and soar 10-20m, miss prey kill by VP.
FAS(1) 197	02/01/2008	кт	1			3	11:42			509			509	KT soaring glides and turns at 15-30m over improved pastures N-S, eventually
FAS(1) 198	02/01/2008	К.	1	F		3	11:43				14		14	K.(F) fast flight - N under 10m.
FAS(1) 54	02/01/2008	К.	1			1	13:08		40	23			63	K. hover and soar 30-40m, drop to 20m over restock planta
FAS(1) 2090	07/01/2008	К.	1	1		19	11:46				30		30	K.(1) - over clear fell area N of A713, N of VP 1146 low hei
FAS(1) 402	07/01/2008	К.	1	F		5	12:26				38		38	K.(F) flight over loch then foraging hover along bracken grassland
FAS(1) 404	07/01/2008			1		5	13:42			8	17		25	MAx128 & 22WN flight to S end of loch at up to 10m.
FAS(1) 2186	07/01/2008	К.	1	1		20	14:52		30	15			45	K.(1) - SE-NW to N of VP, lost behind crags, H-M heights 145
FAS(1) 2187	07/01/2008	нн	1	м		20	15:42				15		15	HH(1) (M) briefly E of VP, moving ESE 1542 low height
FAS(1) 1962	08/01/2008	К.	1			17	10:43				30		30	K.(1) - E of VP, over clear fell area at forestry, low height 1
FAS(1) 646	08/01/2008	кт	1			7	11:35			11			11	KT direct flight at 15-20m into Knocknalling mature mixed policy
FAS(1) 830	09/01/2008	К.	1	м		8	11:03			12			12	K.(M) hover and soar at 20-30m, in and out of view over improve
FAS(1) 1030	11/01/2008	GJ	2	PR		9	10:39		14	2	2		18	GJ pair flight in to loch 80m-ground (water)
FAS(1) 199	11/01/2008	L. + GP				3	12:49		50	17			67	Party of GPx44 tight direct flight then swirl and drop 80-20m, E-W,
FAS(1) 2285	11/01/2008	К.	1	м		21	14:11			45			45	K.(1)-(M), SW-NE over by (to SE of) VP, landed on pylon 1411-1412
FAS(1) 2286	11/01/2008	т.	3	2M, 1F		21	14:20				15		15	T.(3) - 2(M)(M), (F), in flight over Bogton Loch, landed low heig
FAS(1) 201	11/01/2008	К.	1	м		3	14:21				7		7	K.(M) direct flight onto power cable. Move down line to disturb party of 280
FAS(1) 2287	11/01/2008	GN	5	1M, 4F	Imm.	21	14:47				15		15	GN(5) in flight on Bogton Loch, landed low heights 144
FAS(1) 203	11/01/2008	кт	1			3	15:04		159				159	KT soaring glides and spirals 30-80m.
FAS(1) 2290	11/01/2008	T.	1	М		21	15:18				45		45	T.(1) (M) over Bogton Loch, landed low height 1518-152
FAS(1) 2292	11/01/2008	К.	1			21	15:37		30				30	K.(1) - E-W over VP high height 1537-1538
FAS(1) 2293	11/01/2008	WN	16	PR		21	15:59				15		15	WN(16), MA(12) + T.(3) all took off from N end of Bogton Loch, landed again on
FAS(1) 2295	11/01/2008	т.	3	2M, 1F		21	15:59				15		15	
FAS(1) 1583	12/01/2008	GD	1	F		13	09:48				15		15	GD(1) - (F) on Water of Deugh, by VP flew SE, low heights
FAS(1) 55	12/01/2008	К.	1			1	10:16			105			105	K. 1 from plantation edge occasionally hovering.
FAS(1) 406	12/01/2008	К.	1			5	15:20				60		60	K. flying along woodland edge.
FAS(1) 1590	13/01/2008	К.	1			13	10:35				75		75	K. 1 flying fast, also buffeted by gusts, towards plantation
FAS(1) 207	13/01/2008	кт	4			3	14:45				600	360	960	<4 KT up hunting hillside above VP4 mainly flying low, dropping to the ground regularly (to field?) some interaction with the second se
FAS(1) 1704	14/01/2008	WК	1			14	09:19				15	15	30	WK low along edge of birch wood.
FAS(1) 2297	14/01/2008	GN	1	м	Ad.	21	09:32				30		30	GN(M) across loch heading N.
FAS(1) 2298	14/01/2008	GN	1	м	Ad.	21	10:38			30			30	GN (M) again along similar line to (1).
FAS(1) 1705	14/01/2008	GJ	12			14	10:39		180				180	12 GJ flying S↓
FAS(1) 2300	14/01/2008	GN	1	F	Ad.	21	11:44			30			30	GN(F) along line (2).
FAS(1) 292	14/01/2008	К.	1			4	13:40				105		105	K.x1 hovering and gliding.
FAS(1) 294	14/01/2008	кт	1			4	14:12				75		75	KTx1 gliding across fields.
FAS(1) 295	14/01/2008	кт	2			4	14:23				30		30	2xKT over tree tops to ground feeding, lost to view.
FAS(1) 296	14/01/2008	К.	1			4	14:44				60		60	K.x1 flying fast to small woodland
FAS(1) 56	14/01/2008	К.	1			1	14:57		30	30			60	K. (1) - hunting / hovering S of A702 just NE of VP, flew into forestry of
FAS(1) 298	14/01/2008	кт	1	1		4	15:03				45		45	KT from over tree tops, gliding down to fields.
FAS(1) 300	15/01/2008	кт	3			4				30	135		165	3xKT over hill during a bright spell to N of VP and all flew S across road and continued towards plantation
FAS(1) 1795	15/01/2008	К.	1	1		15	08:50				135		135	K. 1 gliding and hovering down road side to trees.
FAS(1) 1799	15/01/2008	К.	1	1		15	11:31				30		30	1 K. flying from plantation perched on pylon.
FAS(1) 1593	15/01/2008	нн	1	м	Ad.	13	15:27			30	30	30	90	HH(M) in from SE and along up valley to SW of me. 3 C. over h
FAS(1) 2008	15/01/2008	нн	1	F	Ad.	18	15:44				30	15	45	(F)HH low over mast
FAS(1) 2009	15/01/2008	нн	1	м	Ad.	18	15:45				45	15	60	(M) HH
FAS(1) 1430	15/01/2008	К.	1			12	15:50				150		150	Kx1 flying and hovering back and forward in open area
FAS(1) 2010	15/01/2008	нн	1	м	Ad.	18	15:53			120	60		180	(M)HH circling moor above loch Muck for 3 mins. Just one (M) HH

VP.
tually moving - W out of view.
plantation.
w height,
ssland at 5-10m.
10m.
5 1452-1453
eight.
ght 1043
policy woodland.
proved pastures.
, E-W, out of view.
-1412 med height
heights. 1420
f 28GO also on wires 5-10m.
s 1447
8-1519
in on the lash law heights 1550
ghts 0948
ng.
ntation.
on with K., BZ and C. c.1445-1509 when heavy showers started again.
iew.
try on N side of road.
S.
auon and gained neight and over trees and lost from view.
l. Nor heading E
ver neaung c.
area
A HH - 2 sightings
Ref No

Nel NO
FAS(1) 301
FAS(1) 1142
FAS(1) 1143
FAS(1) 1145
FAS(1) 1893
FAS(1) 1894
FAS(1) 1896
FAS(1) 1262
FAS(1) 304
FAS(1) 1265
FAS(1) 2191
FAS(1) 654
FAS(1) 2305
FAS(1) 1803
FAS(1) 655
FAS(1) 656
FAS(1) 658
FΔS(1) 1152
FAS(1) 2307
173(1) 2307
FAS(1) 1596
FAS(1) 209
FAS(1) 210
FAS(1) 213
FAS(1) 214
FAS(1) 408
FAS(1) 409
FAS(1) 410
FAS(1) 1433
FAS(1) 1434
FAS(1) 1435
FAS(1) 108
FAS(1) 1039
FAS(1) 544
FAS(1) 2311
FAS(1) 2312
FAS(1) 2314
FAS(1) 549
FAS(1) 1603
FAS(1) 553
FAS(1) 1605
FAS(1) 1043
FAS(1) 308
FAS(1) 1044
FAS(1) 309
FAS(1) 2194
FAS(1) 1441
FAS(1) 1278
FAS(1) 1284



ushy knolls and bracken (vole hunt).

t 100m+. No. of birds not known.

, out of Cleuch Glen.

ow height 1122, flight fast and direct

hen started bathing in loch then perched on loch edge, low height 1130-1132

-1139, gained a little height L-M heights.

improved rough grazings 10-15m

und buildings and Trolane.

over rush pasture area 20-30m hover and soar.

nded on wires.

izing in field.

1628, L-M heights.

es almost immediately. (area walked over highlighted green on map)

lost again behind trees.

E continued flying over trees and up to NW until lost from view.

landed out of sight in dip.

d in adjacent field to the E.

ise and hover soar along river margins - NW and up to sheep and deer enclosure -30m.

W-E

off flew and flew W

ff and flew W.

S end of Loch, M-L heights 1458 1500

ew N, L height, 1512

1510-1515 period bird, H-M-L heights 1609-1610

plantation.

ave in hover soar quickly drop to ground. Back along same line in wayleave and once more.

drop to ground.

ing across area.

I until lost behind flank of Mackilston Hill.

ut across moor and over hill and lost from view.

n to ground, M-L heights 1258-1259

Pool N of A713, 1330-1332 H-M-L heights

ded 1412

ng NW.

along roadside and lost behind trees.

•

l lost from view as it dropped low into valley.

ded, feeding.

dland edge.

s at mid elevation.

evation from 1040

		вто				VP	Start	Fli	ght Heigh	t Recordir	ng Band (I	m)	Dur.	
Ref No	Date	Code	No.	Sex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	Notes
FAS(1) 1286	25/01/2008	К.	1	м	Ad.	11	11:08			90			90	K.(M) hovering to N.
FAS(1) 1289	25/01/2008	К.	1	М	Ad.	11	11:40			45	15	15	75	K.(M) hovering to N then drifted S and passed close by.
FAS(1) 1292	25/01/2008	К.	1	М	Ad.	11	12:18			30			30	K.(M) again hovering to N at (1) (at W end of previous line (1))
FAS(1) 1293	25/01/2008	К.	1	м	Ad.	11	12:32			90			90	K.(M) again hunting to W.
FAS(1) 1295	25/01/2008	К.	1	м	Ad.	11	13:16					15	15	K. through quickly along line (4).
FAS(1) 662	26/01/2008	кт	1			7	10:10		45	220	30		295	KT, 2nd, over VP towards Tocks Hill
FAS(1) 665	26/01/2008	кт	2			7	10:50			60	60	30	150	2 KT over Ardoch Hill, low over the hilltop, landing on fields and tussling / circling each other above hillside.
FAS(1) 666	26/01/2008	кт	1			7	10:55			230			230	1 of the KT flew off Ardoch Hill = Hannaston Hill.
FAS(1) 669	26/01/2008	кт	1			7	11:22			180	30		210	Adult KT Polharrow Bridge onto Hannayston Hill (wing tags red on RW, green on LW)
FAS(1) 671	26/01/2008	кт	1			7	12:19			45			45	Ad KT circling wood above Earlstoun Castle. 3+ BZ drifted ff Arnoch Hill over Earlstoun.
FAS(1) 672	26/01/2008	кт	1			7	12:33			30	30		60	KT flew along ridge at Arnoch Hill.
FAS(1) 674	26/01/2008	кт	1		Ad.	7	12:39		450	120	30		600	Ad KT (green on RW / green on LW) above Earlstoun, circled high, drifted very slowly to the ridge on Hannayston Hill over the VP.
FAS(1) 861	28/01/2008	кт	1		Ad.	8	10:34			60	210	120	390	KT (ad) hunting hillside between Barskeoch Mains and Hannavston Hill. 2RN and 1 BZ flew by while watching.
FAS(1) 862	28/01/2008	кт	1		Ad.	8	10:34			60	180	60	300	As above
FAS(1) 863	28/01/2008	кт	-		hA	8	10.54				30	30	60	1xKT at Barkeoch Mains 1 at 7+8 drifting low and occasionally landing on fields 2 yery distant B7
FAS(1) 865	28/01/2008	кт	1		Ad	8	11:00	120	480	360	60		1020	2 KT drifting over Farlstoun Wood, hird 11 joined by 12 over the loch, continued onto Hannayston Hill and landed in small plantation
FAS(1) 866	28/01/2008	KT KT	1		Ad.	8	11:00	60	120	500	00		180	
EAS(1) 212	28/01/2008	KT KT	1		Au.	1	11.04	00	120	12			12	KT rise out of mature alder in glop, rise and soar drift at 20.20m
FAS(1) 515	20/01/2000		1		۸d	4	11.24	60	240	15 60			260	KT (score DW, score DW) up again from plantation on Hannayston Hill, drifted over valley at Delbarrow. Earlstown Linn
FAS(1) 007	20/01/2000		1	-	Au.	0	11.57	190	240	00			100	NT (blange KW, green LW) up again from plantation on narmayston hin, united over valley at romanow - caristouri Linn
FAS(1) 808	28/01/2008	PE VT	1	F	Ad.	8	11:42	180	10	15			180	PE over hillside between knockhalling and Stroangassel Hill drifted E over valley and out of view. 5 BZ in over Stroangassel Hill.
FAS(1) 314	28/01/2008	КІ	1			4	11:43		16	15	20		31	KT soaring at 15-50m in over woodland and enclosures
FAS(1) 869	28/01/2008	KI	1			8	11:58		360	420	30		810	KT ad (yellow RW / green LW) over Earlstoun wood. Joined by 2nd ad KT (green RW / Green LW). Also 2 BZ over Earlston wood / 2 RN at Poinarrow
FAS(1) 870	28/01/2008	КТ	1		Ad.	8	12:00			180			180	As above
FAS(1) 871	28/01/2008	КТ	1			8	12:16		210	145	300	30	685	Distant KT on Stroangassel Hill, drifted towards Knocknalling, low over hillside at time.
FAS(1) 1806	28/01/2008	К.	1	M		15	12:48		<15	30			30	K.(1) - S of VP along pylons on N side A713, landed on OHL, M-H heights 1248
FAS(1) 317	28/01/2008	КТ	1			4	12:51		207				207	KT soar and wheel at 50-100m.
FAS(1) 318	28/01/2008	MS	1			4	13:01			63			63	MSx1 direct flight at 20-30m, probably off Barscobe Loch.
FAS(1) 1807	28/01/2008	К.	1	М		15	13:23			90			90	K.(1) (M) possibly / probably same bird as above, distantly SE of VP hunting / hovering at same point, moved off SE, med height 1323-1325
FAS(1) 319	28/01/2008	КТ	1			4	13:24		21				21	KT soar and glide at 30-50m.
FAS(1) 1810	28/01/2008	К.	1	М		15	14:15		75	<15	<15		90	K.(1)(M) hunting / hovering S of A713 to W of VP H-M-L heights, dropped on to ground 1415-1417
FAS(1) 1299	28/01/2008	GJ	2			11	15:19		30				30	GJ SE over Mackilston Hill
FAS(1) 415	28/01/2008	GJ	32			5	16:09			7	10		17	GJx32 land on loch, noisily lift off to resume grazing 5-20m. Continue to hear geese nearby (assume may return to roost on loch).
FAS(1) 416	28/01/2008	GD	4	3M, 1F		5	16:27			5	4		9	GDx4 (3(M), (F)) direct flight in to water 30m to ground.
FAS(1) 1711	30/01/2008	К.	1	М		14	12:57			259	50		309	K.(F) hover and soar at 5-25m along riverside flats and greens around OHL, frequently out of view. Seen again over river flats.
FAS(1) 1714	30/01/2008	К.	1	F		14	14:16				39		39	K.(M) hover and soar at 30-40m - WSW
FAS(1) 1715	30/01/2008	К.	1	F		14	14:18				9		9	K.(F) sitting on pole line, lift and drift of at 10m towards Carnavel
FAS(1) 1716	30/01/2008	К.	1			14	14:43			21			21	K.(F) hover and soar at 20-30m. Occasional drop to 10m. Move out of vie from thicket margins to mature plantation.
FAS(1) 874	01/02/2008	GJ	15			8	10:04		200	184			384	GJx15 flight in S-N, fragmented up and down flight into wind at 20-40m.
FAS(1) 877	01/02/2008		1+1			8	11:38			47			47	KT fast glide and rise over through old policy, BZ rise to meet and flight away. Both at 15-30m. Same line as (3_, KT-W, BZ - E
FAS(1) 1904	01/02/2008	К.	1	F		16	16:08			89			89	K.(F) hover and soar at 10-20m, hunting flight along OHL wayleave.
FAS(1) 2317	03/02/2008	к	1			21	09:35				255		255	1xK Hunting edge of marsh arc around to trees - landed in.
FAS(1) 2322	03/02/2008	K.	1			21	11:51				30		30	1x K flying low, above willow scrub, marsh, then through beech trees - lost to view.
FAS(1) 1047	04/02/2008	к	1			9	13:35				285		285	1x K flying low, guartering hillside, hunting, eventually into a low fast glide to trees at loch side.
FAS(1) 1050	04/02/2008	PE	2	M		9	14:46				75		75	2x PE flying across hillside, gliding into wind - occasional hanging - (lost to hill view) F + M.
FAS(1) 216	05/02/2008	К.	1	+ F M	Ad.	3	12:46			30			30	K.(M) in from N and landed on wires and dropped.
FAS(1) 556	05/02/2008	нн	1	м	Sub-Ad	6	14:48					90	90	HH(M) in from SW heading N in very low hunting flight; brown feathering on upper wing coverts and on mantle.
FAS(1) 1161	05/02/2008	нн	1	м		10	14:51					240	240	1x M HH, guartering area, then followed the burn/river then cutting back across moorland. Lost to view, rush & plantation
FAS(1) 557	05/02/2008	К	1	м	bA.	6	15:12			90			90	K.(M) in from E and hovered above me then off F.
FAS(1) 1162	05/02/2008	к	1		/10.	10	15:26				15		15	1x K gliding across hillside, landed on T/pole

Defale	Dete	вто	NI -	6	0.55	VP	Start	Fli	ight Heigh	nt Recordi	ng Band (m)	Dur.	
Ref No	Date	Code	NO.	Sex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	Notes
FAS(1) 1163	05/02/2008	К	1			10	15:40				240		240	1x K left post, staying low and hunting. Turned back, continued to hunt,
FAS(1) 1164	05/02/2008	К	1			10	16:00				165		165	1x K from post flying across area, occasional g
FAS(1) 559	05/02/2008	нн	1	М	Sub-Ad	6	16:32					45	45	HH(M) again hunting very low to W and lost to view be
FAS(1) 560	05/02/2008	нн	1	м	Sub-Ad	6	16:42					30	30	HH(M) again appeared very low briefly to N and landed at E end
FAS(1) 561	05/02/2008	нн	1	М	Sub-Ad	6	16:45				İ	15	15	HH(M) again up very low from bracken bank and landed
FAS(1) 562	05/02/2008	нн	1	м	Sub-Ad	6	17:12			270	60	30	360	Sub-adult (M)HH.
FAS(1) 563	05/02/2008	нн	1	F	Ad.	6	17:16				45		45	
FAS(1) 564	05/02/2008	нн	1	F	Ad.	6	17:19			300			300	(F)HH disturbed by BZ flying, (F)HH chased the BZ which landed on top of a telegraph pole and HH then exhibited som and calling persistently as she attacked.
FAS(1) 2197	06/02/2008	К.	1	м		20	08:26			15	15		30	K.1(M) just N of VP on telegraph wires on N side of road, land
FAS(1) 2198	06/02/2008	GN	4			20	09:46		15	15	15		45	GN4 in flight at Bogton Loch, flew off NW alor
FAS(1) 2200	06/02/2008	К.	1			20	10:31		75	270			345	K.1(M) hunting / hovering either side of the road init
FAS(1) 1965	06/02/2008	К.	1			17	13:26		105	<15	<15		120	K.1 hunting / soaring / hovering over clear fell E of VP, droppe
FAS(1) 111	06/02/2008	К.	1	м	Ad.	2	14:59			45			45	K.(M) hunting briefly to W
FAS(1) 115	06/02/2008	К.	1	м	Ad.	2	17:07			75			75	K.(M) hunting at (2) again in gloaming
FAS(1) 1311	07/02/2008	К.	1	м	Ad.	11	14:18				30	30	60	K. (M) in from E and landed on telegraph pole then c
FAS(1) 1314	07/02/2008	К.	1	м	Ad.	11	14:57				60		60	K.(M) in again along line (10) in opposite direction and briefly la
FAS(1) 1316	07/02/2008	К.	1	м	Ad.	11	15:15				60		60	Same K.(M) in from E again, hovering and landed behind small
FAS(1) 2326	07/02/2008	нн	1	м	Ad.	21	15:48				390		390	HH1(M) initially SE of VP on SW side of Bogton Loch, guartering moving NW towards VP then crossed loch
FAS(1) 2327	07/02/2008	нн	1	м	Ad.	21	16:09				360		360	HH1(M), same bird as above, over NE side of Bogton Loch, quartering, appeare
FAS(1) 684	08/02/2008	GD	1	м		7	11:33			30			30	GD (M) heading S down valley to E
FAS(1) 685	08/02/2008	к	1	м	hA	7	12.12					15	15	K (M) around low to E heading N
FAS(1) 417	08/02/2008	кт	1		/10.	5	14.15			23		13	23	KT sparing drift at 20-30m out of view into
FAS(1) 418	08/02/2008	GI	23			5	14.21			12	7		19	Gix23 calling flight at 15-20m turn and land on loch (assume feral birds (nairing un)
FAS(1) 217	09/02/2008	GD	25	F		3	1/.21			120	,		120	2 googander in flight
EAS(1) 217	09/02/2008		12			2	14.31			120	15	5	25	2 goosander in right.
EAS(1) 210	09/02/2008	6	2			2	15.00			15	15	15	15	2 greyings into in their woor vr.
EAS(1) 219	10/02/2008		1	NA	۸d	16	10:44					15	15	2 more greying geese arrive - 14 birds.
FAS(1) 1900	10/02/2008		11		Au.	10	10:44		20			45	45	(W) her harrier, low hunting high.
FAS(1) 1907	10/02/2008	G	11			16	10:58		30				30	11 greylag geese nign NE.
FAS(1) 1908	10/02/2008	GP	1			16	11:52		60				60	Golden plover flew high w.
FAS(1) 1053	11/02/2008	GP	1			9	10:57		30				30	Golden plover flies high over the VP.
FAS(1) 1911	11/02/2008	K.	1	M	Ad.	16	12:13			105			105	K.(M) hunting below me then off NW
FAS(1) 885	11/02/2008	КТ	2		Ad.	8	13:37		120	120	1380		1620	2 red kites both wing tagged yellow (RW) green (LW) over to Ardoch Hill. Foraging over the hillside or
FAS(1) 886	11/02/2008	КТ	3		Ad?	8	14:08			2400			2400	2 new red kites thermalling with 2 new buzzards over Waterside Hill. Joined by third red kite at 1
FAS(1) 887	11/02/2008	КТ	2		Ad?	8	14:34		120				120	2 red kites over Polharrow/ Knocknalling Hill (14:34). Probably s
FAS(1) 888	11/02/2008	КТ	2		Ad?	8	14:42		300	480	30		810	Pick up KT again at Knocknalling, joined by 2nd bir
FAS(1) 889	11/02/2008	КТ	1			8	15:10				150	30	180	KT leaves plantation and quarters hillside before landing on
FAS(1) 1816	11/02/2008	К.	1			15	15:12			45			45	K. in flight around wood to S pursued by
FAS(1) 890	11/02/2008	КТ	1			8	15:17				600	240	840	2nd KT over hillside in front of KT on fencepost. Circles the hillside foraging
FAS(1) 1818	11/02/2008	К.	1	F	Ad.	15	16:11			120			120	K.(F) down valley heading S and into woo
FAS(1) 1820	11/02/2008	К.	1			15	16:56			45			45	K. hunting to S and into trees
FAS(1) 1326	12/02/2008	GN	2	PR		11	08:52				15		15	GN (2) - M+F on Kendoon Loch, low heights, land
FAS(1) 1724	12/02/2008	К.	1	М	Ad.	14	11:16				75		75	K.(M) hunting to NE.
FAS(1) 1333	12/02/2008	К.	1			11	11:31				15		15	K - on wires by road S of VP, took off, flew E, lov
FAS(1) 1727	12/02/2008	К.	1			14	13:00			90			90	K. hunting to NE
FAS(1) 1616	13/02/2008	GD	1	F		13	13:02		15	30			45	GD1(F) SE-NW along Water of Deugh
FAS(1) 569	13/02/2008	нн	1	F		6	17:07					30	30	HH x1F flying VL above rushes, landed on fend
FAS(1) 570	13/02/2008	нн	1	F		6	17:11					120	120	HH F left post, flying VL and landed in bracken for a few seconds, rising, landed on roc
FAS(1) 421	14/02/2008	К	1			5	09:17				120		120	1x K from woodland edge, hunting, hovering, dropp
FAS(1) 424	14/02/2008	OC	1			5	09:37					75	75	1x CA flying from shore line VL across water to left of
														1





, eventually landed on fence post.

gliding.

hind hummocks.

of bracken covered bank.

in middle of bank.

ne territorial and annoyance behaviour flying back and forth and diving at the BZ

ded on telegraph pole

ng river

tially to E of VP

ed down on to ground

off heading W.

anding on telegraph pole.

l conifer plantation to N

n then along NE edge, moved off slowly NW, low height throughout.

ed to drop in behind bush at egde of loch

mist

) 1 buff coloured (M)) land and bath / preen.

ccasionally landing. Then drifting off high to the west at 14:04.

4:31. Red kites still thermalling at 14:38, one still at 14:48.

same pair of KT as at (7).

rd at 14:47.

n fencepost at 15:13.

2.

until 15:31 when lands in plantation.

od

ded 08:52

w height.

ce post.

ck, left, and flying VL across hillside lost to view.

ed to ground.

of Dam Road.



und.
all flights under 10m. Some groups seen to return.
15m then land.
peard but not seen returning to lochside.
and
and go back to area (1) followed by groups of 16. 4. and 2
(2)
(2)
at of view.
op. BZ(M) lift off rock and glide at 15-20m toward Mackilston trees.
ation at 10m following roadside.
nded
note 1 leucistic / 'fawn' bird and 1 hybrid
gton Loch, landed.
nongst them.
and landed
L och
ch
a post
leights.
eeding, low heights.
periods.
e A713 towards the river.
ne kite N.
ch edge.

PofNo	Data	BTO	No	Sov	4.50	VP	Start	Fli	ight Heigh	ıt Recordi	ording Band (m)		Dur.	Notor
Kel NO	Date	Code	NU.	Jex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	NULES
FAS(1) 2205	26/02/2008	к	1			20	12:35				285		285	1x K Hovering or hanging in wind. Hunting around hills
FAS(1) 2207	26/02/2008	К	1			20	13:26				180		180	1x K from small woodland travelling fast across fields to
FAS(1) 2351	28/02/2008	GN	1	F		21	08:52		30				30	GN1 - S-N along River Doon from Bogton L
FAS(1) 2352	28/02/2008	GD	1	F		21	09:34				30		30	GD1(F) at NW end of Bogton Loch, flew SE end,
FAS(1) 2353	28/02/2008	GN	5	2M, 3F		21	09:53				15		15	GN5 - 2(M)(M), 3 (F)(F), in flight at NW end of Bogtor
FAS(1) 2354	28/02/2008	OC	1			21	10:05			15	45		60	OC1 in field at SE end of Bogton Loch, flew around calling
FAS(1) 901	01/03/2008	КТ	2			8	09:40			120			120	KT 2 up over plantation on Hannayston H
FAS(1) 906	01/03/2008	КТ	1			8	10:53		60	15	15		90	KT high above Knocknalling.
FAS(1) 907	01/03/2008	К.	1			8	11:15				30	30	60	K. up hunting at arcoc's Hill
FAS(1) 908	01/03/2008	КТ	1			8	11:16			75			75	KT over Earlstoun Wood then dropping away to N
FAS(1) 909	01/03/2008	кт	1			8	11:16		90	90			180	KT over Earlstoun Wood then dropping away to N
FAS(1) 915	01/03/2008	КТ	1		Ad.	8	12:22			60			60	ad. KT (green wing tag on both wings) past
FAS(1) 2041	02/03/2008	К.	1			18	10:27				30		30	Kestrel, low south↓ towards Meadowhea
FAS(1) 1059	03/03/2008	К.	1	м	Ad.	9	10:07			30	30		60	3 BZ soaring
FAS(1) 1063	03/03/2008	GI	1			9	10:33			30			30	GI low S over Stroangassel Hill mobbed by
FAS(1) 1068	03/03/2008	К.	1	м	Ad.	9	12:41				120	30	150	(M)K. on bush below VP, then catches prey and high
FAS(1) 429	03/03/2008	К.	1			5	14:56				60		60	K. hunting far side of the loch
FAS(1) 430	03/03/2008	К.	2			5	15:26				60		60	now 3K., 2 additional birds Loch Hill
FAS(1) 431	03/03/2008	К.	1			5	15:29				30		30	K. from 1 flew across loch S of VP
FAS(1) 2119	04/03/2008	К.	1			19	13:10		15	45	30		90	K.(1) - N of A713. ESE of VP. hovering / hunting then crossed A713 and la
FAS(1) 1345	05/03/2008	К.	1			11	13:12				135		135	1xK. Hovering and flying along loch shore / trees -
FAS(1) 1347	05/03/2008	K.	1			11	13:56				180		180	1xK. From plantation edge, hunting along edge
FAS(1) 1353	05/03/2008	K.	1			11	15:25				240		240	1xK. Elving low along roadside, occasional ho
FAS(1) 709	06/03/2008	кт	-	м		7	09:05		60	75	465		600	1xKT flying low and slow (just above OHI beight) circling then moving over tree tons, gaini
FAS(1) 710	06/03/2008	кт	2			7	09.22		375	,,,	105		375	2xKT hjing lott did slott, (just debite one height) enting dien hioting over diet ebps, gain
FAS(1) 578	06/03/2008	ĸ	- 1			6	09:29		60	75			135	K.(1) - hovering / hunting bird in front of forestry a
FΔS(1) 713	06/03/2008	к.	1			7	10.00		600	,,,			600	1x KT slowly gliding occasional circling or hanging in w
FAS(1) 715	06/03/2008	CU	5			7	10:00		240				240	5xCll fiving high suddenly changing course then dronn
FAS(1) 716	06/03/2008	00	1			7	10.46		2.0	180	30		210	1xOC fly through middle of area. dropped
FΔS(1) 1740	06/03/2008	00	2			14	14.23			30	45		75	OC(2) - by Water of Deugh N of VP flew E along river then
FAS(1) 2213	11/03/2008		4			20	14.25			30	45		/5	OC(2) by watch of Decign 1 of V1, new 2 along river then
FAS(1) 2210	11/03/2008	GN	16			20	08.05				30		30	GN(16) - in flight over Bogton Loch from river at N and
FAS(1) 1639	11/03/2008	кт	10		Juv.	13	12:38		45	165	15		225	KT(1) juv, wing-tagged bird, pale green tag on left wing, purple tag on right wing, initially flying NE-SW towards VP jus
EAS(1) 1640	11/03/2008	кт	1		luv	13	12.47		15	15	30		90	KT(1) inv - same bird as above, circling over / by house at start of track to Furmiston Farm
FΔS(1) 237	12/03/2008		1		500.	2	14.17		30	30	50		60	CII(1) - N of VP yocal F-W then NNE high-med
FAS(1) 239	12/03/2008	ĸ	1			3	15:05		50	50	45		45	K (1) - SE - NW over A702 just to NE of VP moved off
FAS(1) 583	12/03/2008	нн	1	E.5	Imm?	6	17.10			15	45		60	HH(1) - ringtail N-S towards low lying marshy area WSW of VP seen during heavy hail shower dror
FAS(1) 585	12/03/2008	нн	1	F2	Imm?	6	17.10			15	30		45	HH(1) - ringtall, N=3 towards low lying marshy area wow of v1, seen during neavy han shower, diop
FAS(1) 586	12/03/2008	нн	1	M		6	18.07			15	45		45	HH(1) - (M) just E of VP moving S-N at one point over the road lost over hr
EAS(1) 64	15/02/2008	ĸ	1	101		1	10.07				190		190	1xK Elving from plantation to open area hunting bevoring
EAS(1) 66	15/03/2008	к. к	1				12:26				60		60	
FAS(1) 00	15/03/2008	к. Сі	-				12:30		210		60		210	As above
FAS(1) 119	15/05/2008		1			2	14.00		210		10		10	CLI flaw low over rough ground colling egress low and
FAS(1) 2358	15/03/2008		1			21	14:15				10	10	10	2 OC law over rough ground calling across low and
FAS(1) 2360	15/03/2008		2			21	10:05					10	10	2 UC low up locn and joined birds already presen
FAS(1) 2361	15/03/2008		1			21	16:31			20	E40	10	10	CU flew up loch and down river
FAS(1) 1183	16/03/2008	К. 	1			10	09:26			30	510		540	1xK. Flying or hovering in wind occasional dropping
FAS(1) 1474	16/03/2008	К.	1			12	12:35				240		240	K.x1 from edge of woodland, flying and hovering through are
FAS(1) 2124	16/03/2008	К.	1	F		19	13:53			20			20	(F)K. over VP and over ridge
FAS(1) 1481	16/03/2008	PE	1			12	15:00	180	30	45			255	1xPE above plantation, circled gaining height V



de, lost to view.
woodland edge.
boch
landed.
Loch, landed.
then landed again
11
Todsmill.
Todsmill.
VP.
d.
сс
across valley.
ided on small crag c.100m S of VP
ost to view.
nd fields
vering
ng height once past trees ((M) with green wing tag.)
ea - lost to view.
rea E of VP
nd. Lost to view
d beyond trees.
own
back W and landed
3
landed on loch
t NE of VP, then moved off ESE, N of B729 then circling low to ground (at med be landing
moved off E towards forestry, mobbed by BZ+ a C.
heights
E, low height.
ped down, presumably landed on slope above marshy area.
ver, N-S along edge of forestry to E of VP
ow of road, again during hail shower.
noving, lost in trees.
out other side
con shore
to ground
a. hunting into trees.
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l glided

_	_	вто			_	VP	Start	Fli	ight Heigh	it Recordi	ng Band (m)	Dur.	
Ref No	Date	Code	No.	Sex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	Notes
FAS(1) 917	17/03/2008	кт	1			8	08:25				30		30	1xKT lifted off from tree tops, circled, landed in field
FAS(1) 918	17/03/2008	кт	4			8	09:10	300	135				435	4xKT fly H to VH circling gaining height
FAS(1) 919	17/03/2008	кт	2			8	09:21		240				240	2xKT gliding slowly across area
FAS(1) 921	17/03/2008	кт	1			8	09:45		270	270			540	1xKT gliding and circling across area between M-H
FAS(1) 923	17/03/2008	кт	3			8	10:10	240	600				840	3xKT circling and gliding High across area going VHigh
FAS(1) 926	17/03/2008	КТ	1			8	10:55			270			270	1xKT gliding through area lost to view
FAS(1) 1069	17/03/2008	К.	1			9	12:16				165		165	1xK. From top of trees along wood edge into trees
FAS(1) 1070	17/03/2008	CU	1			9	13:30		45	30	15		90	1xCU calling in flight, descending turning, landing beside cattl
FAS(1) 1071	17/03/2008	CU	3			9	14:01			120	90		210	3xCU flying fast, turning back, landing in marsh area
FAS(1) 1073	17/03/2008	ос	2			9	14:20				180		180	2xOC flying up river zig zag from riverside - lost to view
FAS(1) 1830	18/03/2008	К.	2			15	10:16		300	345	75		720	2xK. Rising from plantation edge, flying fast, varying from L-H throug
FAS(1) 1831	18/03/2008	CU	1			15	11:10			195	45		240	1xCU from hillside across to riverside, turning back and through pyl
FAS(1) 1833	18/03/2008	К.	1			15	11:52				90		90	1xK. From small group of trees to roadside field
FAS(1) 1834	18/03/2008	К.	2			15	11:56		45	30	30		105	2xK. Flying up from plantation area, circling then gliding t
FAS(1) 2049	18/03/2008	К.	1			18	13:15				300		300	1xK. Flying fast and staying low (lost to view) occasional ho
FAS(1) 434	20/03/2008	CU	1			5	15:46				45		45	CU around S end of loch and landed on small island
FAS(1) 435	20/03/2008	CU	2			5	15:55				120		120	CU2 low across loch heading N at low elevation.
FAS(1) 436	20/03/2008	CU	1			5	15:55			30	15		45	CU in from S and peeled off heading W and gaining heig
FAS(1) 437	20/03/2008	CU	2			5	16:21				90		90	CU 2 low across loch along line (2) again at low elevation
FAS(1) 438	20/03/2008	К.	1			5	16:27				120		120	K. hunting around N end of loch
FAS(1) 1971	20/03/2008	GD	3	2M, 1F		17	16:40		45				45	GD(3), 2(M)(M), 1(F) - S-N to E of VP, somewhat unusually over tops of conifers o
FAS(1) 439	20/03/2008	GJ	5			5	16:49				45		45	GJ 5 across SE corner of loch and landed. 4 M. across head
FAS(1) 440	20/03/2008	К.	2			5	16:57			60	60		120	K. 2(pr?) hunting around SW corner of loch, one at mid & o
FAS(1) 441	20/03/2008	сυ	3			5	17:13				75		75	3 CU along line (2) again
FAS(1) 442	20/03/2008	К.	1	м		5	17:30			90			90	K.(M) hunting at (5) again - now at mid elevation.
FAS(1) 443	20/03/2008	К.	2	PR		5	17:52				120		120	K. pr hunting at (7) again
FAS(1) 444	20/03/2008	CU	3			5	18:21				90		90	3 CU along line (2) again
FAS(1) 445	20/03/2008	CU	2			5	18:28				105		105	2 CU along line 2 again
FAS(1) 1354	21/03/2008	GJ	2			11	08:07		15	<15	<15		30	GJ(2) - S-N at Kendoon Loch
FAS(1) 1355	21/03/2008	GJ	2			11	08:28		15	30			45	GJ(2) - pres same bird as above, N-S at Kendoon Loch
FAS(1) 1356	21/03/2008	К.	1			11	08:57		30	15	15		60	K.(1) N of VP, E-W over B7000
FAS(1) 719	21/03/2008	кт	1			7	10:37		240	120			360	KT2 - 1 to NE at mid altitude, gaining height SE.
FAS(1) 720	21/03/2008	кт	1			7	10:37		480				480	2nd bird higher, similar line.
FAS(1) 1359	21/03/2008	К.	1			11	10:58				15		15	K.(1) E-W over B7000 N of VP
FAS(1) 730	21/03/2008	кт	1			7	12:51			90			90	KT across from S heading N over policy woodland.
FAS(1) 731	21/03/2008	кт	1			7	13:07			90			90	KT across to SE heading NE
FAS(1) 732	21/03/2008	кт	1			7	13:12		60	60			120	KT back along line (14).
FAS(1) 1927	21/03/2008	ВК	1	м		16	13:21		30	<15	<15		45	BK(1) - (M), N-S from N of VP, passed by behind i.e. E of
FAS(1) 1075	21/03/2008	К.	1	м		9	16:21				90		90	K.(M) around to N and headed NW down slope then hunt
FAS(1) 1076	21/03/2008	К.	1	м		9	17:18				90		90	K.(M) again hunting to N at N half of line.
FAS(1) 124	22/03/2008	К.	1			2	12:06			30			30	K. to SW heading SW
FAS(1) 133	22/03/2008	К.	1			2	14:57			105			105	K. hunting to W and away SW
FAS(1) 68	22/03/2008	К.	1			1	15:15			180			180	K. hunting to SW
FAS(1) 69	22/03/2008	К.	1			1	17:51			150			150	K. again across to SE at mid elevation heading SW casually h
FAS(1) 2362	23/03/2008	сυ	2			21	09:24		30				30	CU(2) - S of VP
FAS(1) 2363	23/03/2008	CU	1			21	09:29			15	30		45	CU(1) - over Bogton Loch, landed at Crighton's Knowe at SE en
FAS(1) 2365	23/03/2008	ос	1			21	09:52				30		30	OC(1) - over Bogton Loch, landed
FAS(1) 2366	23/03/2008	LG	1			21	09:57				15		15	LG(1) - briefly in flight along River Doon N of VP, landed
FAS(1) 2367	23/03/2008	CU	1			21	10:23		90	15			105	CU(1) - N of VP displaying by Loch William (Burnton Pod

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Image Image <th< th=""><th>PofNo</th><th>Data</th><th>вто</th><th>No</th><th>Sov</th><th>Ago</th><th>VP</th><th>Start</th><th>Flig</th><th>ght Heigh</th><th>t Recordii</th><th>ng Band (I</th><th>n)</th><th>Dur.</th><th>Notor</th></th<>	PofNo	Data	вто	No	Sov	Ago	VP	Start	Flig	ght Heigh	t Recordii	ng Band (I	n)	Dur.	Notor
Desc Desc J </th <th>Kel NO</th> <th>Date</th> <th>Code</th> <th>NO.</th> <th>Sex</th> <th>Age</th> <th>No.</th> <th>time</th> <th>+100</th> <th>30-100</th> <th>10-30</th> <th><10</th> <th><5</th> <th>(secs)</th> <th>NULES</th>	Kel NO	Date	Code	NO.	Sex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	NULES
9000000000000000000000000000000000000	FAS(1) 2368	23/03/2008	CU	1			21	10:31		45	30	<15		75	CU(1) - probably same bird as above, displaying over Dalmellington Moss, N of VP, landed on No side of A713
94.000 84.000 84.000 84.000 84.000 84.000 84.000 <td>FAS(1) 2369</td> <td>23/03/2008</td> <td>CU</td> <td>1</td> <td></td> <td></td> <td>21</td> <td>10:41</td> <td></td> <td></td> <td><15</td> <td><15</td> <td></td> <td>15</td> <td>CU(1) - N of VP+N of A713, briefly in flight, landed, med-low heights. Presumably same bird as before.</td>	FAS(1) 2369	23/03/2008	CU	1			21	10:41			<15	<15		15	CU(1) - N of VP+N of A713, briefly in flight, landed, med-low heights. Presumably same bird as before.
Model Model <th< td=""><td>FAS(1) 2371</td><td>23/03/2008</td><td>OC</td><td>3</td><td></td><td></td><td>21</td><td>11:16</td><td></td><td>15</td><td>45</td><td></td><td></td><td>60</td><td>OC(3) - E-W just by VP</td></th<>	FAS(1) 2371	23/03/2008	OC	3			21	11:16		15	45			60	OC(3) - E-W just by VP
Martine J Value	FAS(1) 1078	23/03/2008	К.	1			9	13:31		45	15			60	K.(1) (M), just N of VP, circling briefly, moved off E, high-med heights
Num Num <td>FAS(1) 1079</td> <td>23/03/2008</td> <td>CU</td> <td>2</td> <td></td> <td></td> <td>9</td> <td>13:45</td> <td></td> <td>30</td> <td>15</td> <td>15</td> <td></td> <td>60</td> <td>CU(2) SW of VP by Water of Ken, disturbed by BZ flying S-N at low height, both the CU landed again</td>	FAS(1) 1079	23/03/2008	CU	2			9	13:45		30	15	15		60	CU(2) SW of VP by Water of Ken, disturbed by BZ flying S-N at low height, both the CU landed again
Number Num	FAS(1) 1080	23/03/2008	GJ	1			9	14:55			45	15		60	GJ(1) - N- along Water of Ken then back N, landed on E side of river
Martial Martial <t< td=""><td>FAS(1) 1081</td><td>23/03/2008</td><td>GJ</td><td>3</td><td></td><td></td><td>9</td><td>15:35</td><td></td><td></td><td></td><td>30</td><td></td><td>30</td><td>GJ(3) - over fields between VP and Glenhoul, low heights, landed 1535 - the 3 birds landed next to 2xGJ already in the field.</td></t<>	FAS(1) 1081	23/03/2008	GJ	3			9	15:35				30		30	GJ(3) - over fields between VP and Glenhoul, low heights, landed 1535 - the 3 birds landed next to 2xGJ already in the field.
Mixed Virtual	FAS(1) 587	23/03/2008	К.	1	F		6	17:18			5			5	K.(F) direct flight at 10-20m off OHL.
	FAS(1) 589	23/03/2008	К.	1	F		6	18:04			27			27	K.(F), likely same bird as (1) hover and soar at 15-20m, drop to ground out of view.
Name Vertice V	FAS(1) 590	23/03/2008	К.	1	М		6	18:37			14			14	K.(M) foraging hover and soar at 20m by VP.
Mathema Balance Balance <t< td=""><td>FAS(1) 1483</td><td>27/03/2008</td><td>L.</td><td>2</td><td></td><td></td><td>12</td><td>09:30</td><td></td><td></td><td></td><td>270</td><td></td><td>270</td><td>2xL. Rising from marsh area, circling and undulating flight</td></t<>	FAS(1) 1483	27/03/2008	L.	2			12	09:30				270		270	2xL. Rising from marsh area, circling and undulating flight
Yamme Yamme <td< td=""><td>FAS(1) 930</td><td>27/03/2008</td><td>GJ</td><td>3</td><td></td><td></td><td>8</td><td>09:56</td><td></td><td>8</td><td>15</td><td></td><td></td><td>23</td><td>GJx3 direct flight over VP at 40m drop over loch to 20m.</td></td<>	FAS(1) 930	27/03/2008	GJ	3			8	09:56		8	15			23	GJx3 direct flight over VP at 40m drop over loch to 20m.
VALUMO VI VI <td< td=""><td>FAS(1) 933</td><td>27/03/2008</td><td>кт</td><td>1</td><td></td><td></td><td>8</td><td>10:06</td><td></td><td>117</td><td></td><td></td><td></td><td>117</td><td>KT spiralling soar at 100m - N toward VP7, dropping to 30m and out of view, first seen over hotel.</td></td<>	FAS(1) 933	27/03/2008	кт	1			8	10:06		117				117	KT spiralling soar at 100m - N toward VP7, dropping to 30m and out of view, first seen over hotel.
Matrix Matrix<	FAS(1) 934	27/03/2008	КТ	2			8	10:16	550					550	KTx2 spiralling at 100m rising to 200m - W under 2nd bird soaring at 300m. Both out of view into cloud.
Yayyya Yay Yay <thyay< th=""> <thyay< t<="" td=""><td>FAS(1) 936</td><td>27/03/2008</td><td>GJ</td><td>2</td><td>PR</td><td></td><td>8</td><td>10:27</td><td></td><td>21</td><td></td><td></td><td></td><td>21</td><td>Calling direct flight GJ pair at 30-40m - NW over VP and along loch as (2).</td></thyay<></thyay<>	FAS(1) 936	27/03/2008	GJ	2	PR		8	10:27		21				21	Calling direct flight GJ pair at 30-40m - NW over VP and along loch as (2).
Multie Version Version <th< td=""><td>FAS(1) 937</td><td>27/03/2008</td><td>кт</td><td>1</td><td></td><td></td><td>8</td><td>10:35</td><td></td><td>128</td><td></td><td></td><td></td><td>128</td><td>KT spiralling at 60-80m then drop drift - W out of view then back.</td></th<>	FAS(1) 937	27/03/2008	кт	1			8	10:35		128				128	KT spiralling at 60-80m then drop drift - W out of view then back.
MMUM Version V	FAS(1) 940	27/03/2008	кт	1			8	11:01	414	200				614	KT soar and glide at 40-20m then rise to 60m spiralling over woodland and low glide along field edge.
Mathematic Version	FAS(1) 941	27/03/2008	кт	1			8	11:04	7					7	KT direct glide flight at 40m out of view behind trees.
HAIL 100 2707.00 47 1 <th1< th=""> 1 1</th1<>	FAS(1) 942	27/03/2008	ос	4	PR		8	11:09			24			24	OCx4 noisy chase between 2prs with separate flights along loch shore at 10m-ground.
Model Model <th< td=""><td>FAS(1) 945</td><td>27/03/2008</td><td>кт</td><td>1</td><td></td><td></td><td>8</td><td>11:34</td><td>231</td><td></td><td></td><td></td><td></td><td>231</td><td>KT high soaring at 150m then drop - W out of view.</td></th<>	FAS(1) 945	27/03/2008	кт	1			8	11:34	231					231	KT high soaring at 150m then drop - W out of view.
PMU100 ZPMS200 K I <t< td=""><td>FAS(1) 946</td><td>27/03/2008</td><td></td><td>1+1</td><td></td><td></td><td>8</td><td>11:37</td><td></td><td>89</td><td></td><td></td><td></td><td>89</td><td>KT soaring glide at 60-40m drop put of view. In air same time as BZ(F) (large light phase) at 30-40m. Both same flight path.</td></t<>	FAS(1) 946	27/03/2008		1+1			8	11:37		89				89	KT soaring glide at 60-40m drop put of view. In air same time as BZ(F) (large light phase) at 30-40m. Both same flight path.
FAND 10 FAND 20 K I <	FAS(1) 949	27/03/2008	кт	1			8	12:02	23					23	KT high soar at 150m - S over VP.
SAM00 Sub Sub </td <td>FAS(1) 1187</td> <td>27/03/2008</td> <td>К.</td> <td>1</td> <td>F</td> <td></td> <td>10</td> <td>13:18</td> <td></td> <td></td> <td>23</td> <td></td> <td></td> <td>23</td> <td>K.(F) hover and soar at 20m.</td>	FAS(1) 1187	27/03/2008	К.	1	F		10	13:18			23			23	K.(F) hover and soar at 20m.
NAIL Set Val Val <td>FAS(1) 2050</td> <td>29/03/2008</td> <td>CU</td> <td>1</td> <td></td> <td></td> <td>18</td> <td>08:36</td> <td></td> <td>15</td> <td>15</td> <td>15</td> <td></td> <td>45</td> <td>CU - displaying SW of VP</td>	FAS(1) 2050	29/03/2008	CU	1			18	08:36		15	15	15		45	CU - displaying SW of VP
KHX1202 293/208 Cu 1 V	FAS(1) 2051	29/03/2008	CU	1			18	08:55		60	30	15		105	CU - displaying W of VP; also K.(1) hovering behind (W of) CU to W of plantation, high height.
FASC 12003 PA V <th< td=""><td>FAS(1) 2052</td><td>29/03/2008</td><td>CU</td><td>1</td><td></td><td></td><td>18</td><td>09:35</td><td></td><td>60</td><td></td><td></td><td></td><td>60</td><td>CU- displaying S of VP, moved off SSE over A713</td></th<>	FAS(1) 2052	29/03/2008	CU	1			18	09:35		60				60	CU- displaying S of VP, moved off SSE over A713
PASU 373 29/03/208 K 1 I A 7 9/04 X 1 1 20/04 K 1 A 7 101 1 102 1 120 <th1< td=""><td>FAS(1) 2053</td><td>29/03/2008</td><td>CU</td><td>1</td><td></td><td></td><td>18</td><td>09:35</td><td></td><td>15</td><td></td><td></td><td></td><td>15</td><td>CU - 2nd displaying bird whilst watching 1st bird</td></th1<>	FAS(1) 2053	29/03/2008	CU	1			18	09:35		15				15	CU - 2nd displaying bird whilst watching 1st bird
ABI1373 2198/2008 6 7 7 1 <th1< th=""> 1 1</th1<>	FAS(1) 733	29/03/2008	кт	1		Ad.	7	09:44		120	600	90		810	Ad KT (2004 bird yellow) circling valley opposite VP.
PAI173 PAI AL PA PA/17/200/200000	FAS(1) 737	29/03/2008	GJ	7		Ad.	7	10:11		120				120	7 GJ flew high NW along Polharrow Burn
PAX12084 V2 <	FAS(1) 738	29/03/2008	кт	1		Ad.	7	10:16		180	1200			1380	Ad KT (2004 bird vellow 7) circling area opposite VP then drifted S.
KA VI VI<	FAS(1) 2054	29/03/2008	CU	1			18	11:04		45	30	15		90	CU - NW of VP, displaying, 1104-1105 landed.
AR(1) 192 3(0) CU 1 V V 1 V V 1 V V 1 V V 1 V V 1 V V 1 V V 1 V V 1 V V 1 1 V V 1 <	FAS(1) 1928	30/03/2008	WS	9			16	09:42		600	60			660	9 WS flying N along valley bottom, land at N end of Loch Doon.
KAIII 164 SIV0/2008 L I <thi< th=""> I I</thi<>	FAS(1) 1929	30/03/2008	CU	1			16	09:56			15	30		45	CU displaying on hillside below VP.
Kall 188 Mode View Res L <thl> <thl< th=""> L</thl<></thl>	FAS(1) 1648	31/03/2008	L.	1			13				15	15		30	L.(1) briefly display flighting NE of VP
FAS(1) A B BM, 3F I <thi< th=""> I</thi<>	FAS(1) 1835	31/03/2008	WS	2			15	11:37				37		37	WSx2 flight in and land next to large group on water, 30m-ground, S-N flight. Assume all 27 are part of the group of 39 seen by JM at VP22.
FAG10188IV	FAS(1) 1366	31/03/2008	т.	6	3M, 3F		11	11:53				30		30	T.(6) -3(M)(M)+3(F)(F) in flight on Kendoon Loch, landed.
FAG1018JUNVI	FAS(1) 1836	31/03/2008	К.	1	М		15	12:20				51		51	K.(M) hover and soar at 20m, drop out of view.
FAS(1)84SVS68999	FAS(1) 1368	31/03/2008	CU	1			11	12:42		30	15	15		60	CU - W-E from Shiel Hill towards Culmark Hill
FAG1343JU/JO2008KTIIVIVIVIVIVIVIVIVIVIVIIVIII <td>FAS(1) 1843</td> <td>31/03/2008</td> <td>WS</td> <td>6</td> <td></td> <td></td> <td>15</td> <td>14:04</td> <td>20</td> <td>19</td> <td></td> <td></td> <td></td> <td>39</td> <td>WSx6 direct flight at 150m, thought were going to turn and land with group on burn but realigned-N. Assume same group of 6 reported by JM at 1154.</td>	FAS(1) 1843	31/03/2008	WS	6			15	14:04	20	19				39	WSx6 direct flight at 150m, thought were going to turn and land with group on burn but realigned-N. Assume same group of 6 reported by JM at 1154.
FAG1) 461/1<	FAS(1) 345	31/03/2008	КТ	1		Juv.	4	14:24		360	300			660	KT 1(G/P) juv Kite carrion feeding to a great height
FAG1 34StAAAA145A14	FAS(1) 346	31/03/2008	КТ	1		Ad.	4	14:31			120	15		135	Ad KT (G/R) adult Kite also carrying carrion
FAS(1) 34831/03/2008KT1V1V1V1V1V1V1V1V1V1V1V1V1V1V1V11V11	FAS(1) 347	31/03/2008	КТ	1		Ad.	4	14:55			120	15		135	Ad KT (G/O) 2nd ad Kite mobbed by BZ
FAS(1) 349 St I <th< td=""><td>FAS(1) 348</td><td>31/03/2008</td><td>КТ</td><td>1</td><td></td><td>Juv.</td><td>4</td><td>15:13</td><td></td><td>960</td><td>180</td><td>300</td><td></td><td>1440</td><td>Juv. KT (G/P(P) low across field opposite VP, drifted high S of Barscobe Wood / Gate</td></th<>	FAS(1) 348	31/03/2008	КТ	1		Juv.	4	15:13		960	180	300		1440	Juv. KT (G/P(P) low across field opposite VP, drifted high S of Barscobe Wood / Gate
FAS(1) 647 31/03/2008 GJ 4 1 15:1 75 45 120 FAS(1) 30 31/03/2008 KT 1 K 1 15:8 120 120 FAS(1) 30 31/03/2008 KT 1 M Ad. 1 15:1 75 45 120 120 FAS(1) 73 01/04/2008 K. 1 M Ad. 1 15:12 120 120 120 FAS(1) 73 01/04/2008 K. 1 M Ad. 1 15:12 120 120 120 FAS(1) 74 02/04/2008 K. 1 M Ad. 1 15:12 1 <td>FAS(1) 349</td> <td>31/03/2008</td> <td>кт</td> <td>1</td> <td></td> <td></td> <td>4</td> <td>15:34</td> <td></td> <td>120</td> <td></td> <td></td> <td></td> <td>120</td> <td>2nd very distant and very high KT appears mobbed by (4), birds then separate and drift separate ways</td>	FAS(1) 349	31/03/2008	кт	1			4	15:34		120				120	2nd very distant and very high KT appears mobbed by (4), birds then separate and drift separate ways
FAS(1) 350 KT 1 I <th< td=""><td>FAS(1) 1647</td><td>31/03/2008</td><td>GJ</td><td>4</td><td></td><td></td><td>13</td><td>15:51</td><td>75</td><td>45</td><td></td><td></td><td></td><td>120</td><td>GJ(4) 1551-1553 high - VH heights, E-W; also BZ soaring WNW of VP, high heights</td></th<>	FAS(1) 1647	31/03/2008	GJ	4			13	15:51	75	45				120	GJ(4) 1551-1553 high - VH heights, E-W; also BZ soaring WNW of VP, high heights
FAS(1) 73 01/04/2008 K. 1 M Ad. 1 15:12 90 90 FAS(1) 240 02/04/2008 K. 1 M Ad. 3 09:0 45 45	FAS(1) 350	31/03/2008	кт	1			4	15:58		120				120	KT, distant S of Barrscobe Gate, circling high.
FAS(1) 240 02/04/2008 K. 1 M Ad. 3 09:50 45 45	FAS(1) 73	01/04/2008	К.	1	М	Ad.	1	15:12			90			90	K.(M) hunting then around and onto corner of forest to SW.
	FAS(1) 240	02/04/2008	К.	1	М	Ad.	3	09:50			45			45	K. hunting to N, landed briefly on wires then off NE.





Ref No.	Date	вто	No	Sov	Δαρ	VP	Start	Start Flight Height Recording Band (m) Dur. time +100 30-100 10-30 <10 <5 (secs)		Dur.	Notos			
Kei NO	Date	Code	NU.	Эсл	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	
FAS(1) 743	02/04/2008	кт	2			7	13:40		135				135	2KT to SE soaring.
FAS(1) 746	02/04/2008	К.	1	F		7	14:04				45		45	K.(F) SE and landed on wires.
FAS(1) 747	02/04/2008	КТ	1			7	14:27		90				90	KT to E and headed S.
FAS(1) 2216	03/04/2008	CU	1			20	08:57				45		45	CU - on the ground south of road east of VP, took off and flew south-sou
FAS(1) 1082	03/04/2008	К.	2	PR		9	09:21			90			90	K. pr hunting and playful display to W.
FAS(1) 1083	03/04/2008	К.	1	м		9	09:25			60			60	K.(M) again along same line as (1) hunting. Further K. records ama
FAS(1) 1085	03/04/2008	К.	1 OR 2	PR	Ad.	9	09:30		180	1020			1200	K. activity - bird often in air along line (1) and amalgamated as record (4). Mostly 1 bird, usually (M) but sometimes 2 bi immediately behind VP to E on 4 occasions.
FAS(1) 594	03/04/2008	К.	1	М	Ad.	6	15:07			90			90	K. hunting close to VP then moved off NE
FAS(1) 2372	04/04/2008	CU	1			21	07:40				15		15	CU - displaying briefly east side of Bogton Loch, east of VP, lov
FAS(1) 2373	04/04/2008	PG	75			21	07:53	180	60				240	PG (75) - southeast of VP, south to north over Bogton Loch then over opencast, his
FAS(1) 2374	04/04/2008	GN	8			21	08:12				45		45	GN (8) - at northwest end of Bogton Loch, flew to southeast end, landed
FAS(1) 2375	04/04/2008	CU	2			21	08:51		60	45	15		120	CU(2) - displaying birds, low to medium to high heights, 0
FAS(1) 2376	04/04/2008	ос	1			21	09:04				30		30	OC - west to east just too west of VP, landed at Bogton Loch, 09
FAS(1) 1845	04/04/2008	К.	1			15	09:58			90			90	K. hunting to S and into wood.
FAS(1) 2378	04/04/2008	GN	15			21	09:58				30		30	GN (15) - in flight at northwest end of Bogton Loch, low he
FAS(1) 1847	04/04/2008	CU	2	PR		15	10:06					15	15	2 CU (pr?) low around 'knoll' to S.
FAS(1) 2379	04/04/2008	ос	2			21	10:16			15	30		45	OC (2) - along River Doon, northwest of VP, low to medium heig
FAS(1) 1849	04/04/2008	К.	1			15	11:17			120			120	K. hunting again around line (2)
FAS(1) 1850	04/04/2008	CU	2	PR		15	11:39			45			45	CU 2 around in 'bubbling' flight to S.
FAS(1) 450	04/04/2008	RK	1			5	11:55				15		15	RK(1) - briefly in flight at south end of Lochinvar, landed on loch edg
FAS(1) 451	04/04/2008	RK	1			5	12:15	45	30	15			90	RK(1) - east - west-northwest to north of VP, medium-high-very high heights, vocal, disappeare
FAS(1) 452	04/04/2008	GJ	2			5	13:01				15		15	GJ(2) - briefly in flight at south end of Lochinvar, landed, 130
FAS(1) 2058	04/04/2008	К.	1			18	13:41		30				30	Kestrel hunting briefly to northeast.
FAS(1) 2059	04/04/2008	К.	1			18	13:58		60				60	Kestrel hunting beyond wood to southwest.
FAS(1) 2062	04/04/2008	К.	1			18	15:12		150				150	Kestrel at (5) again hunting.
FAS(1) 1932	04/04/2008	CU	1			16	16:52				45		45	CU in from N and landed, 'bubbling'.
FAS(1) 1934	04/04/2008	CU	1			16	18:18			30	30		60	CU up and away and headed N gaining height.
FAS(1) 1974	05/04/2008	К.	1			17					90		90	1x K. from small group of trees, flying across area to pla
FAS(1) 1975	05/04/2008	К.	1			17					420		420	1x K. from plantation edge, flying and hovering, occasional landing for a few second
FAS(1) 1752	05/04/2008	PE	1			14	12:17				45		45	1x PE in fast low glide.
FAS(1) 1755	05/04/2008	нн	1			14	13:56				60		60	1x HH fly and gliding very low, lost to view.
FAS(1) 954	06/04/2008	КТ	1			8	09:26		60	220	15		295	Red Kite over Polharrow Bridge drifted south along ridge toward
FAS(1) 352	06/04/2008	CU	4			4	09:45				105		105	4x CU rising from field, calling, short circular glide to ground, co
FAS(1) 956	06/04/2008	GJ	23			8	10:05		180				180	23 Greylags north over loch.
FAS(1) 957	06/04/2008	КТ	1		Ad.	8	11:36		195	45			240	Adult Red Kite (G/L red / RW) over Earsltoun Loch east past VP, o
FAS(1) 595	06/04/2008	CU	2		Ad.	6	17:57			90	30		120	2 Curlews displaying on hillside 1km southwest of
FAS(1) 1196	06/04/2008	К.	1			10	18:00				75		75	1x K. from tree tops to end of plantation, landing in t
FAS(1) 596	06/04/2008	ML	1	F	Ad.	6	18:37					30	30	Merlin (F) flew low off Old Hill of Mackilston over the cattle grid and cont
FAS(1) 1488	07/04/2008	L.	1			12	09:11				75		75	1x L., flying, twisting and diving, circling then field area the
FAS(1) 77	07/04/2008	К.	1			1	09:23		90				90	K. hunting NE then headed NW over forest.
FAS(1) 1490	07/04/2008	L.	4			12	10:16			45	75		120	4x L. chasing, diving, circling, varying heights, 1 pair chasi
FAS(1) 1492	07/04/2008	КТ	1			12	10:36				75		75	1x KT flying low around hillside, lost to view.
FAS(1) 1493	07/04/2008	К.	1			12	10:50			150			150	1x K. gliding from roadside across plantation.
FAS(1) 134	07/04/2008	К.	1			2	12:10		135				135	K. hovering SW
FAS(1) 1086	07/04/2008	OP	1			9	12:46			75			75	Osprey picked up near Cuckoostone Cottage, slowly drifting north along roads
FAS(1) 2218	07/04/2008	К.	1			20	13:11				480		480	1x K. flying, gliding and hovering around area, lost to
FAS(1) 1090	07/04/2008	КТ	1		2nd yr	9	14:31			300	120		420	Red Kite (juv, 2nd year) green LW / purple RW Dumfries 2007. Circled VP and hillside al
FAS(1) 1091	07/04/2008	CU	2			9	14:37			45			45	2 Curlews flew north opposite VP.
FAS(1) 139	07/04/2008	К.	1			2	14:52			75			75	K. hunting to W.

utheast, low height, 0857.

Igamated below (4).

irds. Amalgamated as total bird / seconds. (M) bird seen to enter quarry

w height 0740.

gh to very high heights, 0753-0756.

l, low heights, 0812-0813.

0851-0853.

904, low height.

eight, 0958.

ghts, 1016-1017.

ge, 1155, low height.

red off very high to northwest of VP, 1215-1217.

01, low height;

antation.

ds, returning to hunting, lost to view.

ds Waterside Hill.

ontinued to call.

challenged by BZ.

VP.

trees.

inued low southeast of VP.

en landing.

ing 2 away.

side over VP and up the valley.

view.

bove quarry, mobbed by pair of Kestrels.

Pof No	Data	вто	No	Sov	A.c.o.	VP	Start	Start Flight Height Recording Band (m) Dur.		Dur.	Notor			
KEINO	Date	Code	NO.	Sex	Age	No.	time	+100	30-100	10-30	<10	<5	(secs)	notes
FAS(1) 755	08/04/2008	КТ	1			7			180	300			480	KT in from S playing around to E and SE then away E at med elevation then high
FAS(1) 758	08/04/2008	GJ	5			7		60		75			135	GJ 5 heading N up valley mid elevation.
FAS(1) 1852	08/04/2008	CU	2			15	08:10			195	45		240	2x CU gliding through and around marsh area, very vocal.
FAS(1) 1853	08/04/2008	CU	2			15	08:15			75	30		105	2x CU from river / marsh over across road and over hillside calling and flying.
FAS(1) 1856	08/04/2008	WS	4			15	09:05				135		135	4x WS rising from river circling around land, back close to take off area.
FAS(1) 1857	08/04/2008	GJ	46			15	09:16	240					240	46x GJ flying very high through area, heading north.
FAS(1) 356	08/04/2008	КТ	1			4	11:08		120				120	Red Kite soaring c.1108.
FAS(1) 357	08/04/2008	PG	77			4	11:14		300				300	77 Pink Footed Geese north over Dalry (off the map) [Also seen at VP14 1132].
FAS(1) 1757	08/04/2008	PG	77			14	11:32	300					300	PG 77 heading very high NW up valley on their way to Iceland?
FAS(1) 1370	08/04/2008	КТ	2		Ad.	11	14:41		660	330			990	2 Adult Red Kite, circled high over valley, circling Mackilston Hill, and disappear to the
FAS(1) 1374	08/04/2008	кт	1		Ad.	11	15:47		60	120	45	15	240	Red Kite (07) missing p° left wing (7 or T?) seen before, left roost in bush and wandered in front of VP, drifted off south an
FAS(1) 750	08/04/2008	кт	1			7	16:01	180	300				480	KT circling around valley to E then spiralled up into cloud.
FAS(1) 454	09/04/2008	К.	1			5	08:52		60	60			120	K. moving through to E heading NE
FAS(1) 455	09/04/2008	CU	3		Ad.	5	08:56				45	45	90	3 CU in bubbling display to NE at low elevation then very low S across lake
FAS(1) 456	09/04/2008	К.	1			5	09:09				15		15	K. Hunting briefly to E
FAS(1) 457	09/04/2008	GJ	3			5	09:18			30			30	GJ 3 in mid elevation flight S across lake. SK calling adjacent conifers
FAS(1) 462	09/04/2008	RK	2		Ad.	5	10:03					30	30	RK 2 S across lake at VL
FAS(1) 463	09/04/2008	CU	1			5	10:06		45				45	CU across lake E-W H. Another at least 'bubbling' to SE. Further flights of feral GJ around later, not worthwhile rec
FAS(1) 467	09/04/2008	CU	4			5	10:41				45		45	4 CU S across lake at low elevation, same line as (2) (straight line section)
FAS(1) 245	09/04/2008	К.	1			3	12:30			90			90	K. hunting to the SE at mid elevation
FAS(1) 246	09/04/2008	К.	1			3	12:52			135			135	K. hunting again at (2)
FAS(1) 2380	11/04/2008	GN	1	М	Ad.	21	16:51			30			30	Goldeneye(M) up from loch and headed northwest.
FAS(1) 2381	11/04/2008	OC	2		Ad.	21	17:08					45	45	Oystercatcher 2 across loch east to west and landed.
FAS(1) 2382	11/04/2008	GN	1	F		21	17:17				30		30	Goldeneye(F) along same line as (1) but low elevation.
FAS(1) 2383	11/04/2008	OC	2		Ad.	21	17:29				30		30	Oystercatcher 2 up from loch and away to northwest.
FAS(1) 2384	11/04/2008	CU	1		Ad.	21	17:36					15	15	Curlew briefly along northeast shore of loch and landed.
FAS(1) 2385	11/04/2008	GN	1	F		21	18:29				30		30	Goldeneye(F) back along line (1) and onto loch.
FAS(1) 2386	11/04/2008	GN	1	F		21	18:58				30		30	Goldeneye(F) along line (1) again southeast to northwest.
FAS(1) 1976	13/04/2008	к	3	2M, 1F		17	12:31		10 (3)	10 (3)	5 (1)		0	3 Kestrels 2 (M) and 1 (F) calling & circling over forestry gained height then began mobbing each o

Table D5.2 - Flight Activity Survey Season 2 – Target Species Records May 2008 to July 2008

Pof No.	Data	вто	No	Sov	A.c.o.	VP	Start		Flight He	ight Recor	ding Ban	d	Dur.	Notor
Kei No.	Date	Code	NO.	Sex	Age	No.	time	νн	н	M2	M1	L	(secs)	NULES
FAS(2)135	16/04/2008	К.	1			18	10:07					180	180	1x K. Flying from loch shore trees across to trees beside (VP18) - a pair (K.)
FAS(2)137	16/04/2008	CU	2			18	11:17					75	75	2x CU flying low along hill top, landing.
FAS(2)71	16/04/2008	CU	2			15	15:01				75	60	135	2x CU rising from marsh area, very vocal, across road, under py
FAS(2)48	17/04/2008	PE	1			14	13:45				240		240	From small group of trees, flying fast across area, 1x PE in a
FAS(2)303	24/04/2008	CA	3			33	12:13		45	15			60	CA (3) - south to north to west of VP, 1213-1214, high
FAS(2)304	24/04/2008	GJ	2			33	12:34		135				135	GJ (2) - high heights, 1234-1236, south to north towards Kendoon Loch, circle
FAS(2)306	24/04/2008	кт	1		Juv.	33	13:11			30	45		75	KT (1) - juv., wing-tagged (green tag on left wing, purple on right), initially on east side of B7000 just southeast of VP, cr 1312.
FAS(2)269	26/04/2008	GJ	2			32	12:00					90	90	2x GJ from fields, flying down to loch.
FAS(2)270	26/04/2008	CU	2			32	13:32					120	120	2x CU from fields behind VP, flying over VP landing
FAS(2)307	26/04/2008	PE	1			33	16:30	195	30	30	15	30	300	1x PE from woodland edge, circling high, gliding high
FAS(2)341	27/04/2008	PE	1			35	10:06	360	60				420	1x PE high gliding across hillside, circling thermal rising to very high, glidin
FAS(2)342	27/04/2008	PE	1			35	11:00	480	90				570	1x PE flying high, circling, gaining height to very high glid
FAS(2)155	29/04/2008	PE	1	М		24	10:12	120	30	15		<15	165	PE (1) - (M), displaying west of VP. Could only see (M), not (F). Very high to
FAS(2)272	29/04/2008	CG	2			32	16:23					<15	0	CG (2) - briefly in flight on river west of VP, landed 162
FAS(2)363	01/05/2008	КТ	1		Juv.	37	11:09		134				134	KT (moulting juv) spiralling soar at 60-80m, drift out of view

Ornithology



e south.

and returned to below VP and out of sight.

cording all these flights of feral birds.

other. Lost to view.

) rising and chasing single bird away.

ylons landing on hillside.

southwest direction.

to M2 heights.

led several times then moved off east.

crossed the road by the VP, continued on north, low to M1 to M2 heights, 1311-

g on hillside.

across area.

ng and flying across to plantation.

ling, lost to view.

high to M to low heights, 1012-1014.

23, low height.

obscured by cloud.

D. (N.	Data	вто		.	•	VP	Start		Flight Hei	ght Recor	ding Band		Dur.	Natas
Ref No.	Date	Code	No.	Sex	Age	No.	time	VH	н	M2	M1	L	(secs)	Notes
FAS(2)172	01/05/2008	PE	1	м		25	12:50		120	45	<15		165	PE (1) - (F), over Clawfin Farm then circling over B741 by VP then moved north into opencast 1250-1253, M1 to M2 to high heights.
FAS(2)424	04/05/2008	КТ	1		Juv.	39	13:27		14	80			94	KT juv (moult) soaring spiral and glide across open ride and along old dyke lines, out of view toward restock area, 40-20-30m.
FAS(2)401	15/05/2008	GJ	2	PR	Ad.	38	07:32				60		60	2 Greylag Geese calling and flying down the valley and over the forest and then lost to view.
FAS(2)19	17/05/2008	GJ	1			12	11:23			15			15	Greylag Goose, over plantation, appeared to land.
FAS(2)308	17/05/2008	CA	3			33	11:47			60	45	15	120	3xCA rising from aqueduct, circling round, heading towards water tower descending through trees (lost to view).
FAS(2)22	17/05/2008	SN	1		Ad.	12	12:17					15	15	Snipe heard 'chipping' from field southwest of VP. (cuckoo calling)
FAS(2)1	18/05/2008	BK	1	м	Ad.	10	08:37				15		15	(M) Black Grouse flew off southeast corner of Marskaig Hill into the forestry.
FAS(2)3	18/05/2008	КТ	1		Ad.	10	09:37			150	30		180	Red Kite over Leys hill, drifted off south, wing tags, left wing green, right wing green.
FAS(2)51	18/05/2008	CU	1	м	Ad.	14	12:02			15	45	15	75	Ad (M) Curlew displaying over fields below VP.
FAS(2)343	18/05/2008	КТ	1			35	14:20	205	45	30			280	1xKT gliding to Mackilston Hill, started circling, gaining height, very high gliding in a south direction, lost to view.
FAS(2)274	20/05/2008	CA	2			32	07:11		180				180	2xCA flying fast across area un a northerly direction.
FAS(2)275	20/05/2008	CA	1			32	07:45		195				195	1xCA single bird flying high through area, south direction.
FAS(2)276	20/05/2008	CA	1			32	08:11		210				210	1xCA single bird flying high, in a northerly direction.
FAS(2)277	20/05/2008	CA	1			32	09:00		90				90	1xCA flying northeast across area.
FAS(2)278	20/05/2008	GJ	1			32	09:22			30	15		45	1xGJ from fields over trees dropping down behind trees (flying just above tree tops).
FAS(2)4	28/05/2008	кт	1			10	14:00			105	105	60	270	1x KT flying and gliding northeast, turned flying south going to ground opposite VP. Green tag on right wing. Stayed on ground, walking through rushes for duration of VP.
FAS(2)309	28/05/2008	CA	2			33	14:35			15	15		30	CA (2) - northwest of VP, landed in trees where joined another 4xCA already perched, M1-M2 heights 1435.
FAS(2)54	29/05/2008	GJ	13			14	08:40	300					300	13xGJ flying high in a north-northwest direction very high (lost to view.)
FAS(2)221	31/05/2008	ос	1		Ad.	29	16:03				15		15	Oystercatcher flushed by farmer from field by VP, probably off the nest / young. Late mobbing crows c.1615.
FAS(2)98	01/06/2008	ВК	1	м	Ad.	16	08:19					15	15	(M) Black Grouse flew in low from north and landed on hill below VP.
FAS(2)99	01/06/2008	CU	1		Ad.	16	08:44				30		30	Curlew flies northeast past VP.
FAS(2)100	01/06/2008	ВК	1	м	Ad.	16	09:26					30	30	(M) Black Grouse flies off low to northwest, landed again at the fell.
FAS(2)139	02/06/2008	SN	1		Ad.	18	08:52				15	15	30	Snipe drumming over fields by VP.
FAS(2)141	02/06/2008	ВК	1	м	Ad.	18	09:38					45	45	(M) Black Grouse in flight on far side of Loch Doon, landed on moor by the lochside bungalows.
FAS(2)5	03/06/2008	кт	1		Ad.	10	12:32		114	30			144	KT in moult adult drifting spiral at 30-60m, drop out of view.
FAS(2)6	03/06/2008	кт	1	м	Ad.	10	12:48		77	20			97	KT(M) adult rise behind Marskaig Plantation in drifting spiral over rough grazings (assume same bird as (3)) 30-50m.
FAS(2)24	04/06/2008	кт	1		Ad.	12	13:35		90	30			120	KT (1) north-northeast of VP, high - M2 heights, wing tagged, red on right wing pale green on left.
FAS(2)311	07/06/2008	кт	1			33	11:32		75	90			165	Red Kite, distant bird flew south from Dundeugh.
FAS(2)281	08/06/2008	GJ	2		Ad.	32	11:32				75		75	2 Greylag Geese flew up from carsfad Loch, landed near to VP.
FAS(2)282	08/06/2008	GJ	2		Ad.	32	11:49			30			30	2 adult Greylag Geese flew north past the VP.
FAS(2)283	08/06/2008	GJ	2		Ad.	32	12:34				60		60	2 Adult Greylag Geese (2) flew back down Carsfad Loch.
FAS(2)284	08/06/2008	кт	1		Ad.	32	13:51		90	135	30		255	Adult Red Kite off Water of Deugh, east to Dundeugh Hill, some flight low over tree canopy.
FAS(2)205	08/06/2008	CU	1		Ad.	28	18:42			30	45		75	Curlew calling. Display over fell northwest of VP. Also a Buzzard hunting the ridge southwest of Bryans Heights.
FAS(2)206	08/06/2008	CU	1		Ad.	28	18:58			60	45		105	Curlew flies southeast by VP.
FAS(2)350	09/06/2008	GJ	2		Ad.	36	09:20				10	5	15	2 Greylag Geese heard and then seen flying in and landing on Lochinvar.
FAS(2)351	09/06/2008	К.	1	м	Ad.	36	09:27				30		30	(M)Kestrel seen down near edge of forest and hunting.
FAS(2)354	09/06/2008	GJ	2	PR	Ad.	36	10:40				30		30	2x Greylag flying from Lochinvar into grassy area near forest.
FAS(2)355	09/06/2008	К.	1	м	Ad.	36	10:47				10	20	30	(M)Kestrel seen hunting at edge of forest lower than last sighting and lost to view.
FAS(2)356	09/06/2008	К.	1	м	Ad.	36	11:33					15	15	Kestrel again seen hunting / hovering near forest edge before lost to view.
FAS(2)357	09/06/2008	К.	1	м	Ad.	36	12:03				15		15	Kestrel hunting but much closer to VP. same general direction and lost over forest.
FAS(2)371	10/06/2008	К.	1	м	Ad.	37	10:20					15	15	Single Kestrel seen briefly on other side of road from small guarry and lost to view.
FAS(2)25	11/06/2008	К.	1	м	Ad.	12	09:40				80	15	95	(M)Kestrel hunting and appeared to taking a vole and then flew off south with prev until lost to view.
FAS(2)29	11/06/2008	К.	1	м	Ad.	12	10:57				30		30	(M)Kestrel flying strongly south and then lost to view.
FAS(2)35	11/06/2008	К.	1			12	12:12		120				120	Kestrel seen hunting over forest east of VP and lost to view.
FAS(2)449	12/06/2008	К.	1			40	11:52		15				15	As above
FAS(2)450	12/06/2008	К.	1			40	11:59			15			15	Kestrel seen in same general area as above hovering and then lost to view.
FAS(2)143	13/06/2008	cu	1		Ad.	18	06:52					205	205	Curlew calling and flying in display flight in a northerly direction.
FAS(2)144	13/06/2008	CU	1		Ad.	18	07:14					155	155	Different Curlew seen flving east. Lost to view.
FAS(2)145	13/06/2008	К.	1	м	Ad.	18	08:15		200				200	(M)Kestrel hunting north of VP, short flights and then bouts of hovering and then lost to view.
FAS(2)211	13/06/2008	OP	1		Ad.	28	12:45	300	-				300	2 Birds of prey picked up flying high in the sky to the north of the VP. One, the lower bird was BZ but the second whom was flying much higher was as Osprev.
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- 6		вто			_	VP	Start	F	light Hei	sht Record	ding Band		Dur.					
Ref No.	Date	Code	No.	Sex	Age	No.	time	VH	н	M2	M1	L	(secs)	Notes				
FAS(2)376	15/06/2008	CA	3		Ad.	37	12:47				16	5	21	CAx3 flight off loch at ground - 20m, out of view through trees, assume heading for Carsfad or other lochs.				
FAS(2)177	18/06/2008	CG	1		Ad.	26	08:34		45	15			60	CG (1) south - north then back south initially to east of VP, high - M2 height, when at overhead OHL, TO, no height gain or loss 0834-0835.				
FAS(2)7	22/06/2008	SN	2		Ad.	10	18:03				30	4	34	2 Snipe displaying northwest of VP.				
FAS(2)8	22/06/2008	PE	1	м	Ad.	10	18:25			60	30		90	Peregrine chasing crows at Marskraig Hill.				
FAS(2)226	23/06/2008	CA	1			31	05:44			45			45	Cormorant flying north from Loch Carsfad.				
FAS(2)229	23/06/2008	КТ	1			31	07:53		60				60	Red Kite circling high.				
FAS(2)285	23/06/2008	CA	1		Ad.	32	11:11		60				60	Cormorant flew north past Kendoon Power Station.				
FAS(2)286	23/06/2008	CA	4		Ad.	32	12:56	75	45				120	4 Cormorants high north along valley past Kendoon Power Station.				
FAS(2)461	01/07/2008	К.	1			40				15			15	Very brief view of K. hunting / hovering W of VP before lost over brow of hill.				
FAS(2)312	01/07/2008	CA	2		Ad.	33	16:22		30	15	1		45	2xCA watched flying S down the valley past the water tower and eventually lost to view.				
FAS(2)313	01/07/2008	CA	1		Ad.	33	16:27			30			30	Also MP around VP and also 8 Swallows and a House Martin flying near aqueduct.				
FAS(2)316	01/07/2008	CA	2		Ad.	33	17:17	45	15	15			75	2 CA's flying very high towards VP and then following line of aqueduct towards Kendoon Loch.				
FAS(2)317	01/07/2008	CU	1			33	17:46	135			1		135	Single CU flying S very high and followed until lost to view.				
FAS(2)321	01/07/2008	К.	1	м	Ad.	33	18:46					15	15	(M) K. sitting on telegraph poles on road side and takes short flights to nearest pole.				
FAS(2)146	03/07/2008	К.	1	м	Ad.	18	10:45				15		15	Kestrel flew from telegraph pole and flew and landed in small patch of conifers. A second Kestrel is perched on other side of road on pylon wires.				
FAS(2)147	03/07/2008	К.	1			18	10:52				30		30	Kestrel took off from wood and flew west crossing road and out over rough pasture and lost to view. No sign of second perched K.				
FAS(2)148	03/07/2008	К.	1	м	Ad.	18	10:58			35	25		60	Kestrel watched hunting / hovering north along pylon time and turned back, flew southeast and lost to view.				
FAS(2)149	03/07/2008	К.	1	м	Ad.	18	11:04		75	135	120	15	345	(M) Kestrel again hunting west of VP on rough pasture, came down at one point but did not appear to catch prey and eventually flew off northeast and was lost to view.				
FAS(2)150	03/07/2008	К.	1	м	Ad.	18	11:46			185	65		250	Kestrel again hunting a similar line to (4).				
FAS(2)151	03/07/2008	К.	1	м	Ad.	18	11:58			60	45		105	Kestrel (M) again hunting the rough pasture west of VP until lost from view.				
FAS(2)377	04/07/2008	К.	2			37	09:02		45				45	2 K. seen flying / hunting high over edge of clear felled forest and moving off NE and lost to view.				
FAS(2)378	04/07/2008	К.	1			37	09:15				15		15	K. hunting near VP and then landed on dead tree.				
FAS(2)381	04/07/2008	К.	1			37	09:38				15		15	K. moved from its original dead tree perch to the next 1 down from it (SE).				
FAS(2)158	04/07/2008	PE	1	м	Ad.	24	11:16		30	15	_		45	PE (1) adult (M), northwest of VP over forestry, northeast to southwest, 1116. H - M2 heights, latterly within 10m of canopy height.				
FAS(2)102	04/07/2008	К.	3	PR	Ad. & Juv.	16	15:00			496			496	Interactive flight K. (M) with (F) and at least 1 iuv. Often to ground but frequently hover and soar at 15-25m.				
FAS(2)103	04/07/2008	PE	1	м	Ad.	16	15:21				16		16	Fast direct chasing flight by PE (M) at 15m.				
FAS(2)231	07/07/2008	PE	1	м	Ad.	31	15:16		45	15	-		60	(M) PE picked up coming down valley. flew past VP and turned west and eventually lost to view.				
FAS(2)232	07/07/2008	СА	3		Ad.	31	15:23	60	-				60	3CA flying very high above loch and then head off south and lost to view.				
FAS(2)233	07/07/2008	К.	1			31	15:30				15		15	K. seen hovering briefly north of VP and then lost to view.				
FAS(2)235	07/07/2008	К.	1			31	15:53				15		15	K. again hovering briefly N of VP along line of pylons and lost to view.				
FAS(2)108	08/07/2008	К.	1		Juv.	16	13:46				45		45	At least 42 Meadow Pipits on telegraph wires and while counting, a Kestrel drifted into view and landed on telegraph pole and then flew off south and was lost to view.				
FAS(2)109	08/07/2008	К.	1			16	13:53				45		45	Kestrel flying towards VP from north (probably a different bird from above), it landed on a telegraph pole, one down fro the radio mast.				
FAS(2)110	08/07/2008	К.	1			16	14:31					10	10	Kestrel took short flight 2nd to 3rd telegraph pole (still nearly 30 MP's on wires).				
FAS(2)382	09/07/2008	K.	1			37	12:50			45			45	Single K, seen flying over clear fell area and into forest and lost to view (within 10m of tree canopy).				
FAS(2)383	09/07/2008	К.	2	м	Ad. & Juv.	37	13:01					15	15	2 K noted sitting perched on a dead tree in the clear fell area. S of VP. 1 adult (M), 1 iuv. Adult (M) took off over the clear fell and was lost to view.				
FAS(2)384	09/07/2008	К.	1	F	Ad.	37	13:12		340				340	Adult (F) K. hunting high E of VP.				
FAS(2)387	09/07/2008	К.	1	-		37	14:00		30				30	Single K. hovering / hunting high above the edge of the clear fell and lost to view.				
FAS(2)389	09/07/2008	к.	1	F	Ad.	37	14:28		30				30	K, hunting / hovering high above clear fell area until lost to view.				
FAS(2)390	09/07/2008	K.	1	F	Ad.	37	14:36		45	60	120		225	K, again seen hunting up and down clear fell area until lost to view.				
FAS(2)391	09/07/2008	K.	1	F	Ad.	37	15:02		60	25			85	K. again hunting over clear fell area and then lost to view as per previous sightings.				
FAS(2)322	10/07/2008	ĸ	1		luv	37	09:50				15		15	Lux K took off and flew NW and was lost to view				
FAS(2)36	10/07/2008	ĸ	1		544.	12	14:49				15		15	Kestrel flew east in front of VP and was lost in clump of trees. Lesser Rednoll flew to conifer wood				
FAS(2)345	11/07/2008	GI	- 8			35	10:12				15	15	30	8 GI flying across Lochinyar and landed on water				
FAS(2)287	12/07/2008	PF	1	м	Ad	32	18:06		180	90		15	270	Adult (M) PE hunting by VP				
FAS(2)/207	13/07/2008	GI	1	F	Ad	30	11.28				30		30	Ad. (E) GI over larch plantation by forest track mobbed by ad. (M) K				
FAS(2)/420	13/07/2008	GI	1	<u> </u>	luv	30	12:09				15		15	lux GLover larch plantation mohbed by ad. (M) K				
FAS(2)/121	13/07/2008	GI	1	F	Δd	30	12.05				30		30	Ad (M) GI mote ad B7 over larch plantation				
FAS(2)730	13/07/2008	CA	1	<u> </u>	Δd	31	19.52			30	50		30	Ad (A) of most do 2 over faich plantation.				
FAS(2)178	14/07/2008	00	2		Ad	26	07:57			30	45		75	2005				
FAS(2)179	14/07/2008	00	- 1		Ad	26	08.03			45			45	1 OC N				
	1,01/2000	20	-			20	00.00			75			75	1000				





Pof No.	Data	вто	No	Sov	A.c.o	VP	Start		Flight Hei	ght Recor	ding Band	ł	Dur.	Notor
Ker No.	Date	Code	NO.	JEX	Age	No.	time	νн	н	M2	M1	L	(secs)	NULES
FAS(2)222	14/07/2008	PE	1	F	Ad.	29	10:57			30			30	Adult PE, NE alongside OHL over Carsphairn.
FAS(2)37	14/07/2008	К.	1	F	Ad.	12	12:19				47		47	K. (F) flight along OHL hover & soar at 20m, drop to ground then rise ar
FAS(2)38	14/07/2008	CU	7			12	13:27		34				34	CUx7 flight over plantation and line route at 70-90m to
FAS(2)245	14/07/2008	ос	6		Family	31	15:53				21		21	OCx6 (family+) alarm flight off lochside to Kendoon and back at ground to 20m c
FAS(2)242	14/07/2008	кт	1		Juv.	31	18:04		48				48	KT juv foraging glides and soars at 70-100m, in and out of view up v
FAS(2)323	16/07/2008	CA	1			33	13:53	60					60	CA high down valley.
FAS(2)324	16/07/2008	PE	1	м	Ad.	33	15:46	15	45	15			75	(M) PE flew past VP, gained height, stooped half heartedly, and le
FAS(2)392	17/07/2008	GI	1	м	Ad.	37	10:00		30				30	(M) GI up over forestry, high headed E.
FAS(2)180	17/07/2008	PE	1	м	Ad.	26	14:38		90				90	As the weather brightened, an adult (M) PE flew over the conifer woodland opposite, looped round and flew back 90secson conifers. Did not see the bird.
FAS(2)290	18/07/2008	CA	1		Ad.	32	11:26		47				47	CA over this time in the high band for 47secs.
FAS(2)360	18/07/2008	GJ	17			36	11:32				<15	<15	0	GJ (17) - briefly in flight at Lochinvar, landed on loch joining 6xGJ al
FAS(2)289	18/07/2008	CA	1		Ad.	32	11:52				51		51	CA flew past VP mid height for 51secs.
FAS(2)250	23/07/2008	CA	1		Ad.	31	11:31		30	30			60	CA - N-S along Water of Deugh.
FAS(2)251	23/07/2008	GJ	1			31	12:02		15	15		15	45	GJ - SE of VP S-N then back S, landed.
FAS(2)252	23/07/2008	GJ	1			31	12:25				<15	<15	0	GJ - Se of VP, landed on Water of Deugh.
FAS(2)434	25/07/2008	GI	1	м	Ad.	39	14:19		15		15		30	GI - ad (M), calling, carrying prey, W-E over A702, high -M1 hei
FAS(2)395	26/07/2008	К.	1	F		37	15:49			23			23	K. (F) flight above canopy and out of view at 30-20m.
FAS(2)325	27/07/2008	GI	1	F	Ad.	33	14:57			60			60	Ad. (F) GI over Dundeugh, flying within 10m of canopy
FAS(2)326	27/07/2008	кт	1		Juv.	33	15:53		180				180	Juv. KT over Arndarroch then drifted SE.
FAS(2)254	27/07/2008	CG	9		Ad.	31	18:12					15	15	9 CG flew of Carsfad Loch into field on E side.
FAS(2)256	27/07/2008	кт	1		Ad.	31	18:24					30	30	3-4 KT ad. Near Ad., 1 prob. 2 juvs feeding in cut hay meadow, reporte
FAS(2)257	27/07/2008	кт	1+		Juv.	31	18:24					30	30	Juv. KT (1/2) circling fields.
FAS(2)258	27/07/2008	кт	1		Ad.	31	18:47					30	30	Ad. KT appears in tree by loch (1839) flies off (1847) (Galloway bird) green L
FAS(2)259	27/07/2008	кт	1			31	19:07					75	75	Sub Ad. KT, green tag L/W, orange tag R/W (2005).
FAS(2)260	27/07/2008	кт	1		Juv.	31	19:26					45	45	Juv. KT appear over field and lands in same tree as (7)
FAS(2)174	03/08/2008	PE	2		Juvs.?	25	14:18	75	105	60			240	2 (juvs?) PE tussling / circled high, flew of SW.
FAS(2)438	04/08/2008	К.	1			39	16:02		30				30	Scanning along the tree line, a K. much lower than the 3
FAS(2)66	05/08/2008	К.	1			14	12:52				15		15	Brief view of K. flying up hillside near VP and lost to vie
FAS(2)82	05/08/2008	К.	1	м	Ad.	15	14:50					10	10	(M) K. briefly near fence line and then lost to view.
FAS(2)85	05/08/2008	К.	1	м	Ad.	15	15:38				15	15	30	K. almost right over VP and heading NE and lost over brow
FAS(2)86	05/08/2008	К.	1	м	Ad.	15	15:45	30	15				45	K. again past VP and heading strongly away NW and lost to
FAS(2)41	06/08/2008	К.	1			12	10:35		30				30	A single K. hunting N of VP and lost to view heading N
FAS(2)11	06/08/2008	К.	1			10	13:21				75	15	90	Single K. hunting / hovering west of VP on rough pastur
FAS(2)12	06/08/2008	кт	1			10	13:32					5	5	A brief view of a KT west of VP.
FAS(2)13	06/08/2008	К.	1			10	13:38				15		15	K. hunting / hovering briefly in of VP and lost to view.
FAS(2)14	06/08/2008	К.	1			10	13:56				45		45	Single K. flying NW over rough past and eventually lost to
FAS(2)15	06/08/2008	К.	1			10	14:08				15		15	K. now hunting on slopes of hillside west of VP briefly
FAS(2)16	06/08/2008	К.	1			10	14:16					15	15	Brief view of hovering K. in same general area as 1, 4 and
FAS(2)17	06/08/2008	кт	1			10	14:20			300			300	KT seen again in same area but for much longer before being mob
FAS(2)188	07/08/2008	К.	3	м	Juv.	27	11:39			326			326	K.x3 (family juvs) foraging hover and soar with bouts of stop and stall interaction and occa
FAS(2)295	07/08/2008	К.	1			32	11:43				30		30	K. flying S along ridge (same as BZ & RN) and lost to view but another different K.
FAS(2)296	07/08/2008	К.	1	м	Ad.	32	11:44					15	15	As above
FAS(2)298	07/08/2008	ĸ	1			32	12:04				45		45	K seen again hovering / hunting along ridge slopes
FAS(2)190	07/08/2008	к	2			27	12:01			453	1.5		453	K x2 hover and soar at 10-40m same area and line as 2 (assume of
FAS(2)329	07/08/2008	к	1			33	15:07			133	15		15	K hunting / hovering along ridge line and then lost to vi
FAS(2)320	07/08/2008	ΓΔ	1		Δd	22	15.57		60	30			90	Single CA flying strongly NF towards VP then turned and followed aquedue
FAS(2)111	08/08/2008	нн	1	м	Ad	16	08.58				<15	<15	0	HH - adult (M) F-NW just to SW of VD M1-low beights
FAS(2)112	08/08/2008	нн	1	M	Ad	16	09.43				1.1.7	45	45	HH - adult (M) same as flight ref no 1 bird. NW of VD
FAS(2)112	08/08/2008	нн	1	M	Δd	16	10.00					15	15	HH - adult (W), same as night fer no 1 billo, NW of VD
1 11 3(2/113	1 00,00,2000		-	1 1 1 1	, Au.	1 10	1 10.00		1	1	1	1 10	1 10 1	a duit (w) again, may have landed, NW OF VF.

e and into plantation
n to S
m circling before settling again.
in valley and back
nd lost to view
csonds all high. As it flew (by coincidence) a (F) K. called from the adjacent
il already present
heights 1419.
Om.
юру.
orted earlier by locals.
en L/W, older bird that (7).
5).
s (7).
ne 3BZ.
view.
w.
ow of hill.
t to view.
g NE.
sture.
iew.
t to view.
efly.
and 5.
nobbed by 2xCC.
occasionally to ground. Ground to 50m.
K. (M) seen moving / hunting N.
es.
ne same birds).
o view.
educt N until lost to view.
ghts.
r vP.

Def No	Data	вто	No	Cov	A.c.	VP	Start		Flight Hei	ght Recor	ding Band	i	Dur.	Notes
Ref No.	Date	Code	NO.	Sex	Age	No.	time	VH	н	M2	M1	L	(secs)	Notes
FAS(2)418	08/08/2008	CA	1			38	11:57		90				90	Single CA seen flying W past VP and followed until lo
FAS(2)396	08/08/2008	нн	1	м	Ad.	37	13:37				10	5	15	(M) HH seen at edge of forest and onto rough pa
FAS(2)398	08/08/2008	К.	1			37	14:15					15	15	Brief view of hunting / hovering K. over rough pasture and
FAS(2)261	09/08/2008	КТ	1		Ad.	31	16:47			15	45		60	Ad. KT near Carsfard Loch (over tree canopy
FAS(2)262	09/08/2008	CA	1		Imm.	31	17:25			30			30	Imm. CA.
FAS(2)263	09/08/2008	CA	1		Imm.	31	17:38			45			45	Imm. CA.
FAS(2)264	09/08/2008	CA	1		Ad.	31	18:25		15	60			75	Ad. CA.
FAS(2)68	10/08/2008	КТ	1		Ad.	14	15:46		195	105			300	KT x1 flying and gliding around hillside.
FAS(2)336	12/08/2008	CA	1			33	08:07		60				60	CA - N-S to SW of VP, high height 0807-0808
FAS(2)337	12/08/2008	CA	1			33	08:59		75				75	CA - N-S to WSW of VP, high height.
FAS(2)338	12/08/2008	CA	1			33	09:29		30	15			45	CA - N-S to SW of VP, 0929-0930, high - M2 hei
FAS(2)218	13/08/2008	нн	1	М		28	10:38					45	45	HH - (M) S of VP, N-S, low height 1038-1039
FAS(2)87	16/08/2008	CA	2			15	07:20		480				480	CA x2 flying high, going up river valley - NW, lost t
FAS(2)159	20/08/2008	К.	2	F	Juv.	24	13:21				307		307	K. (F) and juv hover and soar, perch in mature retention in clear fell, forage out over restock an
FAS(2)161	20/08/2008	К.	2		Juv.	24	13:55			264			264	K. juv x2 direct flight into clear fell area, settling on tree tops in brief interaction
FAS(2)165	20/08/2008	К.	1	м		24	16:00				35		35	K. (M) hover and soar over clear fell restock at 10-20m (assume part of
FAS(2)198	20/08/2008	К.	1			27	18:19			11			11	K. hover and soar at 15-30m along heath ridge
FAS(2)480	21/08/2008	GJ	17		Ferals	40			114				114	GJx17 direct flight at 60-80m (party of ferals
FAS(2)115	21/08/2008	К.	1	F		16	13:10				146		146	K. (F) hover soar and drift at 5-40m before dropping
FAS(2)116	21/08/2008	К.	2	м	Juv.	16	13:27				74		74	K. (M) and juv drifting soar and hover at 10-30m drop out of
FAS(2)117	21/08/2008	нн	1	М	Ad.	16	13:29				51		51	HH (M) drifting quartering flight with occasional rise, stall in wind at 5-15m. Out of
FAS(2)119	21/08/2008	К.	1			16	13:34			182			182	As above
FAS(2)124	21/08/2008	К.	1	F		16	14:12		147				147	K. (F) hover and soar at 30-40m, drop out of view toward
FAS(2)125	21/08/2008	К.	1	М		16	14:22				16		16	K. (M) soar and hover at 20m, drop out of vie
FAS(2)127	21/08/2008	К.	1	м		16	14:42		21				21	K. (M) fast drift at 50m, drop out of view into valley. Assume
FAS(2)128	21/08/2008	К.	1		Juv.	16	14:52		300				300	K. juv hover and soar at 30-40m, aware of surveyors presence on VP. Drift back toward Brockloch
FAS(2)130	21/08/2008	К.	1	м		16	15:00			300			300	K. (M) direct flight at 30m reappear top resume hover and soar foraging fligh
FAS(2)131	21/08/2008	К.	1		Juv.	16	15:08			350			350	K. juv hover and soar at 20-30m back along same
FAS(2)132	21/08/2008	К.	2	М	Juv.	16	15:23			280			280	Birds 16 & 17 along same flight lines and at similar heigh
FAS(2)469	21/08/2008	нн	1		Juv.	40	17:28				23		23	HH ringtail juv, low quartering flight along hill ridge and plantation margin at 5-15m. Ca
FAS(2)471	21/08/2008	К.	1	М		40	17:47				49		49	K. (M) hover and soar across hill face, swinging away fro my posit
FAS(2)473	21/08/2008	К.	1	М		40	18:20				101		101	K. (M) hover and soar across Knocksman Hill face and low slopes at 10-15m, drop to tre
FAS(2)474	21/08/2008	КТ	1		Juv.	40	18:36		19				19	KT juv soaring glide at 40m across Hallmark plantation and Corriedo. Briefly harried by K.x2 (assume adult an
FAS(2)476	21/08/2008	T.	4			40	18:50					9	9	T.x4 flight out of burnside rush margin along burn at 5m and drop
FAS(2)478	21/08/2008	К.	3			40	19:27			290			290	K.x3 (family) hover and soar over Corriedo clearfell / restock and onto
FAS(2)479	21/08/2008	КТ	2			40	19:38		23				23	KTx2 direct flight at 50m heading WSW along v
FAS(2)481	21/08/2008	BO	1	F		40	19:45				31		31	BO (F) hunting along low face of Knockman passing below VP and along Margree plantati
FAS(2)267	27/08/2008	CA	4			31	09:50		52				52	CAx4 direct flight over woodland then circling flight possibly
FAS(2)47	27/08/2008	К.	1			12	10:33		45				45	K NNW of VP, hovering, moved off N, high he
FAS(2)347	27/08/2008	К.	1	М		35	13:22				16		16	K. (M) hover and soar at 15-20m drop out of v
FAS(2)88	27/08/2008	К.	1			15	14:22				45		45	K S of VP, M1 height, landed.
FAS(2)349	27/08/2008	К.	2			35	14:41				117		117	K.x2 hover and soar at 15-20m in and out of v
FAS(2)89	27/08/2008	К.	1			15	15:13				<15		0	K S of VP, flew into line trees, M1 height, pres. same as
FAS(2)90	27/08/2008	К.	1			15	15:48		30	30	60		120	K initially SW of VP then hovering NW of VP, moved off N, hi
FAS(2)91	27/08/2008	К.	1			15	17:06		60		15		75	K. NW of VP at buffer zone, hovering / circling briefly then W into forestry, M1 -
FAS(2)166	29/08/2008	К.	1	М	Juv.	24	14:14				30		30	K juv (M), S of VP, landed in pine, M1 height, 2
FAS(2)167	29/08/2008	К.	1			24	14:50		30	30	30		90	K distantly WNW of VP, at opposite site, hovering, moved off W, 1450-
FAS(2)201	31/08/2008	К.	1	F	Juv.	27	16:34				41		41	K. juv (F) hover and soar at 15-20m over improved fields and road side mar
FAS(2)204	31/08/2008	К.	2			27	18:39			123			123	K.x2 direct flight over plantation and hover and soar at 30m over roadside margin



lost to view.
pasture.
d then lost to view.
py).
F17
aichte
st to view.
and out of area toward other clear fell blocks 15-25m.
ons 15-30m (assume same family as 1).
of K. family working the area).
ge top.
als).
ng to ground.
of view under OHL.
of view on down slope toward existing line.
d Brockloch Craig.
view.
me same bird as 11.
ch Craig side. Concentrating hover hunt over rocky slopes.
ght back along same line and height.
me line.
ghts as previous.
Came out of clearfell and back into plantation.
sition on the VP 15-20m.
tree margin by burn. (Assume same bird as 4).
and juv) over clearfell margins. KT drop and swing out of view to SW.
op out of view onto water.
to Milnmark open hill 20-30m.
; valley.
ation edge at 5-10m swing into trees out of view.
bly to land 40-30m.
height.
f view.
f view.
as flight ref no. 1.
high - M2-M1 heights.
1 - high heights, 1706-1708, TU at OHLs.
t, 1414.
50-1452, high - m2 - m1 heights.
nargins, move into glen out of view.
ins and hill slopes - burnt plantation area.
• •



Table D5.3 - Flight Activity Survey Season 3 – Target Species Records August 2008 to September 2009

Define	Dete	BTO	NIT	6		VP	Chart		Flight Hei	ght Record	ling Bands		Dur.	
Ref NO.	Date	Code	NO.	Sex	Age	No.	Start	VH	н	M2	M1	L	(secs)	Notes
FAS(3)30	01/09/2008	К.	1			12	12:15			240	240		480	K.x1 zigzagging across area through OHLs, flying over planta
FAS(3)31	01/09/2008	К.	1			12	13:40			150	150		300	K.x1 hunting and gliding through open area
FAS(3)1	01/09/2008	PE	1		Juv.	10	16:11					120	120	PEx1 flying low and fast across area occasional gliding into w
FAS(3)898	02/09/2008	К.	1	М	Ad.	40	06:41		10	17			27	K. (M) soar and hover at 40-20m along roadside and in-bye pastures and water ma
FAS(3)900	02/09/2008	CA	2		Ad.	40	07:56		29				29	CAx2 fly over VP at 50-60m direct flight toward Loc
FAS(3)901	02/09/2008	К.	2	м	Ad. + Juv.	40	08:16			45	20		65	K. (M) + juv hover and soar in foraging flight over rough grazing at 10-30m. Juv not put
FAS(3)756	03/09/2008	BO	1			37	19:21				750		750	BO foraging flight at 5-15m along sheltered margins of Glenshimmeroch F
FAS(3)132	05/09/2008	К.	1	F	Ad.	15	09:51		80	50			130	K. (F) hover and soar over plantation and margins at
FAS(3)218	08/09/2008	К.	1			18	09:12		240		30		270	K hovering NE of VP, high - M1 heights, 0912-0916, also 2nd K. perched upon OF
FAS(3)219	08/09/2008	К.	1			18	09:28				15		15	K perched bird from above, E-W over A713, landed on telegraph wi
FAS(3)220	08/09/2008	К.	2	М		18	10:05		585	60			645	K. (2) - 2 hovering NNW of VP, M2-high heights, 095
FAS(3)221	08/09/2008	К.	1			18	10:42		30	45	15		90	K SE of VP, hovering, dropped down, high - M2-M1 heig
FAS(3)222	08/09/2008	К.	1			18	11:18				30		30	K E of VP, landed on pylon, M1 height, 1118, HC+
FAS(3)344	08/09/2008	К.	1			26	14:42		45	45		15	105	K hunting / hovering S of VP, at buffer zone, dropped down on to gro
FAS(3)85	10/09/2008	К.	1		Juv.	14	09:22			30			30	K. hovering in valley floor.
FAS(3)86	10/09/2008	СА	1			14	09:40		85				85	CA high down valley.
FAS(3)87	10/09/2008	К.	1		Juv.	14	10:06			35			35	K. hovering across hillside.
FAS(3)820	10/09/2008	ВК	2	м		38	10:07			45			45	BK(2) - (M)(M). S of VP. E-W. lost over brow of hill. 1007-10
FAS(3)821	10/09/2008	ВК	1	м		38	10:11				15		15	BK - (M). 3rd (M). landed on grass moor to E of VP. low
FAS(3)822	10/09/2008	ВК	1	M		38	10:17		15	15	15		45	BK - (M) same (M) as flight ref no 2, took off, flew SSW, low
FAS(3)88	10/09/2008	нн	1	м	βά	14	10.37				50		50	(M) HH quartering across VP
FAS(3)823	10/09/2008	К.	1			38	10:37		30	15			45	K hovering at clearfell N of VP at huffer zone, dropped down, M2
FAS(3)824	10/09/2008	к	1			38	11.22	345	50	15			345	K - hovering at clearfell area N of VP 1133-1138 his
FAS(3)318	10/09/2008	PF	1	м	۵d	25	12.52	545	45				45	PE (probably (M)) circling over forestry, drifted
FAS(3)610	11/09/2008	GD	1		Au.	33	11.37		30	15	15		60	GD'redhead' NLS_M1_M2-high heights 1137_1
FAS(3)825	11/09/2008	ĸ	1	м	٨d	38	12.22		50	60	15		60	K hovering moved across VP
FAS(3)611	11/09/2008	к.	1	M	Au.	33	12.22			00	30		30	K _ (M) S of VP W E landed on telegraph note. M1 heig
EAS(2)195	12/09/2008	к. К	1			16	08.54				30	15	15	K = (W), S of VF, W_L, landed on telegraph pole, with leig
FAS(3)105	12/09/2008	к. К	1			10	00.34			20	20	15	15	K NNW of VP on telegraph pole, took on, new N, initially MI neigh
FAS(3)180	12/09/2008	к. И	2			10	09:10			30	30		20	K.(2) - NW OF VP, along telegraph pole line initially, new into plantation NE of Lam
FAS(3)187	12/09/2008	К.	1			16	09:37			15	15	105	30	K at forestry on W side of A713, on telegraph pole then took off,
FAS(3)189	12/09/2008	SE	1			16	11:05				30	105	195	SE - quartering grass moor N of VP, dropped down, 1105-110
FAS(3)190	12/09/2008	SE	1			16	11:18			45	60	180	285	SE - presumably same bird as above, again quartering same area as before, whilst watching it, a second SE came into moved off N, 1118 - 1123, low - M1 - M2 heigh
FAS(3)191	12/09/2008	SE	1			16	11:20			45	60	60	165	SE - second bird, different from above, joined first bird, circled with it and moved off
FAS(3)402	12/09/2008	PE	1	М		28	13:15	165	75				240	PE(1) - (M), circling distantly NW of VP, moved off N, VH-high h
FAS(3)404	12/09/2008	К.	1			28	14:06		45		15		60	K hovering / hunting over open moor distantly SE of VP, moved off S,
FAS(3)670	14/09/2008	К.	1	F	Ad.	35	10:22				30		30	K. low across hillside.
FAS(3)699	14/09/2008	К.	1	М	Ad.	36	13:17			30			30	K. flew high past VP.
FAS(3)1070	15/09/2008	CA	1		Ad.	43	16:15				45		45	CA flying W across loch past VP and eventually lost
FAS(3)279	16/09/2008	К.	1		Juv.	24	11:58				9		9	K. juv direct flight between mature tall stands in clearf
FAS(3)280	16/09/2008	К.	1		Juv.	24	12:18				7		7	K. juv off plantation at 15m over restock out of
FAS(3)281	16/09/2008	К.	1	М	Ad.	24	12:22			30	14		44	K. (M) off plantation at 15m, hover and soar at 10-30m returning to plantation / clearfell margin roost. Resume how
FAS(3)551	16/09/2008	CA	1		Ad.	32	14:20					15	15	CA flew S from river from river and down to loch until
FAS(3)554	16/09/2008	CA	1		Ad.	32	15:52		75				75	Single adult CA high and S down the valley until lost
FAS(3)981	17/09/2008	К.	1			41	11:48		120				120	K. hunting / hovering above the forest SE of V
FAS(3)223	17/09/2008	К.	1	м	Ad.	18	13:32				100		100	K. pair off separate perches pole and shelterbelt to hover and soar at 10-20m. Each briefly i
FAS(3)224	17/09/2008	К.	1	F	Ad.	18	13:32				125		125	As above.
FAS(3)225	17/09/2008	СА	1		Ad.	18	14:20		40	16	5	6	67	CA rising flight 10-50m then drop to Loch Doon. Assume ros
FAS(3)226	17/09/2008	нн	1	м	Ad.	18	14:50			1	53		53	HH (M) casual gliding flight at 5-10m, passing under pylon and over pole line
FAS(3)227	17/09/2008	К.	1	F	Ad.	18	15:02				38		38	K. (F) hover and soar as per (2) around shelter block at 15-20r
		1	I	I	1	1	-	1	1	1	1	1	1	

tion, lost to view.
<i>r</i> ind (lost to view).
argins. Drift out of view into plantation.
h Howie.
off by me on VP. Assume (M) same bird as 1.
Rigg and around ruins at Kilnar.
t 25-50m.
HLs E of VP, present from start of watch.
ires, (M), 0928, M1 height.
55-1005.
hts 1042-1043.
at OHLs.
ound, high-M2-low heights.
008 M1 heights.
height 1011.
r-M1-M2 heights.
2-M1 heights 1037-1038.
gh height.
off.
1138.
ht,1319-1320.
nt, then low height, 0854.
ford Farm, M1-M2 heights, 0910-0911.
, M1-M2 heights, 0937.
8, low-M1 heights.
view, it then joined the second bird and both circled over minor road then hts.
N with it 1120-1123, low-M1-M2 heights.
heights, 1315-1318.
high-M1 heights 1406-1407.
to view.
fell 15-20m.
view.
er and soar at 15-30m, calling and fluttering flight over clearfell tall stand.
lost to view.
t to view.
/P.
in air going to ground or perch (pylon, pole, tree).
se off Loch Muck.
e. Slow cruise over rough grazing.
n. Drop to ground.

D .(D).	Dut	вто				VP			Flight Hei	ght Record	ling Bands		Dur.	
Ref No.	Date	Code	NO.	Sex	Age	No.	Start	νн	Н	M2	M1	L	(secs)	Notes
FAS(3)228	17/09/2008	К.	1	м	Ad.	18	15:16				40	8	48	K. (M) and 1 other both hover and soar at 15-20m. (M) back to pole perch, 2nd bird d
FAS(3)229	17/09/2008	К.	3			18	15:24			200	100		300	K.x3 in air 10-30m, all on the area of 1 and 2 (fa
FAS(3)230	17/09/2008	К.	2			18	15:31			20	50		70	K.x2 in air 15-30m.
FAS(3)487	17/09/2008	CA	1		Ad.	31	15:37		100				100	CA high S down the valley before lost to
FAS(3)231	17/09/2008	К.	2			18	16:01			45	100		145	K.x2 hover and soar at 10-30m, same are
FAS(3)232	17/09/2008	К.	2	PR	Ad.	18	16:16			70	100		170	K. pair hover and soar at 10-30m, same area as 2 and 1, settli
FAS(3)1074	17/09/2008	К.	1	м	Ad.	43	18:04			50	22		72	K. (M) hover and soar over loch margin rough grazing near ca
FAS(3)1075	17/09/2008	нн	1	м	Ad.	43	18:30				10	25	35	HH (M) adult direct flight over loch at 10m and drop to
FAS(3)1076	17/09/2008	GJ	1	м	Ad.	43	18:57			15	10	5	30	GJ (M) rise circle and land. Ground to
FAS(3)138	18/09/2008	К.	1	м	Ad.	15			120				120	K. hunting hillside N of VP.
FAS(3)375	18/09/2008	К.	1			27	11:13		30				30	K E of VP, initially chasing above BZ, moved off SE over fores
				М&										
FAS(3)141	18/09/2008	К.	2	JUV F	Ad. & Juv.	15	11:31			15			15	Then 2 K. flew from same general area but mo
FAS(3)144	18/09/2008	К.	1	F?	Juv.	15	11:51		120	30	15	30	195	A single K. again hunting the rough pasture (hill slo
FAS(3)376	18/09/2008	К.	1			27	11:59		45		15		60	K distantly NE of VP, high-M1 heights 1159-1200, I
FAS(3)90	18/09/2008	К.	2			14	14:31				68		68	K.x2 hover and soar at 15-20m, occasional swoop interaction and calls
FAS(3)984	18/09/2008	К.	1		Juv.	41	14:40		390		30		420	K juv hovering . Hunting S of VP, moving SW, high-M.
FAS(3)91	18/09/2008	К.	1	F		14	14:50				110		110	K. (F) hover and soar having come out of alder wood 10-20m. Assume part of huntin
FAS(3)905	18/09/2008	К.	2			40	14:53		45				45	2xK. Hunting above clearfell area near Shie
FAS(3)907	18/09/2008	CA	2			40	15:13		60	16			76	2 CA flying E high and then turning and dropping
FAS(3)985	18/09/2008	К.	1		Juv.	41	15:16		330				330	K juv, possibly same bird as flight ref no.1, hunting / hovering S of VP, eventually cross
FAS(3)94	18/09/2008	СА	2			14	16:08		28	20			48	CAx2 direct flight along river at 20m (Assume birds from Holm of Daltallochan heading for Carminnows roost). wayleave (not under).
FAS(3)1079	18/09/2008	CA	1		Ad.	43	18:25		30	15	15	15	75	The CA took off from loch and eventually fle
FAS(3)703	20/09/2008	К.	1			36	12:45			120			120	1xK. Flying above and across tree tops (with 10m) fly
FAS(3)555	20/09/2008	CA	1		Ad.	32	13:25				30		30	CA flew direct as usual 30secs mid he
FAS(3)996	21/09/2008	CA	1			42	07:31		210				210	1xCA flying high and fast across area
FAS(3)997	21/09/2008	CA	2			42	08:10		120	120			240	2xCA flying high then dropping down to M2 (N
FAS(3)999	21/09/2008	GI	1	м		42	09:05				105		105	1xGI from hillside across B700, through fields to Oak trees then into Birch
FAS(3)910	21/09/2008	К.	1			40	12:10				510		510	1xK. Hunting along roadside, lost to v
FAS(3)282	22/09/2008	К.	1			24	15:08		15	15	15		45	K. SW-NE to W of VP, high-M2-M1 heights, 1
FAS(3)283	22/09/2008	К.	1	м		24	15:09		<15				<15	K different to above bird, seen whilst following above bird, high height
FAS(3)320	22/09/2008	К.	1			25	17:53		390				390	K hunting / hovering bird at forestry on ridge WSW of VP, high
FAS(3)446	23/09/2008	нн	1	F?		29	09:42				90	120	210	HH - ringtail at Bardennoch Hill. S of VP. quartering back and forth and chasing / being chased by 2xC
FAS(3)447	23/09/2008	нн	1	F?		29	09:48				30	60	90	HH - same as above bird, ringtail, being chased / harried by BZ at Bardenno
FAS(3)1081	23/09/2008	СА	1		Ad.	43	15:15					18	18	CA flying low across loch for 12sec
FAS(3)3	24/09/2008	кт	1		Ad.	10	13:10				14		14	KT flying quite far away and lost behind dead ground. N
FAS(3)4	24/09/2008	CA	1		Ad.	10	13:22				40		40	CA flying past VP mid height 40sec
FAS(3)1000	26/09/2008	ĸ	-		luv	42	11.41				<15	<15	<30	K - perched on telegraph nole on W side of road S of VP disturbed by pas
FAS(3)1000	26/09/2008	к.	1		luv	42	12.32				15		15	K - NW of VP took off from overhead wires then landed again o
FAS(3)1001	26/09/2008	K.	1		500.	42	12.52				<15 <15	<15	 	K - S of VP on telegraph pole W side of road, took and flew W M1-low beights 124
EAS(3)1002	20/03/2008	к. И	1	N4	lunz	22	12:45			17	15	<15	17	K 5 01 VI, 01 telegraph pole VI side 01 road, cook and new VV, NIT-IW heights 124
FAS(5)012	27/09/2008	к. И	1		Juv.	22	12.39			1/	12		17	K. juv (ivi) nover and soan hunding over sneep pastures 20
FAS(3)014	27/09/2008	к. СА	1		.vul	22	13:38				12		12	K. Juv (W) (assume same bird as (1)) direct hight them in
	27/09/2008		4		Aŭ.	33	14:04		450		10	4	14	CAX4 IIIL OIT POOST and drift down toward Carminnows fish farm, 20h
FAS(3)556	02/10/2008	CA	3			32	0/:15		150				150	3xCA flying high northwards togeth
FAS(3)95	02/10/2008	HH 	1	M	Ad.	14	11:51					540	540	1XHH, (M) adult quartering, ground, 1-2m, occasional. being mob by small birds (Mf
FAS(3)233	03/10/2008	К.	2			18	10:54				<15		<15	K. (2) south of VP, flew into plantation southwest of V
FAS(3)235	03/10/2008	К.	1			18	11:36		30		30		60	K south to north to west of VP, crossed the A713 a
FAS(3)284	03/10/2008	К.	1		Juv.	24	14:09				30		30	K. south of VP, perched on pine, took off and landed a
FAS(3)285	03/10/2008	К.	1		Juv.	24	14:26	30	480				510	K juvenile, presumably same as flight ref no 1 bird, hovering initially southwest of track, southwest of





frop out of view on hillside. (M) bird same area as (1).

amily territory).

o view.

rea as 3.

ling on poles near Eriff Farm.

attle feeders, 15-30m WNW.

3m over bracken knoll.

30m.

estry, 1113-1114, high height.

oved up hill E.

opes) just N of VP.

hunting / hovering.

s (juv begging). Both flight under OHL.

1 heights, 1440-1446.

ng family (3). Turn back to hunt along live wayleave.

eld Willie.

g until lost view.

sed the track and moved off W, high height, 1516-1521.

Rising to 40m over plantation then drop out of view behind. Note: flew over

ew off NW.

ing W (lost to view).

eight.

a N.

NE direction).

woodland to an (explosion of small birds).

view.

1508-1509.

1509 (continued to follow original bird).

h height 1753-1759, moving W.

, lost when moved off over summit of hill, low-M1 heights 0942-0945.

och Hill S of VP, low-M1 heights, 0948-0949.

.

Med height, 14 seconds.

i.

ssing lorry, flew W, M1-low heights, 1141.

on same wires, M1 height 1232.

45; also M.(2) - NW-SE by road S of VP, M1 heights.

0-30m, drop out of view.

nover and soar at 15m.

m - ground (water) to bath and fish.

ner.

P). Eventually lost to view due to ground structure.

/P, M1 heights, 1054.

ind landed on pylon.

gain on another pine.

f VP then at clearfell by and southeast of VP, eventually moved off east.

Define	Data	BTO	N	6 m		VP	Chart		Flight Hei	ight Record	ling Bands		Dur.	
Ref No.	Date	Code	NO.	Sex	Age	No.	Start	VH	н	M2	M1	L	(secs)	Notes
FAS(3)286	03/10/2008	К.	1		Juv.	24	15:07		45				45	K distantly west-southwest of VP, hovering, moving northeas
FAS(3)287	03/10/2008	К.	1		Juv.	24	15:35		135				135	K presumably same bird as flight ref numbers 1 and 2, hovering southw
FAS(3)6	06/10/2008	CA	1			10	13:14		28	15			43	CA adult direct flight at 20-40m, difficult rolling flight with a lot of t
FAS(3)1003	08/10/2008	К.	1	м		42	11:41				12		12	K. (M) flight onto hawthorn at 5m, lift to 10m off perch and move into old oak disturbing the RE. Small parties
FAS(3)346	08/10/2008	К.	1			26	11:54				15	15	30	K. east to west along edge of plantation to south of VP, TU
FAS(3)1004	08/10/2008	К.	1	м		42	11:56			40	20	8	68	K. (M) (assume same bird as 1) hover and soar at 30m, drop to ground the
FAS(3)1005	08/10/2008	К.	1	м		42	11:57		20				20	K. (M) fly over at 50m at lame line as (2) in the air. No interactio
FAS(3)1006	08/10/2008	К.	1			42	12:38			30	10	2	42	K. hover and soar at 30m, drop to ground, maybe bird (3). Back in the air, spiralling to 40n
FAS(3)1007	08/10/2008	К.	1	м		42	12:47			9	20		29	K. (M) (assume same bird as 1 & 2) hover and soar 2
FAS(3)1010	08/10/2008	нн	1	F		42	13:14		33				33	HH (F) soaring spiral at 40-100m then drop and drift away at 50m to north-nor
FAS(3)1011	08/10/2008	К.	1	м		42	13:29		20	2			22	K. (M) at 30-50m over rush pastures, drop out of view, back onto roadside telepho
FAS(3)1012	08/10/2008	К.	1			42	13:36				3		3	Joined on nest pole by another K. (200m to south of VP) 10m. Note: mixed party of REx8, FFx17 flight and land on bir
FAS(3)827	09/10/2008	К.	1	м	Ad.	38	10:11		30	15			45	(M) K. hovering across VP, circled and headed nor
FAS(3)829	09/10/2008	ВК	2			38	11:53		40				40	2 BZ circling high over forest.
FAS(3)238	11/10/2008	нн	1			18						300	300	Adult (M) HH hunting rough ground between VP + Loch Doon (
FAS(3)406	11/10/2008	ВК	1	м	Ad.	28	15:03					15	15	(M) BK flew low towards forest block south of VF
FAS(3)488	12/10/2008	GD	1			31	08:30				30		30	Redhead GD southeast water of Deugh.
FAS(3)489	12/10/2008	CA	1		Imm.	31	09:05				30	30	60	Immature CA flies low along Water of Deugh south-southeast tow
FAS(3)490	12/10/2008	CA	1		Imm.	31	09:20			45			45	Immature CA circle Water of Deugh then south-southeast towar
FAS(3)491	12/10/2008	GJ	2		Ad.	31	09:25			45			45	2 GJ south-southeast towards Carsfad Loch.
FAS(3)492	12/10/2008	GD	1			31	10:05			30			30	Redhead GD flies north from Carsfad Loch.
FAS(3)494	12/10/2008	CA	1		Ad.	31	10:18				30		30	CA over Kendoon to Carsfad Loch.
FAS(3)912	12/10/2008	CA	2		Imm.	40	13:22		90	15	15		120	2 CA fly into lake near Margree Cottage.
FAS(3)913	12/10/2008	нн	1	м	Ad.	40	13:28		45	15	15		75	Adult (M) HH over clear area then circled high over Kiln
FAS(3)704	14/10/2008	К.	1	м	Ad.	36	12:37		60				60	(M) K. hovering and flying high over forestry.
FAS(3)705	14/10/2008	К.	1	м	Ad.	36	13:19		30				30	(M) K. (same bird as flight line 1) high across grour
FAS(3)706	14/10/2008	К.	1			36	14:04		10				10	K. high over VP, lost to view quickly.
FAS(3)449	16/10/2008	К.	1			29	12:17		90		30	15	135	K. south of VP, hovering then moved off west, high - M1 heights - low
FAS(3)450	16/10/2008	CA	1			29	12:46					15	15	CA - east to west along Water of Deugh, south of V
FAS(3)615	16/10/2008	К.	1	м	Juv.	33	14:07				19		19	K. juv (M) lift off pole and hover and soar at 15-20m, swing sou
FAS(3)380	16/10/2008	К.	1			27	16:49		315	15			330	K east of VP at buffer zone, hovering / hunting
FAS(1) 2221	16/10/2008	нн	1	F?		20	16:19			12			12	HH ringtail direct flight at 20-30m along valley and over mixed plantation - I
FAS(3)381	16/10/2008	PG	40			27	17:05	75					75	PG (40) - very distantly east of VP, north to south, very high heights. NB: line shown on m
FAS(1) 2224	16/10/2008	К.	1	F		20	17:10				10		10	K.(F) lad on telephone cable. Disturbs 3 parties of GO total 21, then flights along cable into
FAS(3)1086	19/10/2008	CA	1			43	10:29		60				60	9 GJ over Lochinvar from southwest, circle, 2x land on water
FAS(3)1087	19/10/2008	GJ	9			43	10:34		30	180	60		270	1 CA few in, landed at north end of Lochinvar.
FAS(3)1088	19/10/2008	CA	1			43	10:58				30	15	45	9 GJ still at the loch.
FAS(3)7	19/10/2008	GD	1	м	Ad.	10	13:22					15	15	(M) GD flew up near at Butterhole Bridge.
FAS(3)1089	22/10/2008	GJ	9			43	08:15		60	30		15	105	GJx 9 flying in to loch from southwest, turning over loch and ascending,
FAS(3)1090	22/10/2008	GJ	11			43	08:30		300				300	GJ x11 flying high and very vocal, flying west to west (lost
FAS(3)1091	22/10/2008	GJ	4			43	08:46		180		15	15	210	GJx4 flying in from a northerly direction, landing near loch head
FAS(3)1092	22/10/2008	GJ	5			43	09:30		75		30	15	120	GJ x5 very vocal, flying in from west.
FAS(3)1093	22/10/2008	CA	1			43	10:00					60	60	CAx1 flying low across water, landing on rock (sun bathin
FAS(3)1094	22/10/2008	WS	4			43	10:50		240				240	4xWS flying south across loch, veering right at end west, lo
FAS(3)558	22/10/2008	CA	1		Juv.	32	12:54				21		21	CA juv direct gliding flight at 15-30m then down onto
FAS(3)560	22/10/2008	ML	1	F		32	12:58		20	23			43	All species swung out of view behind or into large beech trees by lodge. PE
FAS(3)559	22/10/2008	PE	1	м		32	12:58		20	23			43	PE (M) mobbed first by ML (F) then joined by RNx2, all by VI
FAS(3)562	22/10/2008	CA	2		Ad.	32	13:21	48	20				68	CA x2 adults direct flight at 60-120m.
FAS(3)563	22/10/2008	К.	1	F		32	13:23		14				14	K. (F) flight off mature ash into soaring spiral 30-80
FAS(3)347	22/10/2008	К.	1			26	16:40		15				15	K. southwest of VP. north to south over forestry.

heast to southwest.
uthwest of VP, dropped down.
t of tacking across wind.
ties of MP moving around VP, WP activity over Kendoon Woodlands.
/P, TU at OHLs.
d then up and back to old oaks.
action between birds.
9 40m and drifting to northeast around hill face.
oar 20m.
h-northeast toward aqueduct area.
lephone wire pole 150m to south of VP.
on birches by VP. Both flight off to south, out of view at pole height, 7-10m.
l north.
con (1308 onwards).
of VP.
l.
t towards Carsfad Loch.
owards Carsfad Loch.
ch.
ch.
2.
r Kilnair Hill.
try.
ground.
- low heights, TO at OHLs.
h of VP.
g south out of view.
nting.
on - NE out of view behind trees.
on map is only approximate flight line location.
into policy enclosures - WSW out of view 5-10m.
vater by the dam.
ivar.
je.
ding, landing near loch head.
(lost to view.)
lead with other geese.
athing) drying.
est, lost to view.
onto water.
PE went out over Glenhoul Hill.
by VP at 40-20m.
20.00-
รม-สมกา.
esu y.

Pof No.	Data	вто	No	Sov	1.00	VP	Start		Flight Hei	ght Record	ling Bands		Dur.	Notos	
Kel NO.	Date	Code	NO.	Sex	Age	No.	Start	νн	н	M2	M1	L	(secs)	NOLES	
FAS(3)348	22/10/2008	BO	1			26	17:38				30	45	75	BO - quartering / hunting distantly southeast of VP, at buffer zone.	
FAS(3)349	22/10/2008	BO	1			26	17:46				15		15	BO - presumably same bird as above, flying through coniferous trees, lost in amongst the trees, may have landed.	
FAS(3)1013	23/10/2008	GJ	8			42	08:35		300				300	8xGJ flying high through valley heading in a southerly direction.	
FAS(3)1014	23/10/2008	CA	3			42	09:15			270			270	3xCA flying up valley (North), sometimes within 10m of tree tops.	
FAS(3)193	26/10/2008	К.	1			16	10:36			85			85	K. hovering and moving slowly across hillside.	
FAS(3)10	26/10/2008	нн	1	F	Ad.	10	15:25			10	50		60	(F) HH low across hillside, moved down burn, lost to view.	
FAS(3)874	26/10/2008	GI	1	м		39	15:27			12			12	GI (M) direct flight at 30m	
FAS(3)876	26/10/2008	GJ	11			39	16:04		39				39	GJ flight northeast to southwest along valley at 80-100m (assume ferals).	
FAS(3)409	28/10/2008	WS	4			28	08:47	150					150	WS - 4 birds, east to west to north of VP, picked up initially on call.	
FAS(3)101	28/10/2008	PE	1	М	Juv.	14	10:17	75					75	Juvenile (M) PE circling near VP and moving off high southwest.	
FAS(3)102	28/10/2008	К.	1		Juv.	14	10:21			35	30	30	95	Young K. hunting hillside slopes down from VP until lost to view.	
FAS(3)155	28/10/2008	К.	1			15	14:20		90	30			120	K. seen hunting to the south / east of the VP, on the slopes of Craig of Knockgray.	
FAS(3)156	28/10/2008	CA	1			15	15:15				145		145	Single CA flying south following river.	
FAS(3)1016	29/10/2008	К.	1	F	Juv.	42	10:45					30	30	K. took off from perch and headed off south before lost to view.	
FAS(3)710	30/10/2008	нн	1	F?	Imm.?	36	14:11				120		120	Ringtail HH past VP (quite close) and down west and over forest and eventually lost to view, going south.	
FAS(3)496	31/10/2008	К.	1			31	11:05		15				15	K. south of VP briefly being harried by CC.	
FAS(3)498	31/10/2008	CA	1			31	11:30		30				30	BZ. Also CA flying fast high and south.	
FAS(3)414	31/10/2008	нн	1	М	Ad.	28	14:32				75	45	120	(M) HH past VP across moor to woodland edge which it followed northeast until lost to view.	
FAS(3)915	01/11/2008	ВК	2	М		40	08:37				12	5	17	BK (M) x2 flight out of clearfell at 15m land on bracken hill face, drop out of view.	
FAS(3)916	01/11/2008	К.	1	М		40	09:43			47			47	K. (M) hover and soar over clearfell restock at 20-30m, land in large layby beech.	
FAS(3)917	01/11/2008	CA	2		Ad.	40	09:50		32				32	CAx2 fly over towards Regland Loch 50m - E.	
FAS(3)919	01/11/2008	К.	2			40	10:20			176			176	K. x2 hover and soar interaction over Corridos clearfell restock assume one of birds is (2) 15-20m.	
FAS(3)240	02/11/2008	К.	1	F	Juv.	18	10:53			11			11	K. (F) juv glide hover and soar at 20-30m, drop out of view to east.	
FAS(3)242	02/11/2008	К.	1	F	Juv.	18	11:01				9		9	K. (F) juv (same bird as (2)) lands in tree canopy to roost, lift and drop out of view at 15m.	
FAS(3)243	02/11/2008	К.	2		Juv.	18	11:03				9		9	K. juvs x2 onto pole line at 3-10m, settle on poles.	
FAS(3)12	04/11/2008	GJ	8			10	09:41	23					23	Feral GJx8 rising flight 40-150m (1 white bird) probably off Dalry area loch or river, turn and head - E out of view.	
FAS(3)288	04/11/2008	К.	1			24	12:17		60		15		75	K distantly northwest of VP, hovering, dropped down.	
FAS(3)831	04/11/2008	К.	1	м	Ad.	38	12:23			40			40	(M) K. perched on monitor, flew across open ground and over top of forestry.	
FAS(3)289	04/11/2008	К.	1			24	12:36		<15					K briefly in flight west of VP, appeared to be landing on top of pine.	
FAS(3)834	04/11/2008	К.	1	М	Ad.	38	13:39			25			25	(M) K. (probably same bird as above (1)) flew past VP.	
FAS(3)157	04/11/2008	К.	2			15	13:53				635		635	K.x2 hover & soar at 10-20m, occasional swoop interaction. Assume adult and juv or 2 juvs. Drop to ground x2.	
FAS(3)835	04/11/2008	нн	1	М	Ad.	38	14:22			30			30	(M) HH across track down side of forestry block then headed west.	
FAS(3)836	04/11/2008	К.	1			38	14:32			65			65	K. hovering over wood to south of track moving slowly east.	
FAS(3)1096	04/11/2008	CA	2			43	15:01		15		4	2	21	2 CA flew around loch 2 seconds low, 4 seconds med, 15 seconds high.	
FAS(3)837	04/11/2008	К.	1			38	15:02		15				15	K. flew high past VP to north.	
FAS(3)158	04/11/2008	нн	1	М		15	15:04					15	15	HH (M) quartering flight at 3-10m, turning behind VP then reappear, dropping out of view over road into river valley. Passed directly under OHL, no deviation flight at 10m when crossing road.	
FAS(3)159	04/11/2008	нн	1	м		15	15:04				8		8	HH (M) quartering flight at 3-10m, turning behind VP then reappear, dropping out of view over road into river valley. Passed directly under OHL, no deviation flight at 10m when crossing road.	
FAS(3)451	07/11/2008	К.	1			29	14:02			45	15		60	K. hovering over field to south of VP, dropped down to ground, M2-M1 heights, 1402-1403.	
FAS(3)452	07/11/2008	К.	1			29	14:10		15		15		30	K. pres same bird as above, high - M1 heights 1410.	
FAS(3)453	07/11/2008	К.	1			29	15:02		30	15	15		60	K. south-southeast of VP, perched on pylon, took off then landed again on telegraph pole, M2 - high - M1 heights 1502-1503.	
FAS(3)44	08/11/2008	К.	1	М	Ad.	12	12:08				20		20	(M) K. flew along pylon line and off east.	
FAS(3)1018	09/11/2008	К.	1	М		42	10:08			30	15		45	K. (M), hovering just W of VP, dropped down out of view, M2-M1 heights, 1008-1009.	
FAS(3)1019	09/11/2008	К.	1	М		42	10:40		75		15		90	K (M), hovering / hunting again over rough field just W of VP	
FAS(3)1020	09/11/2008	К.	1	М		42	11:52		75		15		90	K (M), hovering / hunting again W of VP, dropped down, high - M1 heights, 1152 - 1154, presumed same bird as flight refs 1 & 4.	
FAS(3)244	12/11/2008	К.	1			18	10:27		30		15		45	K. north of VP, northwest to southeast over A713	
FAS(3)245	12/11/2008	К.	1			18	11:30		60		15	İ	75	K. east of VP, hovering then flew south to north.	
FAS(3)160	12/11/2008	ML	1	М		15	11:56			4	13		17	ML (M) land on top lie wire on pylon line directly below VP, flight line to west to valley floor, originally along OHL from shelter block.	
FAS(3)161	12/11/2008	CA	1			15	12:12				14		14	CA direct flight along river at 10-15m.	
FAS(3)246	12/11/2008	К.	1			18	12:17				15	15	30	K. on pylon southeast of VP, took off then landed again on same pylon, 1217, low - M1 heights, TU at OHL.	
FAS(3)247	12/11/2008	К.	1			18	12:40			<15			<15	K. briefly in flight north-northwest of VP, landed on telegraph pole.	
						1 1									





Def No	Data	вто	No	Cov	A.c.a	VP	Chart		Flight Hei	ght Record	ling Bands		Dur.	Notes
Kel NO.	Date	Code	NO.	Sex	Age	No.	Start	νн	н	M2	M1	L	(secs)	Notes
FAS(3)248	12/11/2008	К.	1			18	12:56				15		15	K. North of VP at clearfell area, landed.
FAS(3)416	12/11/2008	CA	1			28	13:40		15		30		45	CA in flight at Loch Muck, M1 - high heights, 1340-134
FAS(3)13	12/11/2008	нн	1	М	Juv.	10	14:19					11	11	HH (M) juv low quartering flight at 3-5m disturbed by surveyor at VP - swe
FAS(3)417	12/11/2008	нн	1	М		28	16:10				30	90	120	HH (M) southwest of VP, northwest to southeast, typical harrier, low to the ground / quartering flight. Lost when
FAS(3)711	15/11/2008	GJ	2			36	12:13		45	30			75	2 GJ flew south over corridor in vicinity of Hog Hill toward Lonchin
FAS(3)712	15/11/2008	GI	1	м	Ad.	36	12:58			60	240		300	(M) GI, within 10m of canopy, over plantation Hog Hill, mobbing BZ then flew across clearing to south side
FAS(3)713	15/11/2008	GD	4			36	13:14		45				45	4 GD north over corridor to east of Hog Hill.
FAS(3)501	16/11/2008	кт	1		Ad.	31	11:44			120	360		480	Adult KT near Glenhoul Lodge arching over fields and landed on Glenhoul
FAS(3)502	16/11/2008	КТ	1		Ad.	31	12:12		30	90	60		180	Adult KT up above Glenhoul Hill then drifts across over behind Kendoon and over Dundeugh Wood. (par
FAS(3)290	17/11/2008	нн	1	м	Ad.	24	13:11			15	15		30	HH (M) distantly west of VP by B741, flew north to south over road mobbed briefly by a C. then ba
FAS(3)350	18/11/2008	К.	1			26	15:02		60	15	30		105	K. northwest to southeast over A713, landed on slope of Snabb Hill, 1502-1504
FAS(3)762	19/11/2008	К.	1	F		37	14:29				27		27	K. (F) hover and soar over restock by VP 5-15m.
FAS(3)764	19/11/2008	К.	1	F		37	14:45				47		47	K. (F) (assume same bird as 1) same location 5-10m.
FAS(3)765	19/11/2008	К.	1	F		37	15:17				28		28	K. (F) same as 1 and 3 5-10m.
FAS(3)766	19/11/2008	К.	1	F		37	15:37				53		53	K. (F) same again 5-10m drop to ground.
FAS(3)323	21/11/2008	К.	1			25	11:24		45				45	K. south to north to south of VP.
FAS(3)384	21/11/2008	К.	1			27	12:50		285		15		300	K. north of VP, hunting / hovering 1250-1255, high and M1 h
FAS(3)385	21/11/2008	SN	1			27	13:31					<15	<15	SN northwest of VP, southeast to northwest, heard calling initially lo
FAS(3)112	21/11/2008	WК	1			14	14:40					15	15	WK in valley across fields into Carsphairn Churchyard.
FAS(3)622	23/11/2008	кт	1		Ad.	33	09:40			300			300	1xKT flying and gliding at various speeds, occasional circling, dropping down
FAS(3)623	23/11/2008	кт	1		Ad.	33	09:51		270				270	1xKT gliding and flying, occasional circling, dropping down to tree an
FAS(3)624	23/11/2008	кт	1		Ad.	33	10:10		360	240			600	1xKT gliding slowly, twisting, circling across valley following pylon lines, turning back a
FAS(3)625	23/11/2008	кт	1		Ad.	33	11:20			750			750	1xKT from woodland area, across valley to hills, weaving across hill face, occasional circling, gliding across area, tu
FAS(3)626	23/11/2008	кт	1		Ad.	33	12:26			150			150	1xKT appearing above trees, gliding, circling, traversing area, then back on its
FAS(3)1022	23/11/2008	КТ	2			42	13:56				159		159	KT swing and drift flight 10-20m around OHL by farm and parkland trees. Attracts GB over, both birds eyeball & posture. K out over inbye toward VP then drift at 15m - S along valley
FAS(3)1023	23/11/2008	К.	1	м		42	14:07				14		14	K. (M) direct flight across sluice wall at 15m over inbye and in
FAS(3)1024	23/11/2008	КТ	1			42	14:10				24		24	KT soaring turns and glide over inbye at 10-15m, drop down toward trees be
FAS(3)1097	23/11/2008	GJ	19			43	16:03		60				60	19 GJ northeast, just north of Lochinvar loch towards Kilna
FAS(3)570	24/11/2008	К.	1	м	Ad.	32	10:59					45	45	(M) K. flew low past the VP.
FAS(3)571	24/11/2008	КТ	1			32	11:14				135		135	Adult KT on hillside west of north end of Carsfad Loch
FAS(3)716	24/11/2008	BO	1			36	11:49				25		25	BO quartering rough ground, landed on fence post. Still present or
FAS(3)677	24/11/2008	К.	1			35	14:44			125			125	K. hovering and moving slowly across hillside.
FAS(3)14	24/11/2008	нн	1	F?		10	15:42						0	1xHH ringtail flying low, quartering ground, flying easterly over fel
FAS(3)15	25/11/2008	К.	1	М		10	11:40				9		9	K. (M) direct flight at 10m across rough grazing.
FAS(3)16	25/11/2008	кт	1		Juv.	10	12:07			27			27	KT juv circling flight at 15-30m then land on top of electric pole in clearing edge of planta
FAS(3)418	25/11/2008	PE	1	М	Ad.	28	12:13					45	45	Single PE seen flying north of VP and then lost to view
FAS(3)1025	26/11/2008	КТ	1			42	10:24				15	50	65	A KT flew past, it was meandering about mostly low for majority of the time (low - M1 at end of time) total
FAS(3)503	26/11/2008	GN	2	М		31	11:33					15	15	GN(2) (M)(M), took off from river southeast of VP, landed again, low
FAS(3)504	26/11/2008	КТ	1			31	11:41		90				90	KT east of VP, east to west initially from Mackilston Hill direction then drifted south then east, high height, 1141-11
FAS(3)162	26/11/2008	нн	1		Ad.	15	13:16		60	180			240	H. flew up valley to south of road and out of sight.
FAS(3)921	26/11/2008	К.	1			40	14:38		135				135	K N of VP, hunting / hovering at edge of forestry, dropped down, high
FAS(3)250	27/11/2008	К.	1			18	08:51				30	15	45	K. hunting hillside slopes east of VP before lost to view
FAS(3)251	27/11/2008	К.	1			18	09:26				15	15	30	K. again seen very briefly east of VP but a little further north than
FAS(3)352	27/11/2008	PE	1			26	10:49		60	5			65	PE high across VP heading north, dropped into hillside and los
FAS(3)572	27/11/2008	КТ	1		Ad.	32	11:31		180				180	KT being mobbed by crow flies between trees toward power station, then lost to view.
FAS(3)573	27/11/2008	КТ	1		Ad.	32	11:42		180				180	Same KT flies up and high to the east.
FAS(3)574	27/11/2008	КТ	1		Ad.	32	12:10		165	30			195	Same KT flies from south of VP, being mobbed by a C. then flies off high in s
FAS(3)772	27/11/2008	PE	1	F	Ad.	37	15:17		15	30	30		75	(F) PE seen over forest west of VP and then it headed down towards Lochinv
FAS(3)297	28/11/2008	K.	1			24	14:30		135				135	K. very distant to west of VP, hunting / hovering.

10-1341.

/P - swerve avoidance flight.

when flew over top of Little Eriff Hill, 1610-1612, low - M1 heights.

onchinvar reservoir.

h side at Glenshimmeroch Hill, mobbing K. then out of view.

nhoul Hill (2006 D & G bird).

d. (part of this flight over woodland with 10m of canopy).

hen back on to north side of road when lost to view.

02-1504, high - M2 - M1 heights.

d M1 heights.

ially low height 1331.

chyard.

down to fields between trees.

tree area, lost to view.

back across, dropping down to ground.

rea, turning back down towards tower, landing in fields out of view.

on itself, lost to view of trees.

ure. KT moves off towards river woodland. KT joined by 2nd bird, both swing valley fields.

and into valley.

rees behind farm out of view.

s Kilnair Hill.

ad Loch.

sent on post at 1205.

de.

ver fell lost to view.

plantation, remained well beyond VP end.

to view.

e) total time 1min 5secs. Tagged green on both upper wings.

ain, low heights 1133.

141-1142, it was wing tagged, too distant to make out colour of tags.

n, high height 1438-1440.

to view.

h than last sighting.

and lost to view.

view. KT had a green tag on each wing.

igh in similar direction to (2).

ochinvar and was lost to view.

ring.

- (· ·		вто				VP			Flight Hei	ght Record	ing Bands		Dur.	Notes	
Ref No.	Date	Code	No.	Sex	Age	No.	Start	VH	н	M2	M1	L	(secs)		
FAS(3)298	28/11/2008	нн	1	М		24	15:03					30	30	HH (M) north of VP, east to west over clearfell, flew straight through, lost behind pines on west side of track.	
FAS(3)506	29/11/2008	К.	1	F		31	12:31				43		43	K. (F) rise out of ash to hover and soar over inbye around Glenhoul Lodge at 10-20m.	
FAS(3)507	29/11/2008	КТ	1			31	13:45				51		51	KT low drifting flight across rough grazing (green tag bird) 15m, drops to check area with RO and C. activity (probably worms).	
FAS(3)509	29/11/2008	К.	1	F		31	13:48				17		17	K. (F) (same as 2) in same flight area, out of view behind trees at 15m.	
FAS(3)510	29/11/2008	PG	100+			31	14:22	70					70	PG 100+ at 400m+ to south-southwest.	
FAS(3)511	29/11/2008	КТ	1			31	14:28			11			11	KT (same bird as 3) off ground into hawthorn then to south at 10-40m.	
FAS(3)1099	06/12/2008	CA	1		lmm.	43	11:30					15	15	CA flew in from the N and landed on the Loch.	
FAS(3)629	06/12/2008	CA	1		Imm	33	14:19				75		75	CA headed up river toward Kendoon Loch, may have landed on river.	
FAS(3)630	06/12/2008	нн	1	м	Ad.	33	15:03		120			180	300	(M) HH flew down Blackwater then across valley to Stroangassel Hill.	
FAS(3)922	07/12/2008	КТ	1		Ad.	40	12:50				30	30	60	Adult KT.	
FAS(3)923	07/12/2008	PG	##			40	13:34	300					300	c. 110 PG flew high N.	
FAS(3)924	07/12/2008	GJ	32			40	13:54			15	15	15	45	c. 32 GJ W over the corridor at Hog Hill landed at Lochinvar.	
FAS(3)1027	08/12/2008	GD	1	м	Ad.	42	09:27				15		15	Single GD flew west and then N before lost to view.	
FAS(3)1029	08/12/2008	GD	1			42	10:51			45			45	GD in high E and then lost to view. Single MG SW of VP.	
FAS(3)576	08/12/2008	CA	1			32	11:16		30				30	CA flew up valley and over VP.	
FAS(3)578	08/12/2008	кт	1			32	12:38		60				60	KT circling high over VP	
FAS(3)115	08/12/2008	к	1	F		14	14.26				46		46	K (E) hover and soar along note and pylon lines at 10-20m settle on note line lift off line and flight toward alder woodland out of view at 10m	
FAS(3)116	08/12/2008	к.	1	F		14	14.41				10		10	K. (F) hack to OHL out of woodland brief hover and soar 10-15m	
FAS(3)117	08/12/2008	к.	1	F		14	15.26				19		19	Note: K juy (M) on wires by Carnaval Farm entrance of A713 at 569929. Riverside enclosures C x6, MGx4, IDx6	
FAS(3)678	00/12/2008	K.	1			25	09.54				15		15	K took off from small wood W of VP and flow off S and was lost to view.	
FAS(3)070	09/12/2008	к. СА	1			36	14.24				15	10	10	CA flew NE across Locinyar and landed	
EAS(2)722	00/12/2008		1	DD	٨d	26	14.24				15	10	20	CA new NL across Lochinger from the S	
FAS(5)725	10/12/2008		1		Au.	20	13.20				15	15	50	2xivis new into Exclinical from small conifer plantation 5 of VD	
FAS(3)420	10/12/2008	к. И	1	IVI		20	14.20					15	15	(M) K. calling and new out from small conter plantation S of VP.	
FAS(3)421	10/12/2008	к. И	1			20	14:38			20		60	20		
FAS(3)454	10/12/2008	К.	1	M		29	14:43			30	45		30	K. flew across valley and past VP.	
FAS(3)422	10/12/2008	К.	1			28	14:53				15		15	K. flew along edge of nearest forest and landed.	
FAS(3)423	10/12/2008	К.	1	M	Imm	28	15:02		45	15	15	15	90	K. again but much higher and then dropping down (perhaps for prey?)	
FAS(3)327	11/12/2008	К.	1			25	13:24		<15				<15	K. south-southeast of VP, landed on top of pine.	
FAS(3)328	11/12/2008	К.	1			25	13:26				15		15	K. bird from above, took off west-southwest.	
FAS(3)329	11/12/2008	К.	1	F		25	14:29		15	15			30	K. north to south to west of VP, (F), landed on pine tree behind Clawfin Farm.	
FAS(3)330	11/12/2008	К.	1	F		25	15:01				15		15	K. (F), south of VP, west to east, landed on top of pine. M1 height, 1501, presumed same as flight ref no 3.	
FAS(3)355	12/12/2008	К.	1	М		26	11:06		20				20	K. flew past VP heading west.	
FAS(3)878	14/12/2008	CA	8			39	11:15		240				240	8xCA flying high over plantation, turned, went back SW lost to view.	
FAS(3)925	14/12/2008	НН	1	м		40	12:55					270	270	(M) HH flying low then circling, quartering ground up face of hill, went behind hill, lost to view SW direction.	
FAS(3)838	14/12/2008	К.	1			38	13:43			20			20	K. past VP.	
FAS(3)839	14/12/2008	нн	1	м		38	14:44			5	25		30	(M) HH over cut forest then over top of trees and lost to view.	
FAS(3)632	16/12/2008	CA	2			33	12:54				11		11	CAx2 off tree roost onto loch shore point S end, 20m-ground, join the other 4 basking on the point.	
FAS(3)633	16/12/2008	CA	3			33	13:58					4	4	CAx3 flight - S to fish.	
FAS(3)840	18/12/2008	К.	1	м		38	09:27					31	31	K. (M) hover and soar at 5-10m in valley floor over clearfell / restock out of view behind mature larch.	
FAS(3)841	18/12/2008	К.	1	м		38	10:01				43		43	K. (M) (assume same as (2)) behind / out of larches, resume hover and soar at 10-15m out of view behind retained block.	
FAS(3)118	18/12/2008	GI	1	F	Ad.	14	12:51			13			13	GI (F) direct gliding flight over plantation and rough grazing into mature mixed policy woodland, flushing C.x4 out of trees 20-25m.	
FAS(3)724	20/12/2008	нн	1	м	Juv.	36	10:52					22	22	HH (M) juv. Quartering foraging flight at 3-10m.	
FAS(3)202	21/12/2008	нн	1	F		16	10:41					18	18	HH (F) N-S along OHL then out over road - W into valley out of view 3-10m.	
FAS(3)455	22/12/2008	К.	1			29	09:54				15		15	K. flies into small plantation by the river.	
FAS(3)457	22/12/2008	К.	1			29	10:13				30		30	K. at (1) flies over river lands on the OHL using as a hunting perch.	
FAS(3)775	22/12/2008	CA	2			37	10:17		15	10	15	3	43	CAx2 direct flight circle and turn onto S at end of Lochinvar, 40m to water.	
FAS(3)331	22/12/2008	К.	1	м		25	10:43		30		15		45	K (M), W of VP, at opencast on N side of B741, hovering then dropped down, high-M1 heights.	
FAS(3)776	22/12/2008	GJ	12			37	11:08		8	5	10	3	26	GJx12 flight in from S to circle and land on bank margin by Lochinvar and go onto water, 40m. Note: feral birds (1 dun 1 white).	
				2RH				1							
FAS(3)926	22/12/2008	GD	3	& 1 M	? & 1 Ad.	40	11:14					28+	28+	3xGD (2red heads and adult (M)) flew fast and low from loch round the face of the hill. All low for 28secs (although they were out of sight at times).	



Ornithology



e of Loch Doon.
igh height, 1127.
4-1426, lost to view.
, M2-high heights.
flew E, low height, 1227.
k on ice.
ow-M1-high heights 1140-1141.
P, M1 height 1337.
irds to 4 birds at 0930-0935 period). Dropping down on to river.
w NE, 1401, high height.
es before settling on the water. Came of the rough grazing at 30-40m.
nes before settling on the water. Same over rough grazing at 30-40m.
ghts 0852-0857.
9-0909, TO at OHL.
ts 1026-1028.
off.
)32.
v off low 1359.
uarry.
loch).
ch.
anding on a post. After a few minutes it took off and after a short session of to view behind plantation.
conds.
onds.
Lane, not flying and 4 MA, 2 (M)(M), 2 (F)(F), not flying.
1004, landed.
. (HH flight ref no 1, like adult (M) but a bit 'dirty' amongst the grey on the ird (upperwing coverts) so perhaps the bird a 2nd winter.
n height, 1519-1520.

Image Image <th< th=""><th>Pof No</th><th>Data</th><th>вто</th><th>No</th><th>Sov</th><th>٨٥٥</th><th>VP</th><th>Start</th><th>Flight He</th><th>ight Record</th><th>ing Bands</th><th>1</th><th>Dur.</th><th colspan="2">Dur. Notes</th></th<>	Pof No	Data	вто	No	Sov	٨٥٥	VP	Start	Flight He	ight Record	ing Bands	1	Dur.	Dur. Notes	
	Kei No.	Date	Code	NU.	Sex	Age	No.	VH	н	M2	M1	L	(secs)	NULES	
mmm mm	FAS(3)518	25/01/2009	CA	1		Imm	31	15:09		30			30	CA S along river.	
Singer Singer<	FAS(3)519	25/01/2009	GJ	1		Ad.	31	15:20	30	30			60	1 GJ flew NE.	
9009 10 1 <td>FAS(3)520</td> <td>25/01/2009</td> <td>CA</td> <td>1</td> <td></td> <td>Ad.</td> <td>31</td> <td>15:30</td> <td></td> <td>30</td> <td>15</td> <td></td> <td>45</td> <td>2 ad CA, 1 after the other, came down valley over power station onto Loch Carsfad. 2 ad RN 'display patrol' over woodland opposite VP. Area B.</td>	FAS(3)520	25/01/2009	CA	1		Ad.	31	15:30		30	15		45	2 ad CA, 1 after the other, came down valley over power station onto Loch Carsfad. 2 ad RN 'display patrol' over woodland opposite VP. Area B.	
190099 10 1 </td <td>FAS(3)521</td> <td>25/01/2009</td> <td>CA</td> <td>1</td> <td></td> <td>Ad.</td> <td>31</td> <td>15:31</td> <td>45</td> <td></td> <td></td> <td></td> <td>45</td> <td>As above</td>	FAS(3)521	25/01/2009	CA	1		Ad.	31	15:31	45				45	As above	
Vision Vision<	FAS(3)522	25/01/2009	CA	1		Ad.	31	15:49	45	15			60	Ad CA down to Loch Carsfad.	
Nume Num Nume Num	FAS(3)523	25/01/2009	CA	1		Ad.	31	15:52		45			45	Ad CA down to Loch Carsfad.	
Here Here <th< td=""><td>FAS(3)1035</td><td>26/01/2009</td><td>GJ</td><td>2</td><td></td><td></td><td>42</td><td>09:21</td><td>180</td><td>15</td><td>30</td><td></td><td>225</td><td>GJx2 flying high and vocal, circling round, landing at dam head.</td></th<>	FAS(3)1035	26/01/2009	GJ	2			42	09:21	180	15	30		225	GJx2 flying high and vocal, circling round, landing at dam head.	
Network Network <t< td=""><td>FAS(3)1036</td><td>26/01/2009</td><td>GJ</td><td>4</td><td></td><td></td><td>42</td><td>09:50</td><td>30</td><td>15</td><td>30</td><td>30</td><td>105</td><td>4sGJ flying high, dropping down low across water to dam head.</td></t<>	FAS(3)1036	26/01/2009	GJ	4			42	09:50	30	15	30	30	105	4sGJ flying high, dropping down low across water to dam head.	
154.000 154.000 <t< td=""><td>FAS(3)1037</td><td>26/01/2009</td><td>GJ</td><td>3</td><td></td><td></td><td>42</td><td>10:32</td><td></td><td>45</td><td>15</td><td>15</td><td>75</td><td>3xGJ flying fast and vocal, towards dam head, turning sharply and landing.</td></t<>	FAS(3)1037	26/01/2009	GJ	3			42	10:32		45	15	15	75	3xGJ flying fast and vocal, towards dam head, turning sharply and landing.	
Norme Norme <td< td=""><td>FAS(3)583</td><td>27/01/2009</td><td>GD</td><td>1</td><td>м</td><td></td><td>32</td><td>09:26</td><td></td><td></td><td>5</td><td>6</td><td>11</td><td>GD (M) direct flight along river at 10-15m, land on river and fish / drift back to Carsfad dam.</td></td<>	FAS(3)583	27/01/2009	GD	1	м		32	09:26			5	6	11	GD (M) direct flight along river at 10-15m, land on river and fish / drift back to Carsfad dam.	
Norms Vert Vert< Vert Vert< Vert< Vert< Vert Vert Vert Vert< Vert< Vert< Vert< Vert< Vert< Vert< Vert< Vert< Vert Vert< Vert Vert Vert </td <td>FAS(3)584</td> <td>27/01/2009</td> <td>WS</td> <td>11</td> <td></td> <td></td> <td>32</td> <td>09:31</td> <td>29</td> <td></td> <td></td> <td></td> <td>29</td> <td>WSx11 direct flight at 50-60m B-S down valley.</td>	FAS(3)584	27/01/2009	WS	11			32	09:31	29				29	WSx11 direct flight at 50-60m B-S down valley.	
Monte Monte <th< td=""><td>FAS(3)301</td><td>28/01/2009</td><td>К.</td><td>1</td><td></td><td></td><td>24</td><td>13:36</td><td></td><td>60</td><td>30</td><td></td><td>90</td><td>K hunting / hovering bird at opencast very distantly W of VP, M2-M1 heights 1336-1338.</td></th<>	FAS(3)301	28/01/2009	К.	1			24	13:36		60	30		90	K hunting / hovering bird at opencast very distantly W of VP, M2-M1 heights 1336-1338.	
Here Here <th< td=""><td>FAS(3)1109</td><td>30/01/2009</td><td>GD</td><td>2</td><td>PR</td><td></td><td>43</td><td>13:51</td><td></td><td></td><td></td><td>14</td><td>14</td><td>GD 2prs direct flight - S down loch at 3-5m.</td></th<>	FAS(3)1109	30/01/2009	GD	2	PR		43	13:51				14	14	GD 2prs direct flight - S down loch at 3-5m.	
MAXLUM VA VA V	FAS(3)1110	30/01/2009	CA	1			43	14:02				8	8	CA lift off water and direct flight to roost on semi submerged rock 3m height max.	
styling styling <t< td=""><td>FAS(3)1111</td><td>30/01/2009</td><td>CA</td><td>1</td><td></td><td></td><td>43</td><td>14:55</td><td></td><td></td><td></td><td>27</td><td>27</td><td>CA direct flight - S along loch at 2-3m.</td></t<>	FAS(3)1111	30/01/2009	CA	1			43	14:55				27	27	CA direct flight - S along loch at 2-3m.	
MADDE Value Value <th< td=""><td>FAS(3)363</td><td>31/01/2009</td><td>GJ</td><td>24</td><td></td><td></td><td>26</td><td>14:21</td><td>40</td><td>6</td><td>5</td><td>5</td><td>56</td><td>GJx24 flight into Bogton Loch 80m - water, likely feral.</td></th<>	FAS(3)363	31/01/2009	GJ	24			26	14:21	40	6	5	5	56	GJx24 flight into Bogton Loch 80m - water, likely feral.	
MAME MAME A A A A B C A B A B </td <td>FAS(3)27</td> <td>01/02/2009</td> <td>кт</td> <td>1</td> <td></td> <td>Ad.</td> <td>10</td> <td>13:06</td> <td></td> <td></td> <td>15</td> <td>45</td> <td>60</td> <td>Adult KT departed Mackilston Hill WSW.</td>	FAS(3)27	01/02/2009	кт	1		Ad.	10	13:06			15	45	60	Adult KT departed Mackilston Hill WSW.	
NUMD QUUD VA VA VA<	FAS(3)169	02/02/2009	К.	1	F		15	10:40			15	15	30	(F) K hunting from wires area A.	
GAUDY GAU GAU </td <td>FAS(3)170</td> <td>02/02/2009</td> <td>EA</td> <td>2</td> <td>м</td> <td>Ad</td> <td>15</td> <td>11:10</td> <td>45</td> <td></td> <td></td> <td></td> <td>45</td> <td>Both birds in flight over knockover and Coran of Portmark.</td>	FAS(3)170	02/02/2009	EA	2	м	Ad	15	11:10	45				45	Both birds in flight over knockover and Coran of Portmark.	
KAMENIA KUM Ku <	FAS(3)171	02/02/2009	ВК	1	м	Ad?	15	11:49	60				60	2 (M) Black grouse flushed? By the EA flew off Cairnsgarroch, one flew north and tracked	
symbol symbol<	FAS(3)1115	02/02/2009	wк	1			43	17:35				15	15	Woodcock briefly past VP and into forest and lost to view	
ANNUM Val Val </td <td>FAS(3)1116</td> <td>02/02/2009</td> <td>wк</td> <td>1</td> <td></td> <td></td> <td>43</td> <td>17:40</td> <td></td> <td></td> <td></td> <td>15</td> <td>15</td> <td>Another or the same WK again following exactly the same flight path as above.</td>	FAS(3)1116	02/02/2009	wк	1			43	17:40				15	15	Another or the same WK again following exactly the same flight path as above.	
MAXIMA VALUE VALUE </td <td>FAS(3)1119</td> <td>03/02/2009</td> <td>кт</td> <td>1</td> <td></td> <td></td> <td>43</td> <td>12:08</td> <td></td> <td>60</td> <td>60</td> <td>15</td> <td>135</td> <td>KT circling moor SW at Lochinyar, drifts off S.</td>	FAS(3)1119	03/02/2009	кт	1			43	12:08		60	60	15	135	KT circling moor SW at Lochinyar, drifts off S.	
INSDB 94/92/298 60 1 <th1< th=""> 1 1 <</th1<>	FAS(3)644	03/02/2009	СА	1		Ad.	33	12:31	65				65	Single cormorant flying high and N up the valley until lost behind Dundeugh Hill	
Ability Ability Value	FAS(3)850	04/02/2009	GD	1			38	12:19			30		30	Single goosander flew over silin flying NE and lost over trees	
MAX MAX <td>FAS(3)787</td> <td>04/02/2009</td> <td>кт</td> <td>1</td> <td></td> <td></td> <td>37</td> <td>13:30</td> <td></td> <td>120</td> <td></td> <td></td> <td>120</td> <td>Distant red kite moving slowly west and just circling</td>	FAS(3)787	04/02/2009	кт	1			37	13:30		120			120	Distant red kite moving slowly west and just circling	
PAS13792 Overload N I <thi< th=""> I I</thi<>	FAS(3)788	04/02/2009	кт	1			37	13:41			30		30	Same or another red kite circling stand of trees	
HX13454 Org2/000 K I M A.d. B I.d. K B A.d. B I.d. K B A.d. B I.d. K B A.d. B	FAS(3)792	04/02/2009	кт	1			37	15:10	60	45	15		120	Red kite again distantly circling a radio mast and moving N along ridge line before lost to view	
BABBBBB BVD22000 K I F A.d. Z B.d. L.D. B.D.	FAS(3)645	05/02/2009	ML	1	м	Ad.	33	11:04				30	30	(M) ML flew in landing on overhead cable, onto gate and out of Blackwater (small nos of MP and a S. in roadside fields near VP.)	
HSI327 HSI2777 HSI327 HSI3277	FAS(3)336	05/02/2009	К.	1	F	Ad.	25	13:04				30	30	(F) K. flew past (west) and landed briefly on telegraph pole and was then mobbed by CC and it flew off again then lost to view, west of opencast entrance.	
ANIAR OR V <td>FAS(3)273</td> <td>05/02/2009</td> <td>SN</td> <td>1</td> <td></td> <td></td> <td>18</td> <td>13:30</td> <td></td> <td></td> <td>15</td> <td>15</td> <td>30</td> <td>Snipe flew from Juncus/marsh just west of VP and then flew around and landed N of VP</td>	FAS(3)273	05/02/2009	SN	1			18	13:30			15	15	30	Snipe flew from Juncus/marsh just west of VP and then flew around and landed N of VP	
ANSIANC ANSIANC	FAS(3)466	06/02/2009	К.	1			29	12:27	60				60	Kestrel flying / hunting high down the valley	
ACIA OVID/VID/VID B0 I M M L D L D L D L D L D L D L D L D <thd< th=""> <thd< th=""> D</thd<></thd<>	FAS(3)467	06/02/2009	ML	1	м	Ad.	29	13:17				15	15	(M) Merlin flying NE and landed on small tree	
Andrew Andrew<	FAS(3)56	07/02/2009	BO	1	м		12	20:11				47	47	BO (M) quartering flight along pole line way leave at 3-5m then rise and settle on pole top. Drop and cross road at 5m	
FAG3D2IVVI	FAS(3)57	07/02/2009	BO	1	м		12	21:04				248	248	BO (M) appear on fence stop at top of bank by roadside. Lift and hovering quartering flight along road margin to south. Drift into mature woodland out of view. Reappear quartering way leave to south at 5-3m	
FAG312 IV VA	FAS(3)302	10/02/2009	К.	1			24	10:52			15		15	KW of VP, N to S over B741, M1 height, went to plantation SSE of Clawfin farm, 1052.	
FAG305II <td>FAS(3)172</td> <td>11/02/2009</td> <td>ML</td> <td>2</td> <td>м</td> <td>Ad.</td> <td>15</td> <td>14:33</td> <td></td> <td></td> <td>15</td> <td></td> <td>15</td> <td>ML - (M), bird from above, took off, flew NW and landed on top of next pylon, 1433, M1 height.</td>	FAS(3)172	11/02/2009	ML	2	м	Ad.	15	14:33			15		15	ML - (M), bird from above, took off, flew NW and landed on top of next pylon, 1433, M1 height.	
FAG200IV	FAS(3)525	14/02/2009	GJ	37			31	16:00	42				42	37 GJ circled the VP before flying S H for total of 42secs.	
FAG3079II <td>FAS(3)207</td> <td>15/02/2009</td> <td>ВК</td> <td>2</td> <td>м</td> <td></td> <td>16</td> <td>08:51</td> <td></td> <td></td> <td>60</td> <td></td> <td>60</td> <td>2xBK flying fast around hillside, lost to view.</td>	FAS(3)207	15/02/2009	ВК	2	м		16	08:51			60		60	2xBK flying fast around hillside, lost to view.	
FAG(393) VI VII VIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	FAS(3)796	15/02/2009	GJ	12			37	11:09	40				40	12 GJ high over VP calling.	
FAS(3)29KTIII<	FAS(3)933	15/02/2009	кт	1			40	11:47		36	4		40	KT flew around the VP for 26secs at height band M2 fully to band M1 for 4secs in the middle. It flew of SW and was lost over a hillock. First KT at this VP.	
FAS(364)IV	FAS(3)29	16/02/2009	кт	1			10	13:13			65		65	KT drifting back and forth across VP.	
FAS(3)64817/02/009K.1MAd.3311:17III	FAS(3)646	17/02/2009	К.	1	м	Ad.	33	10:42				15	15	(M) K. flew low past VP.	
FAS(3)12017/02/009CA1II </td <td>FAS(3)648</td> <td>17/02/2009</td> <td>К.</td> <td>1</td> <td>м</td> <td>Ad.</td> <td>33</td> <td>11:17</td> <td></td> <td></td> <td></td> <td>10</td> <td>10</td> <td>(M) K. (probably same bird as above) low past VP.</td>	FAS(3)648	17/02/2009	К.	1	м	Ad.	33	11:17				10	10	(M) K. (probably same bird as above) low past VP.	
FAS(3)121 17/02/009 GD 3 1M, 2F 43 14:06 43 14:06 30 30 30 30 300	FAS(3)1120	17/02/2009	CA	1			43	13:51				20	20	CA flew low along loch and landed.	
FAS(3)122 17/02/009 GJ 1 4 14:37 10 20 5 35 FAS(3)123 17/02/009 GJ 1 4 15:09 5 4 14	FAS(3)1121	17/02/2009	GD	3	1M, 2F		43	14:06			30		30	3 GD ((M) and 2 (F)(F)) flew low along loch and landed in far bay.	
FAS(3)1123 17/02/2009 GJ 1 43 15:09 5 4 14 GJ (above bird) flew off calling.	FAS(3)1122	17/02/2009	GJ	1			43	14:37		10	20	5	35	1 GJ flew length of Loch, circled then landed.	
	FAS(3)1123	17/02/2009	GJ	1			43	15:09		5	5	4	14	GJ (above bird) flew off calling.	

Ornithology



Def No	Data	вто	No	Cov	A	VP	Chart		Flight Hei	ght Record	ling Bands	;	Dur.				
KET NO.	Date	Code	NO.	Sex	Age	No.	Start	VH	н	M2	M1	L	(secs)	Notes			
FAS(3)1124	17/02/2009	GD	4	1M, 3F		43	15:33			25			25	4 GD (1male and 3 (F)) flew across loch.			
FAS(3)881	20/02/2009	PG	88			39	10:01	75					75	PG(88)- initially picked up on call, W-E just to S of VP, VH heights, 10:011-10:02			
FAS(3)934	20/02/2009	ML	1	F		40	14:16		45				45	ML- F, SSE of VP, W-E causing disturbance amongst some S. then NNW over new edge of forestry then losing height over open ground then lost to view still going NNW, high- M1 heights			
FAS(3)989	22/02/2009	нн	1	м		41	15:39					27	27	HH M quartering foraging flight at 3-10m to North over open ground dropping into burn valley and possibly into plantation.			
FAS(3)853	25/02/2009	WN	5	3M 2F		38	14:46		45				45	WN(5) 3M 2F - E of VP, initially flying SW but double-backed, circled a few times then dropped down, assumed to have landed on Loch, high heights 1446-1447			
FAS(3)58	04/03/2009	нн	1	м	Ad	12	10:47	240	105				345	Ad (M) HH crossed the corridor SE-NW (came from S side at Dundeughhill.)			
FAS(3)585	04/03/2009	CA	1			32	11:28	47					47	CA flew down valley (N to S) at VH for 47 seconds			
FAS(3)586	04/03/2009	кт	1			32	11:56		44	8			52	KT (green tags both upper wings) circling right above , drifted off N at H.			
FAS(3)587	04/03/2009	L.	17			32	12:40	71					71	17 L. flew up the valley at VH for 1min11secs, lots of passerines: 21 skylarks, 18 Song thrush, 141 fieldfare south and 27 starling north.			
FAS(3)1125	05/03/2009	ос	2			43	09:54			30	30	15	75	4 oystercatcher flying around the reservoir, same display from one pair.			
FAS(3)1126	05/03/2009	ос	2			43	09:55				15	15	30	As above			
FAS(3)1128	06/03/2009	кт	1	F		43	12:37			72			72	KT (F) adult spiralling glide flight at 20-30m. Foraging over rough grazing and loch margins			
FAS(3)125	06/03/2009	СА	1		Ad	14	15:56		1	60	15		75	Ad cormorant S towards Kendoon Loch. 15:56.			
FAS(3)337	08/03/2009	К.	1		-	25	09:11		45				45	K SW of VP. hovering / 'hanging in the wind' at Clawfin Farm, 0911-0912, high height.			
FAS(3)1040	08/03/2009	К.	1	м	Ad.	42	12:32				15		15	K (M). just W of VP. S to N. m1 height, 12:32			
FAS(3)1042	08/03/2009	PF	1	м	hΑ	42	13.02		30		15	15	60	PF (M) N to S to W of VP high - low - M1 heights 13:02 -13:03			
FAS(3)1045	08/03/2009	к	1	м	Ad	42	14.44		50		15	15	15	PE (M), N to S, to W of VP, high - low - M1 heights 13:02 -13:03 K (M) by R7000 N of VP, briefly in flight landed on telegraph pole by the road, M1 height 14:44. Pres same as flight ref no 2 bird			
FAS(3)1045	08/03/2009	к.	1	M	Ad.	42	14.50		45		15		45	K. (M) by B7000 N of VP, briefly in flight, landed on telegraph pole by the road, M1 height 14:44. Pres same as flight ref no 2 bird			
EVC(3)E040	00/03/2003	DE	1		Ad.	22	15.40		60	20			45	K. (M), N of VP, E to W over B7000, high height, 1450-1451			
FA3(3)500	09/03/2009		1		Ad	22	15.40		45	50			90	(ivi) peregnine			
FAS(3)509	09/03/2009		1		Au	22	15.45		45	45			45	Cormorant into Carsfaid Loch			
FAS(3)590	15/03/2009		1		Au	32	10:28			45	15	15	45				
FA5(3)533	15/03/2009	CA	1	N45	imm.	31	13:33				15	15	30	CA south down river towards Loch.			
FAS(3)535	15/03/2009	CU	2	?	Ad	31	13:40				30		30	As above			
FAS(3)534	15/03/2009	L.	6		Ad	31	13:40				30		30	S/E of VP a group of waders flying S/W 6 Lapwing and 2x Curlew.			
FAS(3)537	15/03/2009	CA	1		Ad	31	13:50		ļ			15	15	A different Ad.CA flew S and towards loch where it was lost to view			
FAS(3)1047	16/03/2009	GJ	1		Ad	42	11:59		45				45	A single Greylag Goose flying south high and calling			
FAS(3)1048	16/03/2009	GD	1	м	Ad	42	12:13				15		15	A drake Goosander flew east following line of river			
FAS(3)1049	16/03/2009	К.	1	м	Ad	42	12:53		ļ			15	15	M kestrel perched on wires (telegraph) west of youth hostel, took off and moved down (west) a short distance			
FAS(3)468	16/03/2009	OC	3			29	15:22					<15	<15	3xOC in flight at Water of Deugh, S of VP, 1522, low heights.			
FAS(3)469	16/03/2009	OC	2			29	15:56					15	15	2 OC in flight at Water of Deugh, low heights 1556.			
FAS(3)650	16/03/2009	К.	1	м	Ad	33	16:19					15	15	Kestrel flew N from telegraph pole low across rough pasture			
FAS(3)470	16/03/2009	OC	5			29	16:39			15		20	35	5xOC at Water of Deugh SE of VP, Iow-M2 heights, 1639-1640, landed.			
FAS(3)936	17/03/2009	GI	1	м	Ad	40	11:57		60	45	15		120	A (M) Goshank was seen well close to VP and then drifted off N/W before turning east and lost in forest			
FAS(3)941	17/03/2009	К.	1	м	Ad	40	12:23		60				60	Kestrel seen quite close to VP and hunting over rough pasture			
FAS(3)943	17/03/2009	К.	1	м	Ad	40	12:35		30				30	Kestrel again hunting high near VP			
FAS(3)945	17/03/2009	GI	1	м	Ad	40	13:00		30	15			45	(M) Goshawk seen again but much further away hanging in breeze and then diving into forest N/E of VP			
FAS(3)946	17/03/2009	GD	1	м	Ad	40	13:01			15			15	(M) Goosander flew through scope while watching Goshawk flying closer and moving rapidly			
FAS(3)949	17/03/2009	КТ	1			40	13:25		30				30	Distant red kite above ridge line S/E of VP			
FAS(3)799	17/03/2009	GD	2	MF		37	14:23				20		20	Pair of Goosanders flew along forestry. *3 pairs of buzzards displaying over forestry			
FAS(3)338	18/03/2009	К.	1	м	Ad.	25	12:09					15	15	Kestrel near VP and flew along course of the burn and was lost to view			
FAS(3)339	18/03/2009	К.	1	м	Ad.	25	14:12				15	15	30	Kestrel seen flying quickly N/E low then got a little higher once it reached the forest			
FAS(3)340	18/03/2009	К.	1	м	Ad.	25	14:19					15	15	Kestrel flew back S/W close to VP and turned at the entrance of the quarry			
FAS(3)175	18/03/2009	CU	1			15	14:41		180				180	1xCU: on ground, mobbed by C., off ground, flying high over riverside, turning E across pylons, dropping to ground behind small woodland.			
FAS(3)471	18/03/2009	ос	2	MF	Ads	29	17:36					15	15	2x OC flew onto grass this side of the river (Original 2 still there plus 1 CU)			
FAS(3)472	18/03/2009	CU	1		Ad	29	17:37		1			15	15	Curlew flew up river and was lost to view			
FAS(3)474	18/03/2009	GD	1	м	Ad	29	17:53		1			15	15	(M) goosander flew up river W of VP before lost to view			
FAS(3)126	19/03/2009	MS	2	MF	Ads	14	07:32		60				60	2x mute swans high up the valley above the river			
FAS(3)127	19/03/2009	GD	2	MF	Ads	14	07:48		1			45	45	2x Goosander N up the river until lost to view			

Def Ne	Data	вто	No	Cov	A	VP	Chaut		Flight Hei	ght Record	ling Bands	ds Dur.		
Ref No.	Date	Code	NO.	Sex	Age	No.	Start	νн	н	M2	M1	L	(secs) Notes	
FAS(3)1131	20/03/2009	GN	1	М	Ad	43	07:44					10	10	(M) Goldeneye flew up loch
FAS(3)1133	20/03/2009	CA	1		Juv	43	08:31					15	15	Cormorant flew in and landed on loch
FAS(3)1134	20/03/2009	CA	1		Ad	43	08:42				25		25	Cormorant flew down loch and over dam
FAS(3)1135	20/03/2009	GN	2	F		43	08:53				20		20	2 (F) goosander flew down loch
FAS(3)543	24/03/2009	GJ	2			31	12:21			35			35	2 Greylags flew down loch
FAS(3)395	24/03/2009	К.	1			27	13:31		45		45		90	K hunting / hovering NNW of VP, high - M1 heights, 1331-1333, dropped down.
FAS(3)547	24/03/2009	CA	1			31	14:11		25				25	Cormorant flew high past VP.
FAS(3)396	24/03/2009	GJ	2			27	14:15		45		15		60	GJ(2) - S-N by VP, high - M1 heights, 1415-1416.
FAS(3)397	24/03/2009	CU	2			27	14:28		30	15			45	CU(2) - NW of VP, E-W, M2-high heights, TO at OHL, 1428-1429.
FAS(3)654	26/03/2009	CA	1			33	10:31		20	15			35	Cormorant flew along valley
FAS(3)69	26/03/2009	L.	4			12	16:07		75		42	30	147	L.(4) - E-W over pylon line N of VP, eventually moved off N, TO height again at OHL, high - M1 - low heights, 1607-1609 - note birds flying due to disturbance in the fields by farmer checking his cows.
FAS(3)176	26/03/2009	GD	2	м	Ad	15	16:13			120	30		150	16:13 2 (M) goosanders over VP and S towards river at Carsphain.
FAS(3)278	27/03/2009	К.	1			18	11:13					15	15	K S of VP, E-W over A713 towards plantation SW of VP, low height 1113.
FAS(3)209	27/03/2009	BK	1	F	Ad.	16	11:31		15	15			30	As above
FAS(3)592	27/03/2009	CU	1	1	Ad.	32	13:41					15	15	Single CU flying a short distance & land moving in/on rough pasture (also 2 hares boxing nearby) CU 15 sec L
FAS(3)1137	30/03/2009	КТ	1			43	11:17				20		20	Red kite floated across front of VP on other side of loch, appeared to land, lost to view.
FAS(3)1138	30/03/2009	ws	13		10 Ads, 3 juvs	43	12:55				15	10	25	13 Whooper swans flew into Lochilnvar, landed on loch.
FAS(3)733	01/04/2009	GJ	3			36	13:31		15	15	15	15	60	3 GJ flying into Lochinvar well south of VP. GJ 15 seconds H. GJ 15 seconds M2, GJ 15 seconds M1, GJ 15 seconds L.
FAS(3)736	01/04/2009	кт	1		Ad.	36	13:54		30				30	KT 30 sec H. KK 30 seconds H, 60 seconds VH.
FAS(3)737	01/04/2009	кт	1		Ad.	36	13:58	60	30				90	KT picked up again further down the ridge & circling & gaining height & eventually circling VH with 2 BZ's
FAS(3)741	01/04/2009	кт	1		Ad.	36	15:26		120				120	Red KT flew much closer & over forest & circled nr Hog Hill and was lost to view (possibly went down?) KT 120 seconds H.
FAS(3)688	01/04/2009	кт	1			35	16:02		60				60	Red kite seen flying in VP direction & then turned slightly & went along the ridge line before disappearing over hill. KT 60 seconds H.
FAS(3)1051	01/04/2009	кт	1		1st year	42	16:49			20			20	KT (juv) with radio tracker flew around up circling overhead for 7 mins
FAS(3)1053	01/04/2009	КТ			1st year	42	17:06						0	KT (same as bird (2)) circled over house & dam, gained height and drifted over hill
FAS(3)695	01/04/2009	WS	14		Ad.s	35	18:04		60	60			120	Whooping Swan heard a good while before seen, 14 Ad.s calling and heading North.
FAS(3)1056	01/04/2009	WS	13		1 Ad. 3 juvs	42	18:05			35			35	WS flew past VP headed North
FAS(3)958	02/04/2009	кт	1			40	14:06		60				60	Single KT seen above ridge east of VP before lost to view. KT 60 seconds H.
FAS(3)959	02/04/2009	CA	1		Ad.	40	14:13		60				60	Adult CA following ridge line south (east of VP). CA 60 seconds H.
FAS(3)960	02/04/2009	кт	1			40	14:25		15				15	KT seen again east of VP moving along heathery ridge line & seen chasing a RN. KT 15 seconds H. Second RN appeared in same general area. RN 30 seconds H. Single RN morning quickly & high west (just north of VP) RN 60 seconds VH.
FAS(3)963	02/04/2009	КТ	1			40	14:31		30				30	KT seen again with RN at deep notch in ridge line & all appeared to land on the ridge. KT 30 s H, RN 30 s H.
FAS(3)968	02/04/2009	К.	1	м	Ad.	40	15:10			60			60	Kestrel above wooded part of ridge 1m 5 of VP also many 6+ BZ?
FAS(3)969	02/04/2009	КТ		м	Ad.	40	15:28	120	80	40	60		300	Green tagged adult Red Kite watched for several mins last seen v close to Hog Hill. KT 60 M1, 40 M2, 80 H, 120 VH.
FAS(3)972	02/04/2009	КТ	2			40	16:50		30				30	2 Red Kites & BZ (one or two) all having a dog fight on the ridge line south of VP. KT 30 seconds H.
FAS(3)596	03/04/2009	GJ	1		Ad.	32	08:54			60	15		75	Greylag goose flew to Carsfad loch
FAS(3)597	03/04/2009	GJ	2		Ad.	32	08:57				45		45	2 greylags flew from loch to fields below VP
FAS(3)598	03/04/2009	GJ	5		Ad.	32	09:13					30	30	5 Greylag geese 'chasing' around the fields below VP, (2 pairs and one aggressive single bird)
FAS(3)599	03/04/2009	CU	1		Ad.	32	09:24			30	15		45	Curlew displaying
FAS(3)600	03/04/2009	L.	2			32	09:54				45		45	2 lapwings flew E over Carfad loch
FAS(3)656	03/04/2009	CG	1		Ad.	33	10:41		45	15			60	Single CG flying S down line of aqueduct then turning east until lost to view C 45 Seconds H
FAS(3)658	03/04/2009	CG	1		Ad.	33	11:05		30				30	Another single CG flying high south 15 seconds M1 and following the line of the river CG 30 seconds H
FAS(3)660	03/04/2009	К.	2	Pair	Ad.	33	11:24				45		45	2 K. flying around a small conifer plantation just east of VP before they head off (and out of sight) North
FAS(3)311	08/04/2009	CA	1			24	12:18		180				180	Cormorant flew SW
FAS(3)476	08/04/2009	CU	2			29	12:50		45	15			60	CU(2) - WNW of VP, high-M2 heights 1250-1251
FAS(3)477	08/04/2009	К.	1			29	14:05		60	30	15		105	K hovering / hunting on edge of forestry SE of VP, high-M2-M1 heights 1405-1407.
FAS(3)178	08/04/2009	GJ	2			15	16:06		45		15		60	GJ(2) - S of VP, NW-SE, high - M1 heights, dropping down, appeared to be landing 1606-1607.
FAS(3)70	09/04/2009	CG	4			12	11:46		30	30			60	CG(4) - S-N to W of VP, then E over A713, high-M2 heights, 1146-1147, TO at OHL, no HC, 4 noted.
FAS(3)433	09/04/2009	GJ	3		Ad.	28	16:14			90			90	3 greylag geese flew SE over the Moor
FAS(3)661	15/04/2009	PE	1	м	Ad.	33	12:43	60	60				120	PE flying west along ridges & gaining height & soon high lost stooping down'S. PE 60 seconds VH

- Ornithology



ur.	Dur.		ing Bands	ght Record	Flight Hei		Chart	VP		6	Nie	вто	Dete	Defilie
ecs)	(secs)	L	M1	M2	н	νн	Start	No.	Age	Sex	NO.	Code	Date	KET NO.
40 Untagged KT past VP & following the river valley e	240	60	60	120			15:09	33	1st summer		1	КТ	15/04/2009	FAS(3)668
25 (M) Goosander fle	25		25				18:15	43		М	1	GD	15/04/2009	FAS(3)1140
35 KT (1st year bird) flew ac	135			135			11:20	42	1st year			КТ	16/04/2009	FAS(3)1057
95 (F) Peregrine sat in tree took off, joined by 2nd bird ((M)) and pair p	295		15	45	120	115	12:55	33	Ad.	Pair	2	PE	20/04/2009	FAS(3)669
10 CA flew past up h	40				40		16:40	39			1	CA	20/04/2009	FAS(3)895
10 Pair of Teal flew a	10	10					09:01	43		Pair	2	T.	23/04/2009	FAS(3)1141
00 CU - displaying bird NW of VP, landed, hig	90	15	15	30	30		10:15	16			1	CU	23/04/2009	FAS(3)210
OO CU(2) - NW of VP, displaying M2	90	45	15	30			11:21	16			2	CU	23/04/2009	FAS(3)211
50 CU(2) - E of VP, chasing a RN, high - M2 - M1 heigh	60		15	15	30		11:38	16			2	CU	23/04/2009	FAS(3)212
IS SN - S of VP, E to W over A713,	15		15				12:19	16			1	SN	23/04/2009	FAS(3)213
50 1 x LB Gull flying N up the valley, 1 x CA flying s	60			60			13:30	42	Ad.		1	CA	23/04/2009	FAS(3)1059
OC(2) - S of VP, by A713, landed, TU a	30	30					14:45	29			2	ос	23/04/2009	FAS(3)480
US OC(2) - S of VP at Water of Deugh, low heights, 1532, a	15	15					15:32	29			2	ос	23/04/2009	FAS(3)481
CU - S of VP on N side of Water of Deugh, 1543, landed , disp	15	15					15:43	29			1	CU	23/04/2009	FAS(3)482
CU(2) - same as 1540 -1545 birds, S of VP, land	30	15	15				16:22	29			2	CU	23/04/2009	FAS(3)483
OC(2) - pres same as flight reef no 3 birds SW to	15	15					16:23	29		1	2	ос	23/04/2009	FAS(3)484
30 (M) Goshawk picked flying along slopes of Knockman & h	30			15	15		10:54	36	Ad.	м	1	GI	24/04/2009	FAS(3)748
L5 Single Greylag took off from Lochinvar & landed in m	15	15					11:21	36			1	GJ	24/04/2009	FAS(3)750
2 x KT above ridge south of VP (& probably off VP map) lost to vie	15				15		11:40	36			2	кт	24/04/2009	FAS(3)751
75 Single KT V high above forest & flying N/W	75				15	60	11:53	36			1	кт	24/04/2009	FAS(3)752
20 Kestrel hovering over cle	120				120		12:01	38		м	1	K.	24/04/2009	FAS(3)870
Single KT seen low down over rough pasture near sheen & it land	30	30		-			12:01	36			1	кт	24/04/2009	FAS(3)753
KT seen over Lochinvar & then nursued by ec & gained height went backs &	90	30	15	15	30		12:03	36			1	кт	24/04/2009	FAS(3)755
(F) T flew p	30	50	15		30		12:22	38		F	1	т	24/04/2009	FAS(3)871
(M) Kestrel hunting clear fell area south of VP & lan	45	15	15	15			13.55	37	h۵	М	1	к	24/04/2009	FAS(3)808
(M) kestrel took a v short flight to tree with (E)	15	15	15				14:05	37	Ad.	M	1	к.	24/04/2003	FAS(3)800
(M) kestel took off from tree and started hovering /bunting of	15		15	<u> </u>	<u> </u>		14.05	37	Ad.	M	1	к.	24/04/2003	FAS(3)810
Kostrol again over clear foll & v low & e	15	15	15				14.00	27	Ad.		1	K.	24/04/2003	EAS(2)911
Kestrel soon again but much bigher above the forest/clear fell. Swall	20	15		15	15		14.13	27	Ad.		1	к. К	24/04/2009	EAS(2)812
	50			15			14.24	57	Au.		1	<u>к.</u>	24/04/2009	FA3(5)012
L5 KT seen (tagged 1st summer) over rough pasture in a	15	15					14:43	37	Summ		1	кт	24/04/2009	FAS(3)814
65 Interaction with 2 x CC and 2 x KT just south of Lochinvar. Ls	165			60	75	30	15:05	37			2	КТ	24/04/2009	FAS(3)816
L5 OC(2) - N of VP by water of D	15	15					10:28	14			2	ос	26/04/2009	FAS(3)128
L5 OC(2) - pres different from above bird, at	15	15					10:42	14			2	ос	26/04/2009	FAS(3)129
50 OC(2) - N of VP, eventually landed by water of Deugl	60	30	15	15			12:26	14			2	ос	26/04/2009	FAS(3)130
15 HH (F) N of VP, picked up flying W to E, crossed to N side	45	45					14:44	16		(F)	1	нн	26/04/2009	FAS(3)214
30 Wing tagged KT flying across pasture an	30		30				14:50	12	Ad.		1	КТ	26/04/2009	FAS(3)72
L5 KT seen briefly again fly	15				15		14:52	12	Ad.		1	КТ	26/04/2009	FAS(3)73
30 KT seen again with a sing	30			30			15:03	12	Ad.		1	кт	26/04/2009	FAS(3)74
80 KT seen but this time circling and much hig	180					180	15:12	12	Ad.		1	КТ	26/04/2009	FAS(3)76
L. up to the S of the VP and flying arc	15	15					16:28	12	Ad.		1	L.	26/04/2009	FAS(3)81
00 L. up again but much high	90				90		16:31	12	Ad.		1	L.	26/04/2009	FAS(3)82
OC (M) rising calling flight off burnside ground	57	3	2	2	50		10:19	27		м	1	ос	27/04/2009	FAS(3)401
13 K pair spiralling soar drop and glide into oper	13		3	10			13:28	26		Pair	2	К.	27/04/2009	FAS(3)367
78 K high soaring glide flight and hovering stall at 100 - 60m over m	78				78		14:22	26			1	К.	27/04/2009	FAS(3)368
00 84x GJ flying high N in a	600					600	09:55	15			84	GJ	28/04/2009	FAS(3)184
20 Wing tagged Kite (green/purple) chased 1s	120			120			11:35	32	Ad. 1st year		2	КТ	28/04/2009	FAS(3)602
27 KT (tagged/inner primary molt) circling at M2 21 se	127				30	97	14:58	40			1	КТ	09/05/2009	FAS(3)975
2 GJ flew calling at 31 s	31		31				15:15	40	Ad.		2	GJ	09/05/2009	FAS(3)976
29 KT (different bird/tagged) circled for 2 mins 9 second	129			8	121		16:19	40	Ad.		1	КТ	09/05/2009	FAS(3)977

ew,	КΤ	120	M2,	60	M1,	60	L
ς νν,	IX I	120	1112,	00	··· ,	00	-

le to great height. Lost to view in 5th minute

eights, 1015-1017

21 - 1122

Iso SN chipping just W of VP

ht 1219

alley. CA 60 seconds M2.

45, low heights

fferent from flight ref no 2 birds

(a second CU also present, not flying) M1 height 1622 - 1623

Deugh, low height 1623

largree forest. G1 15 seconds H, M

conifer flock. GJ 15 seconds L

of Green top of Margree. KT 15 seconds H.

w. KT 60 VH, 15 s H.

st (nr Green top Duchrae). KT 30 seconds L tually drifted off low S. KT 30 H, 15 M2, 15 M1, 30 L.

Imp. K 15 seconds M2, M1, L

briefly. K 15 seconds M1

a, (F) still sitting on tree. K seconds M1

K 15 seconds L.

r clear-fell area. K 15 seconds H, 15 seconds M

are grazing. KT 15 seconds L.

ver Lochinvar. KT 30 VH, 75 H, 60 M2

neights

1042, low heights

2-M1 low heights 1226 - 1227

ontinued flying E, low height 1444

calling SE of VP.

(and out of sight) E. *N* of the road.

f view behind plantation

on 30-5m on Snabb hill

nd on to Brown Hill out of view into cloud

wood and up valley

nds and 9 seconds at M2 (1)

ds at M2 121 seconds at H (3)

Pof No.	Data	вто	No	Sov	A.g.o.	VP	Start		Flight Hei	ght Record	ing Bands		Dur.	s) Notes	
Kei No.	Date	Code	NO.	Sex	Age	No.	Start	νн	н	M2	M1	L	(secs)		
FAS(3)978	09/05/2009	КТ	1		Ad.	40	16:34			18			18	KT for 18 seconds at M2	
FAS(3)1060	26/05/2009	PE	1	М	Ad	42	15:03	120	120				240	(M) peregrine seen south of VP and it circled and gained height for several minutes before finally lost to view S/E of VP	
FAS(3)1063	26/05/2009	PE	1	м	Ad	42	15:47			15			15	While watching ravens noted the (M) peregrine again briefly, checked the time and then lost sight of bird.	
FAS(3)1065	26/05/2009	КТ				42	16:53	120					120	Red Kite drifting very high across the valley before lost to view	
FAS(3)603	27/05/2009	К.	1	М	Ad	32	15:04			60	60		120	Kestrel hunting close to VP just south-S/E and eventually harried by 2xC and lost to view	
FAS(3)604	27/05/2009	К.	1	м	Ad	32	15:11		60	120			180	(M) kestrel again hunting hill-side just S/E of VP, a little higher and further S/E than last sighting	
FAS(3)606	27/05/2009	CU	3		Ad	32	15:21				60	120	180	CU calling and then seen well S/W of VP and moving slowly North	
FAS(3)607	27/05/2009	CU	1		Ad	32	15:33					15	15	Single curlew calling and flew short distance south along edge of loch	
FAS(3)608	27/05/2009	К.	1	м	Ad	32	17:32				60		60	Kestrel again hunting in area as previously	
FAS(3)438	28/05/2009	CU	2	2F	Ad	28	12:59					30	30	2xCU flying around calling just west of VP.	
FAS(3)441	28/05/2009	CU	1		Ad	28	14:50				15	15	30	Single curlew low past VP calling heading off south	
FAS(3)442	28/05/2009	К.	1			28	15:38				15		15	Kestrel or skylark near Fire Tower and then dropped down and lost to view	
FAS(3)341	17/06/2009	К.	1	м		25	16:00		60				60	K (M), circling just SE of VO, drifted N over B741, 1600-1601, high height (also TC height).	
FAS(3)342	17/06/2009	К.	1			25	16:59		45	15			60	K SW of VP, at Clawfin, gained height, circled, then N over B741, M2 - high heights 1659-1700.	
FAS(3)343	17/06/2009	PE	1	М	Ad.	25	17:12		30			15	45	PE - adult (M), NW of VP at Benbeoch Craig, flew NE then SW and landed on top of Craig, high-low heights, 1712-1713.	

D.6 Details of Collision Risk Assessment for **Target Species**

D.6.1 Introduction

1 This appendix provides further information on the methods adopted to derive estimates of annual bird collisions for the proposed and existing OHLs, elaborating on the methods outlined in Chapter 9 of the ES. Also provided here are tables that detail the estimates of bird collision risk for target species for the proposed and existing OHLs. Figures D6.1 to D6.10, provided at the end of this appendix, illustrate mapped bird transit estimates per 250m long section of the existing and proposed OHLs for target and secondary species combined.

D.6.2 **OHL Collision Estimation Method**

- 1 The method adopted to derive estimates of annual bird collisions is essentially a three-stage process summarised as follows:
 - Rates of flights by birds across the OHL (i.e. the collision risk zone; accounting for margins of error in recording bird flight lines) is estimated from observation (i.e. the number of 'transits');
 - Estimates of the annual 'residence period' during which the species of interest is present within the area and potentially exposed to the collision risk. This estimate may also be adjusted to account for periods of increased vulnerability (e.g. estimated proportion of the residence period when poor-weather is predicted, or for some species with clear patterns of daily flight activity the period of vulnerability may not be throughout daylight hours); and

- The proportion of those flights through the collision risk zone which would result in a collision is determined by the application of an avoidance rate (i.e. 1 - the collision rate).
- 2 Estimations of bird transit rates across the proposed and existing OHLs were derived from timed watches from strategic vantage points located along the proposed OHL route corridor. Observers recorded flight direction, duration and height for the target species of interest. Watches were undertaken throughout daylight hours and through the months when the highest level of activity would be expected to occur (details of the flight activity survey methods are provided in Section D.1.2.1). From this sample data total estimates of annual bird transits across the OHL route were derived, taking into consideration the estimated residence period of the individual species within the area of interest.
- 3 The collision risk estimates are based on collision rates sourced from available literature. Detailed empirical studies from the UK quantifying OHL collision mortality rates for most of the species of interest are not available. In order to help inform estimates of collision rates for species of specific interest to this assessment, two sections of the existing N-Route were searched for bird carcasses on a regular basis during the autumn and early winter of 2008, along sections of the existing line that were within vantage point viewsheds of the flight activity surveys ongoing for the EIA of the proposed OHL. The sections were at Carsphairn (fields on either side of the Water of Deugh) and at Kendoon, selected because of the anticipated relatively high level of bird flight activity associated with these watercourses. However, no carcasses were found during the study period (see Section D.9 for further details). This may reflect the non-random nature of OHL collisions in that collision events are likely to be 'clumped' relative to weather conditions and other environmental factors.
- 4 Data from the available literature suggests that collision rates, relative to exposure (i.e. degree of flight activity in the vicinity of OHL), are usually very low. For example,

- below).
- or existing OHL routes).

Species in the Study Area.

Species	Collision rate (flights at all heights)	Source	Comment
Whooper swan	0.07 - 0. 4 %	Anderson & Murphy (1988)	Used goose collision rate
Pink-footed goose	0.07 - 0. 4 %	Anderson & Murphy (1988)	
Greylag goose	0.07 - 0. 4 %	Anderson & Murphy (1988)	
Red kite	0.01 %	Alonso & Alonso (1999)	Used black kite collision rate
Hen harrier	0.072 %	Alonso & Alonso (1999)	Used buzzard collision rate
Goshawk	0.034 %	Alonso & Alonso (1999)	Used average of black kite and buzzard
Merlin	0.012 - 0.02 %	Alonso & Alonso (1999)	Used kestrel collision rate
Peregrine	0.041 %	Alonso & Alonso (1999)	Used average of black kite and kestrel



Meyer (1978) recorded collisions occurring in 0.03% of total flights through or over OHLs. In the absence of species-specific collision rates for most species in this assessment, collision rates were taken from species that are as close as possible in relation to size, wing morphology, flight capability and behaviour (see Table 9.6.1

5 Only species that were observed flying across the proposed and / or existing OHL routes (within any height band) are included in the analysis (e.g. black grouse were recorded during flight activity surveys but were not noted flying over the proposed

Table D6.1 - Collision Rates (%) Used for Estimates of Collision Mortality for Target

Species	Collision rate (flights at all heights)	Source	Comment
Oystercatcher	0.1 - 0. 67 %	Meyer (1978)	Derived from waders; long-billed dowitcher and western sandpiper
Lapwing	0.146 - 0. 059 %	Alonso & Alonso (1999)	Different rates from two Study Areas
Common snipe	0. 1 - 0. 67 %	Meyer (1978)	Derived from waders; long-billed dowitcher and western sandpiper
Curlew	0. 1 - 0. 67 %	Meyer (1978)	Derived from waders; long-billed dowitcher and western sandpiper
Barn owl	0. 072 %	Alonso & Alonso (1999)	Used buzzard collision rate

Method to Estimate Transit Rates **D.6.3**

- 1 The following describes the approach to determine estimates of annual bird transit rates. This follows a method developed, in liaison with SNH and RSPB, for the Beauly to Denny 400kV OHL project.
- 2 In order to provide a more spatially detailed assessment of collision risk along the length of the existing and proposed OHLs was divided into 250m long x 200m wide sections.
- 3 In order to calculate the total hours watched per 250m section the spatial overlap between viewsheds (visible area from each VP) and the hours watched simultaneously for overlapping viewsheds was taken into account.
- 4 Viewsheds with a 3km radius were generated (using the Vertical Mapper extension to MapInfo Professional) with a vertical offset from ground level of 5m, which is well below the minimum acceptable ground clearance of the OHL conductors.
- 5 The degree of overlap between viewsheds was determined using MapInfo Professional GIS. Once the overlaps between viewsheds had been determined each 250m section was attributed with the correct viewshed or combination of overlapping viewsheds.
- 6 A correction to the hours watched per 250m was made to account for simultaneous watches undertaken from geographically overlapping viewsheds. For example, for overlapping viewsheds that have each been watched for 45 hours, the combined watch time for the overlapping section would be 90 hours. However, if the overlapping viewsheds had been watched simultaneously for 5 hours, the total hours watched for the overlapping section would be 85 hours.
- 7 Bird transits were determined using GIS by 'intersecting' digitised recorded flight lines with each of the 250m sections (this was subsequently checked by the GIS operator for error). In order to account for potential surveyor error in mapping flight lines accurately, all flights that fell within the 250m x 200m rectangle (i.e. this includes a 100m 'buffer' either side of the OHL route) have been recorded as flights 'crossing'

the line. The flight line intersect process was then applied to the series of 250m by 200m rectangles, which resulted in all flights either crossing or falling within 100m either side of the OHL.

8 Due to the variable nature of the flights recorded, i.e. some direct linear flights and some looping flights, and also the manner in which the intersect process within GIS is applied, it was necessary to manually check each flight that was selected through the intersect process. Illustration D6.1, below, provides an example of the type of flights recorded in relation to the OHL and the way in which the number of transits has been determined. Transits have been determined on the basis of all recorded flights i.e. flights at any height band.

FLIGHT TRANSIT ASSESSMENT:

Flight 1.

One transit, assigned to section 856

Flight 2.

One transit, assigned to section 858 (the section at which point the flight crosses the centre line)

Flight 3.

One transit, assigned to section 860 (the section at which point the flight crosses the centre line)

Flight 4.

Two Transits, assigned to sections 861 and 862 (the flight loops across the entire width of the buffer zone)

Flight 5.

D.6.4

One transit, assigned to section 863 (the flight loops within the buffer zone and is recorded for the section within which the greater part of the flight is present)



Illustration D6.1 - Flight Transit Assessment Method

856

857

858

'Empirical Method' for Estimating Collision Risk

1 In the ES the number of birds recorded/hr was multiplied by the total number of hours that birds were estimated to be present in the area (i.e. the 'active' or 'residence' period) and therefore at risk of collision.

- are subject to).

D.6.5

for each target species.

Table D6.2 - Observation Effort for the Proposed OHL by 250m Section, accounting for viewshed overlap and simultaneous watches from adjacent VPs (section numbers for the proposed OHL are shown on Figures D6.1, D6.2, D6.3).

250m Continu	Hours pe	vey Period		
No.	Oct 2007 - Apr 2008	Apr 2008 - Sep 2008	Sep 2008 - May 2009	Total Hrs
1	129.75	114.00	210.83	454.58
2	129.75	114.00	210.83	454.58
3	67.50	114.00	210.83	392.33
4	67.50	114.00	210.83	392.33
5	67.50	84.00	146.83	298.33
6	67.50	114.00	210.83	392.33
7	67.50	114.00	210.83	392.33
8	67.50	114.00	210.83	392.33
9	67.50	154.10	277.50	499.10
10	0.00	73.00	144.00	217.00
11	0.00	73.00	144.00	217.00
12	0.00	73.00	144.00	217.00
13	0.00	114.70	213.17	327.87
14	0.00	114.70	213.17	327.87
15	0.00	86.70	144.00	230.70
16	0.00	86.70	144.00	230.70
17	0.00	86.70	144.00	230.70
18	0.00	86.70	144.00	230.70
19	0.00	86.70	144.00	230.70

2 Using the individual 250m section transit rates/hr (i.e. estimated number of bird flights at risk of collision per individual 250m section per annum) are summed along the full length of the proposed OHL. Estimates of the total number of transits/per annum at all heights were calculated for each target species.

3 Collision estimates have then been derived based on all flight heights crossing the OHL corridor and using various compatible collision rates determined from several OHL collision field studies (see Table 9.6.1). These studies measured both the level of bird exposure to collision risk and estimated the number of collisions from carcass searches under the OHLs (correcting for various biases which carcass search studies

4 The exact position of the supporting towers is not factored into the calculations as they occupy a relatively small proportion of the OHL length. The justification of the focus on the cables is based on field observations of geese in collision or near collision with cables (e.g. Anderson & Murphy 1988) and that no strikes with supporting poles or towers were observed and hence are likely to be very rare events.

Annual Transit and Collision Estimates for each Target Species

1 The following tables provide a breakdown of the observation effort, annual transit and collision rate estimates for each 250m section of the proposed and existing OHLs

	Hours pe	er Section per Surv	vey Period		250	C	Hours pe	r Section per Surv	ey Period				
No.	Oct 2007 - Apr 2008	Apr 2008 - Sep 2008	Sep 2008 - May 2009	Total Hrs	250m S	lo.	Oct 2007 - Apr 2008	Apr 2008 - Sep 2008	Sep 2008 - May 2009	Total Hrs		No.	0
20	0.00	86.70	144.00	230.70	6	57	66.75	76.00	147.00	289.75]	114	
21	0.00	86.70	144.00	230.70	6	58	66.75	76.00	147.00	289.75		115	
22	0.00	86.70	144.00	230.70	6	69	66.75	76.00	147.00	289.75		116	
23	0.00	42.00	72.00	114.00	7	0	129.33	115.00	214.50	458.83		117	
24	0.00	83.10	148.67	231.77	7	'1	129.33	115.00	214.50	458.83		118	
25	0.00	83.10	148.67	231.77	7	2	129.33	71.00	146.17	346.50]	119	
26	0.00	45.00	81.00	126.00	7	'3	129.33	71.00	146.17	346.50]	120	Τ
27	79.50	81.00	151.00	311.50	7	/4	129.33	71.00	146.17	346.50]	121	
28	79.50	81.00	151.00	311.50	7	'5	129.33	71.00	146.17	346.50]	122	Τ
29	79.50	81.00	151.00	311.50	7	' 6	66.75	32.00	75.00	173.75	1	123	1
30	79.50	81.00	151.00	311.50	7	7	66.75	32.00	75.00	173.75	1	124	
31	79.50	81.00	220.58	381.08	7	'8	0.00	0.00	0.00	0.00	1	125	\top
32	147.00	81.00	220.58	448.58	7	79	65.50	39.00	72.00	176.50	1	126	1
33	147.00	120.20	291.75	558.95	8	80	65.50	39.00	72.00	176.50	1	127	+
34	67.50	90.00	221.75	379.25	8	81	65.50	39.00	72.00	176.50	1	128	+
35	136.17	78.25	196.92	411.34	8	32	65.50	39.00	72.00	176.50	1	129	+
36	136.17	119.50	261.42	517.09	8	3	65.50	39.00	72.00	176.50	-	130	+
37	136.17	119.50	261.42	517.09	8	34	65.50	39.00	72.00	176.50	1	131	+
38	136.17	119.50	261.42	517.09	8	35	65.50	39.00	72.00	176.50	1	132	-
39	136.17	119.50	261.42	517.09	8	36	65.50	39.00	72.00	176.50	1	133	+
40	136.17	119 50	203.67	459 34	8	37	65 50	39.00	72.00	176 50	1	134	+
41	67.50	87.00	141 92	296.42	8	12	65 50	39.00	72.00	176.50		135	+
41	67.50	124.20	212.02	405.62		20	65 50	39.00	72.00	176.50	-	135	+
/3	67.50	124.20	213.52	405.62	0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	65.50	39.00	72.00	176.50	1	130	+
43	67.50	124.20	213.52	405.62		n0 1	65.50	39.00	72.00	176.50	1	137	+
44	126.17	155 20	213.52	620.21)1)2	120.70	78.00	126.09	244.79	{	130	+
45	71.00	110.40	270.42	451.82		12	135.70	78.00	141 50	354.00	1	140	+
40	71.00	110.40	270.42	451.82		,5 M	125.50	77.00	141.50	254.00	-	140	+
47	71.00	110.40	270.42	451.82)4)5	135.50	77.00	141.50	254.00	{	141	+
40	71.00	110.40	270.42	451.82			135.50	77.00	141.50	354.00		142	+
50	71.00	110.40	270.42	451.82		7	135.50	77.00	141.50	254.00	-	143	+
50	71.00	26.00	270.42	431.82	9	,, ,,	135.50	77.00	72.00	100 50	{	144	+
51	71.00	36.00	36.00	143.00	9	20 20	69.50	39.00	72.00	180.50	{	145	+
52	71.00	36.00	36.00	143.00	9	99 00	69.50	39.00	72.00	180.50	-	140	+
53	71.00	36.00	36.00	143.00	10	00	69.50	39.00	72.00	180.50	-	147	+-
54	71.00	36.00	36.00	143.00	10	01	69.50	39.00	72.00	180.50	-	148	+
55	71.00	36.00	36.00	143.00	10	02	69.50	39.00	72.00	180.50	-	149	
56	/1.00	36.00	36.00	143.00	10	03	135.50	77.00	141.50	354.00	{		
57	0.00	0.00	0.00	0.00	10	04	135.50	77.00	141.50	354.00	-		
58	0.00	0.00	0.00	0.00	10	05	69.50	39.00	72.00	180.50	-		
59	0.00	0.00	0.00	0.00	10	06	69.50	39.00	72.00	180.50	-		
60	66.75	32.00	75.00	173.75	10	07	68.00	39.00	74.00	181.00	-		
61	66.75	76.00	147.00	289.75	10	08	68.00	39.00	74.00	181.00	4		
62	66.75	76.00	147.00	289.75	10	09	68.00	39.00	74.00	181.00	-		
63	66.75	76.00	147.00	289.75	1	10	68.00	39.00	74.00	181.00			
64	66.75	76.00	147.00	289.75	1	11	68.00	39.00	74.00	181.00			
65	66.75	76.00	147.00	289.75	1	12	68.00	0.00	0.00	68.00			
66	66.75	76.00	147.00	289.75	1	13	68.00	0.00	0.00	68.00			

Ornithology



Hours pe			
Oct 2007 - Apr 2008	Apr 2008 - Sep 2008	Sep 2008 - May 2009	Total Hrs
68.00	0.00	0.00	68.00
68.00	0.00	0.00	68.00
68.00	39.00	74.00	181.00
68.00	39.00	74.00	181.00
68.00	39.00	74.00	181.00
68.00	69.00	146.00	283.00
0.00	30.00	72.00	102.00
67.50	30.00	72.00	169.50
67.50	0.00	75.00	142.50
67.50	0.00	75.00	142.50
0.00	0.00	75.00	75.00
67.50	0.00	0.00	67.50
67.50	36.00	72.00	175.50
67.50	63.00	144.00	274.50
71.30	36.00	72.00	179.30
71.30	36.00	72.00	179.30
71.30	36.00	72.00	179.30
71.30	36.00	72.00	179.30
71.30	36.00	72.00	179.30
71.30	63.00	144.00	278.30
9.00	63.00	144.00	216.00
0.00	63.00	216.75	279.75
9.00	105.08	286.50	400.58
9.00	105.08	286.50	400.58
9.00	105.00	291.75	405.75
9.00	68.33	222.00	299.33
0.00	68.33	222.00	290.33
9.00	112.33	292.67	414.00
9.00	87.00	147.00	243.00
9.00	87.00	147.00	243.00
9.00	87.00	147.00	243.00
9.00	87.00	147.00	243.00
9.00	87.00	147.00	243.00
9.00	87.00	147.00	243.00
9.00	87.00	147.00	243.00
9.00	87.00	147.00	243.00

Table D6.3 - Annual Transits and Estimated Annual Collisions for Whooper Swan for the Proposed OHL by 250m Section.

	No o	f transits	at all hei	ghts	Active per 24	riod (hr) = 34		
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section		Estimated Collisions yr ¹ at 0.0007 rate	Estimated Collisions yr ¹ at 0.004 rate
19			4	4	0.027778	67.61111	0.047328	0.270444
26			14	14	0.17284	420.6914	0.294484	1.682765
38	8			8	0.020121	48.97507	0.034283	0.1959
46			11	11	0.032218	78.41954	0.054894	0.313678
68	10			10	0.046784	113.8713	0.07971	0.455485
74	16			16	0.058076	141.3575	0.09895	0.56543
77	6			6	0.042328	103.0265	0.072119	0.412106
83	6			6	0.043636	106.2109	0.074348	0.424844
113			4	4	0.058824	143.1765	0.100224	0.572706
				79		1223.34	0.856338	4.893359

Table D6.4 - Annual Transits and Estimated Annual Collisions for	Pink-footed Goose
for the Proposed OHL.	

	No of	f transits	at all heig	shts	Active pe 31	riod (hr) = .46		
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ⁻¹ at 0.0007 rate	Estimated Collisions yr ⁻¹ at 0.004 rate
3			88	88	0.316171	994.6754	0.696273	3.978702
12			110	110	0.763889	2403.194	1.682236	9.612778
79	180			180	1.309091	4118.4	2.88288	16.4736
119			40	40	0.186916	588.0374	0.411626	2.35215
136	20			20	0.067682	212.9272	0.149049	0.851709
				438		8317.234	8.822064	33.26894

Table D6.5 - Annual Transits and Estimated Annual Collisions for Greylag Goose fo
the Proposed OHL by 250m Section.

	No of	transits a	t all heig	hts	Active per 29	riod (hr) = 06		
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ^{.1} within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.0007 rate	Estimated Collisions yr ¹ at 0.004 rate
1	10			10	0.029362	85.32503	0.059728	0.3413
2			11	11	0.032298	93.85754	0.0657	0.37543
5		2		2	0.009331	27.11706	0.018982	0.108468
7		17		17	0.061079	177.4943	0.124246	0.709977
16			12	12	0.083333	242.1667	0.169517	0.968667
18			4	4	0.027778	80.72222	0.056506	0.322889
20			19	19	0.131944	383.4306	0.268401	1.533722
21			11	11	0.076389	221.9861	0.15539	0.887944
37	2			2	0.00503	14.61807	0.010233	0.058472

	No of	transits a	t all heig	hts	Active per 29	riod (hr) = 06		
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.0007 rate	Estimated Collisions yr ¹ at 0.004 rate
40			8	8	0.02354	68.40866	0.047886	0.273635
41			2	2	0.00955	27.75284	0.019427	0.111011
42	6	1		7	0.024874	72.28342	0.050598	0.289134
43	6			6	0.02132	61.95722	0.04337	0.247829
76	46			46	0.324515	943.0406	0.660128	3.772162
79	46			46	0.334545	972.1891	0.680532	3.888756
91	46			46	0.334545	972.1891	0.680532	3.888756
92			39	39	0.146188	424.822	0.297375	1.699288
93	46			46	0.166065	482.5848	0.337809	1.930339
124			7	7	0.093333	271.2267	0.189859	1.084907
125			2	2	0.02963	86.1037	0.060273	0.344415
				343		5709.276	3.996493	22.8371

Table D6.6 - Annual Transits and Estimated Annual Collisions for Red Kite for the Proposed OHL by 250m Section.

roposee		Join Seeth					
	No o	of transits a	t all height	s	Active pe 43	riod (hr) = 80	
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ⁻¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.0001 rate
1		2		2	0.0044	19.27054	0.001927
15			1	1	0.004335	18.9857	0.001899
16			1	1	0.004335	18.9857	0.001899
17			1	1	0.004335	18.9857	0.001899
18			1	1	0.004335	18.9857	0.001899
29			1	1	0.00321	14.061	0.001406
30			2	2	0.006421	28.12199	0.002812
31	1			1	0.002624	11.49365	0.001149
32		1	1	2	0.004459	19.52829	0.001953
35	1	1		2	0.004862	21.29625	0.00213
36		1		1	0.001934	8.470479	0.000847
38			5	5	0.009669	42.3524	0.004235
39			2	2	0.003868	16.94096	0.001694
40			5	5	0.010885	47.6771	0.004768
41			8	8	0.026989	118.2106	0.011821
42	2		3	5	0.012327	53.99142	0.005399
43			1	1	0.002465	10.79828	0.00108
45			1	1	0.001587	6.950064	0.000695
47		1		1	0.002213	9.694126	0.000969
55	1			1	0.006993	30.62937	0.003063
62	1			1	0.003451	15.11648	0.001512
				45		550.5458	0.055055

Proposed OHL by 250m Section.

$\mathbf{A} = \mathbf{A} + $												
	No	of transits	at all heigh	ts	Active period	l (hr) = 2614						
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ⁻¹ at 0.00072 rate					
5	1			1	0.004666	12.19615	0.008781					
18	1			1	0.006944	18.15278	0.01307					
19	1			1	0.006944	18.15278	0.01307					
24			1	1	0.006726	17.58257	0.012659					
26	1			1	0.012346	32.2716	0.023236					
28	1			1	0.004338	11.34056	0.008165					
29	1		1	2	0.008677	22.68113	0.01633					
30	1		1	2	0.008677	22.68113	0.01633					
37			1	1	0.002515	6.574612	0.004734					
68	1			1	0.004678	12.22924	0.008805					
81			1	1	0.007173	19.01091	0.013688					
83			1	1	0.007273	19.01091	0.013688					
				14		211.8844	0.152557					

Proposed OHL by 250m Section.

	No c	of transits a	at all heigh	ts	Active period	(hr) = 4380	
250m section no.	Survey Period 1	Survey period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ⁻¹ at 0.00034 rate
3			1	1	0.002549	11.16407	0.003796
15			2	2	0.008669	37.97139	0.01291
16			2	2	0.008669	37.97139	0.01291
20			1	1	0.004335	18.9857	0.006455
21			1	1	0.004335	18.9857	0.006455
53	1			1	0.006993	30.62937	0.010414
				8		155.7076	0.052941

Proposed OHL by 250m Section.

	No c	of transits	at all hei	shts	Active pe 43	riod (hr) = 880		
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.0002 rate	Estimated Collisions yr ¹ at 0.00012 rate
69			1	1	0.003451	15.11648	0.003023	0.001814
80			3	3	0.016997	74.44759	0.01489	0.008934
105	1			1	0.00554	24.26593	0.004853	0.002912
				5		113.83	0.022766	0.01366

Table D6.7 - Annual Transits and Estimated Annual Collisions for Hen Harrier for the

Table D6.8 - Annual Transits and Estimated Annual Collisions for Goshawk for the

Table D6.9 - Annual Transits and Estimated Annual Collisions for Merlin for the

Table D6.10 - Annual Transits and Estimated Annual Collisions for Peregrine for th	ıe
Proposed OHL by 250m Section.	

	No of transits at all heights			hts	Active period	(hr) = 4380	
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.00041 rate
30			1	1	0.00321	14.061	0.005765
36	2			2	0.003868	16.94096	0.006946
37			1	1	0.001934	8.470479	0.003473
38			1	1	0.001934	8.470479	0.003473
39		1	1	2	0.003868	16.94096	0.006946
40			3	3	0.006531	28.60626	0.011729
45			2	2	0.003174	13.90013	0.005699
46			4	4	0.008853	38.7765	0.015898
47			4	4	0.008853	38.7765	0.015898
48			6	6	0.01328	58.16476	0.023848
49			2	2	0.004427	19.38825	0.007949
67	1			1	0.003451	15.11648	0.006198
68		1		1	0.003451	15.11648	0.006198
87	1			1	0.005666	24.81586	0.010175
128			2	2	0.011154	48.85666	0.020031
129		1		1	0.005577	24.42833	0.010016
142		4		4	0.016461	72.09877	0.02956
143			2	2	0.00823	36.04938	0.01478
144			1	1	0.004115	18.02469	0.00739
147		1		1	0.004115	18.02469	0.00739
				42		535.0276	0.219361

Table D6.11 - Annual Transits and Estimated Annual Collisions for Oystercatcher for the Proposed OHL by 250m Section.

	No o	f transits a	at all heig	hts	Active pe	eriod (hr) = 996		
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.001 rate	Estimated Collisions yr ¹ at 0.0067 rate
67	4	3	17	24	0.08283	248.1588	0.248159	1.662664
68			8	8	0.02761	82.71959	0.08272	0.554221
76		1		1		17.24317	0.017243	0.115529
				33		348.1215	0.348122	2.332414

Table D6.12 - Annual Transits and Estimated Annual Collisions for Lapwing for the Proposed OHL by 250m Section.

	No of transits at all heights				Active pe 43	riod (hr) = 880		
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.00059 rate	Estimated Collisions yr ¹ at 0.00146 rate
41	19		17	36	0.121449	531.9479	0.313849	0.776644
50	1			1	0.002213	9.694126	0.00572	0.014153
51	1			1	0.006993	30.62937	0.018071	0.044719
52	3		4	7	0.048951	214.4056	0.126499	0.313032
53	9			9	0.062937	275.6643	0.162642	0.40247
				54		1062.341	0.626781	1.551018

Table D6.13 - Annual Transits and Estimated Annual Collisions for Common Snipe for the Proposed OHL by 250m Section.

	No of transits at all heights			Active pe 43	riod (hr) = 880			
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.001 rate	Estimated Collisions yr ¹ at 0.0067 rate
82	1			1	0.005666	24.81586	0.024816	0.166266
				1		24.81586	0.024816	0.166266

Table D6.14 - Annual Transits and Estimated Annual Collisions for Curlew for the Proposed OHL by 250m Section.

	No of	transits a	at all heig	hts	Active pe 29	eriod (hr) = 996		
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.001 rate	Estimated Collisions yr ¹ at 0.0067 rate
1		1		1	0.0022	6.590699	0.006591	0.044158
30			3	3		28.85393	0.028854	0.193321
42		1		1		7.386224	0.007386	0.049488
49		7		7		46.41671	0.046417	0.310992
67			2	2		20.6799	0.02068	0.138555
68			3	3		31.01984	0.03102	0.207833
79	1		1	2		33.94901	0.033949	0.227458
80	1	1		2		33.94901	0.033949	0.227458
81	3	1		4		67.89802	0.067898	0.454917
82	1	2		3		50.92351	0.050924	0.341188
83			1	1		16.9745	0.016975	0.113729
102		3		3	0.01662	49.79501	0.049795	0.333627
103			2	2	0.00565	16.92655	0.016927	0.113408
				34		411.3629	0.411363	2.756132

Proposed OHL by 250m Section.

	No of transits at all heights Active period (hr) = 4380						
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr¹ within each section	Estimated annual transits	Estimated Collisions yr ⁻¹ at 0.00072 rate
18			1	1	0.004335	18.9857	0.01367
19			1	1	0.004335	18.9857	0.01367
121			1	1	0.0059	25.84071	0.018605
				3		63.8121	0.045945

Table D6.16 - Observation Effort for the Existing OHL to be Dismantled by 250m Section, accounting for viewshed overlap and simultaneous watches from adjacent VPs (section numbers for the existing OHL are shown on Figures D6.7, D6.8, the numbers start at 30 as there was no flight activity survey observation north of c. section 30).

	Hours pe			
No.	Oct 2007 - Apr 2008	Apr 2008 - Sep 2008	Sep 2008 - May 2009	Total Hrs
30	9.00	0.00	0.00	9.00
31	9.00	0.00	0.00	9.00
32	9.00	0.00	0.00	9.00
33	9.00	0.00	0.00	9.00
34	9.00	0.00	0.00	9.00
35	9.00	0.00	0.00	9.00
36	9.00	0.00	0.00	9.00
37	9.00	0.00	0.00	9.00
38	9.00	0.00	0.00	9.00
39	9.00	0.00	0.00	9.00
40	80.30	0.00	0.00	80.30
41	71.30	0.00	0.00	71.30
42	71.30	0.00	0.00	71.30
43	71.30	0.00	0.00	71.30
44	71.30	0.00	0.00	71.30
45	133.30	0.00	0.00	133.30
46	133.30	0.00	0.00	133.30
47	71.30	0.00	0.00	71.30
48	71.30	0.00	0.00	71.30
49	71.30	0.00	0.00	71.30
50	71.30	30.00	72.00	173.30
51	0.00	30.00	72.00	102.00
52	0.00	30.00	72.00	102.00
53	0.00	30.00	72.00	102.00
54	0.00	30.00	72.00	102.00
55	67.50	63.00	144.00	274.50
56	67.50	63.00	216.75	347.25
57	0.00	36.00	147.00	183.00
58	0.00	36.00	147.00	183.00
59	0.00	36.00	72.00	108.00
60	0.00	36.00	72.00	108.00
61	68.00	36.00	72.00	176.00



Table D6.15 - Annual Transits and Estimated Annual Collisions for Barn Owl for the

	Hours p	Hours per Section per Survey Period								
No.	Oct 2007 - Apr 2008	Apr 2008 - Sep 2008	Sep 2008 - May 2009	Total Hrs						
62	68.00	36.00	72.00	176.00						
63	68.00	0.00	0.00	68.00						
64	68.00	0.00	0.00	68.00						
65	68.00	0.00	0.00	68.00						
67	68.00	0.00	0.00	68.00						
68	0.00	0.00	0.00	0.00						
69	0.00	0.00	0.00	0.00						
70	0.00	0.00	0.00	0.00						
71	0.00	0.00	0.00	0.00						
72	0.00	0.00	0.00	0.00						
73	0.00	0.00	0.00	0.00						
74	69.50	39.00	72.00	180.50						
75	69.50	39.00	72.00	180.50						
76	69.50	39.00	72.00	180.50						
77	69.50	39.00	72.00	180.50						
78	69.50	39.00	72.00	180.50						
79	69.50	39.00	72.00	180.50						
80	69.50	39.00	72.00	180.50						
81	69.50	39.00	72.00	180.50						
82	69.50	39.00	72.00	180.50						
83	69.50	39.00	72.00	180.50						
84	69.50	39.00	72.00	180.50						
85	69.50	39.00	72.00	180.50						
86	69.50	39.00	72.00	180.50						
87	69.50	39.00	72.00	180.50						
88	69.50	39.00	72.00	180.50						
89	0.00	0.00	0.00	0.00						
90	65.50	39.00	72.00	176.50						
91	65.50	39.00	72.00	176.50						
92	65.50	39.00	72.00	176.50						
93	65.50	39.00	72.00	176.50						
94	65.50	39.00	72.00	176.50						
95	65.50	39.00	72.00	176.50						
96	65.50	39.00	72.00	176.50						
97	65.50	39.00	72.00	176.50						
98	65.50	39.00	72.00	176.50						
99	65.50	39.00	72.00	176.50						
100	65.50	39.00	72.00	176.50						
101	65.50	39.00	72.00	176.50						
102	0.00	0.00	0.00	0.00						
103	66.75	32.00	75.00	173.75						
104	66.75	32.00	75.00	173.75						
105	66.75	32.00	75.00	173.75						
106	126.42	71.00	146.17	343.59						
107	126.42	71.00	146.17	343.59						
108	126.42	71.00	146.17	343.59						
109	126.42	71.00	146.17	343.59						

	Hours pe	ey Period		
No.	Oct 2007 - Apr 2008	Apr 2008 - Sep 2008	Sep 2008 - May 2009	Total Hrs
110	66.75	32.00	75.00	173.75
111	126.42	71.00	146.17	343.59
112	126.42	113.75	214.50	454.67
113	66.75	76.00	147.00	289.75
114	66.75	76.00	147.00	289.75
115	66.75	76.00	147.00	289.75
116	66.75	76.00	147.00	289.75
117	0.00	0.00	0.00	0.00
118	0.00	0.00	0.00	0.00
119	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00
121	0.00	0.00	0.00	0.00
122	0.00	0.00	0.00	0.00
123	0.00	0.00	0.00	0.00
124	0.00	0.00	0.00	0.00
125	71.00	36.00	74.00	181.00
126	71.00	36.00	74.00	181.00
127	71.00	36.00	74.00	181.00
128	71.00	36.00	74.00	181.00
129	71.00	36.00	74.00	181.00

Table D6.17 - Annual Transits and Estimated Annual Collisions for Whooper Swan for the Existing OHL by 250m Section.

	No of transits at all heights			hts	Active pe 24	riod (hr) = I34			
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.0007 rate	Estimated Collisions yr ⁻¹ at 0.004 rate	
33	6			6	0.666667	1622.667	1.135867	6.490667	
39	8			8	0.888889	2163.556	1.514489	8.654222	
40	4			4	0.049813	121.2453	0.084872	0.484981	
41	8			8	0.112202	273.0996	0.19117	1.092398	
42	2			2	0.02805	68.27489	0.047792	0.2731	
43	2			2	0.02805	68.27489	0.047792	0.2731	
44	1			1	0.014025	34.13745	0.023896	0.13655	
67			4	4	0.058824	143.1765	0.100224	0.572706	
95	6			6	0.043636	106.2109	0.074348	0.424844	
101	6			6	0.043636	106.2109	0.074348	0.424844	
103	6			6	0.042328	103.0265	0.072119	0.412106	
106	16			16	0.058696	142.8666	0.100007	0.571466	
112	10			10	0.029332	71.39505	0.049977	0.28558	
				79		5024.141	3.516899	20.09656	

for the Existing OHL.

	No o	of transits	at all heig	hts	Active pe 31	eriod (hr) = L46			
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.0007 rate	Estimated Collisions yr ¹ at 0.004 rate	
43	75			75	1.051893	3309.257	2.31648	13.23703	
101	15			15	0.109091	343.2	0.24024	1.3728	
116	77			77	0.360234	1133.296	0.793307	4.533184	
				167		4785.753	3.350027	19.14301	

the Existing OHL by 250m Section.

	No of	f transits	at all heig	hts	Active pe 29	riod (hr) = 06			
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.0007 rate	Estimated Collisions yr ¹ at 0.004 rate	
40	6			6	0.07472	217.1357	0.151995	0.868543	
43			24	24	0.336606	978.1767	0.684724	3.912707	
44	27			27	0.378682	1100.449	0.770314	4.401795	
57			7	7	0.047619	138.381	0.096867	0.553524	
86	46			46	0.325088	944.7067	0.661295	3.778827	
87			29	29	0.204947	595.576	0.416903	2.382304	
90	46			46	0.334545	972.1891	0.680532	3.888756	
94	46			46	0.334545	972.1891	0.680532	3.888756	
95	46			46	0.334545	972.1891	0.680532	3.888756	
100	46			46	0.334545	972.1891	0.680532	3.888756	
107	46			46	0.168752	490.3922	0.343275	1.961569	
				369		8353.573	5.847501	33.41429	

Table D6.20 - Annual Transits and Estimated Annual Collisions for Red Kite for the Existing OHL by 250m Section.

	No o	f transits	at all hei	ghts	Active perio	d (hr) = 4380	
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.0001 rate
125	1			1	0.005525	24.1989	0.00242
				1		24.1989	0.00242

Table D6.21 - Annual Transits and Estimated Annual Collisions for Hen Harrier for the Existing OHL by 250m Section.

	No of	f transits	at all heig	ghts	Active period	l (hr) = 2614	
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ⁻¹ at 0.00072 rate
40	1			1	0.012453	32.55293	0.023438
82			1	1	0.007067	18.4735	0.013301
98			1	1	0.007273	19.01091	0.013688

Table D6.18 - Annual Transits and Estimated Annual Collisions for Pink-footed Goose

Table D6.19 - Annual Transits and Estimated Annual Collisions for Greylag Goose for

	No of	f transits	at all hei	ghts	Active period	l (hr) = 2614	
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr¹ within each section	Estimated annual transits	Estimated Collisions yr ⁻¹ at 0.00072 rate
100			1	1	0.007273	19.01091	0.013688
101			1	1	0.007273	19.01091	0.013688
112	1			1	0.002933	7.667488	0.005521
113			1	1	0.004678	12.22924	0.008805
128			1	1	0.006897	18.02759	0.01298
				8		145.9835	0.105108

Table D6.22 - Annual Transits and Estimated Annual Collisions for Goshawk for the Existing OHL by 250m Section.

		No o	f transits	at all heig	hts	Active period	(hr) = 4380	
250 section no.	m on	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.00034 rate
126	6	1			1	0.005525	24.1989	0.008228
					1		24.1989	0.008228

Table D6.23 - Annual Transits and Estimated Annual Collisions for Merlin for the Existing OHL by 250m Section.

	No o	f transits a	at all heig	;hts	Active per 43	riod (hr) = 80		
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.0002 rate	Estimated Collisions yr ¹ at 0.00012 rate
75	1			1	0.00554	16.59834	0.00332	0.001992
100			3	3	0.016997	50.92351	0.010185	0.006111
108	1			1	0.00291	8.719695	0.001744	0.001046
				4		76.24155	0.015248	0.009149

Table D6.24 - Annual Transits and Estimated Annual Collisions for Peregrine for the Existing OHL by 250m Section.

	No	of transits	s at all hei	ghts	Active period	d (hr) = 4380	
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ Estimated within each annual section transits		Estimated Collisions yr ⁻¹ at 0.00041 rate
47				0	0	0	0
48				0	0	0	0
49				0	0	0	0
50				0	0	0	0
51				0	0	0	0
93	1			1	0.005666	24.81586	0.010175
110		1		1	0.005755	25.20863	0.010336
112		1		1	0.002199	9.63336	0.00395
113	1			1	0.003451	15.11648	0.006198
				4		74.77434	0.030657

Table D6.25 - Annual Transits and Estimated Annual Collisions for Oystercatcher for the Existing OHL by 250m Section.

	No c	of transits a	at all heig	hts	Active pe 29	eriod (hr) = 996			
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.001 rate	Estimated Collisions yr ¹ at 0.0067 rate	
39	3			3		998.6667	0.998667	6.691067	
47		1		1		42.01964	0.04202	0.281532	
49		2		2	0.02805	84.03927	0.084039	0.563063	
56			1	1	0.00288	8.62779	0.008628	0.057806	
112			9	9		59.30455	0.059305	0.39734	
113			2	2		20.6799	0.02068	0.138555	
				18		1213.338	1.213338	8.129363	

Existing OHL by 250m Section.

	No o	of transits	at all heig	hts	Active period (hr) = 2996				
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ⁻¹ at 0.001 rate	Estimated Collisions yr ¹ at 0.0067 rate	
39	2			2	0.222222	665.7778	0.665778	4.460711	
40	2			2	0.024907	74.62017	0.07462	0.499955	
41	1			1	0.014025	42.01964	0.04202	0.281532	
43	2			2	0.02805	84.03927	0.084039	0.563063	
54			2	2	0.019608	58.7451	0.058745	0.393592	
77		1	2	3	0.01662	49.79501	0.049795	0.333627	
78	1	1		2	0.01108	33.19668	0.033197	0.222418	
97	2		1	3	0.016997	50.92351	0.050924	0.341188	
98	1	2		3	0.016997	50.92351	0.050924	0.341188	
99	2	1		3	0.016997	50.92351	0.050924	0.341188	
101	1	1	1	3	0.016997	50.92351	0.050924	0.341188	
108			2	2	0.005821	17.43939	0.017439	0.116844	
112		1	1	2	0.004399	13.17879	0.013179	0.088298	
				30		1242.506	1.242506	8.324789	

Table D6.26 - Annual Transits and Estimated Annual Collisions for Lapwing for the Existing OHL by 250m Section.

	No of	transits a	at all heig	hts	Active period (hr) = 4380			
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.00059 rate	Estimated Collisions yr ¹ at 0.00146 rate
126	4			4	0.022099	96.79558	0.057109	0.141322
127	5		4	9	0.049724	217.7901	0.128496	0.317973
128	3			3	0.016575	72.59669	0.042832	0.105991
129	4			4	0.022099	96.79558	0.057109	0.141322
				20		483.9779	0.285547	0.706608

Table D6.27 - Annual Transits and Estimated Annual Collisions for Common Snipe for the Existing OHL by 250m Section.

	Estir	nated anr	nual transi	its	Active pe 43	riod (hr) = 80		
250m section no.	Survey Period 1	Survey Period 2	Survey Period 3	Total	Transits hr ¹ within each section	Estimated annual transits	Estimated Collisions yr ¹ at 0.001 rate	Estimated Collisions yr ¹ at 0.0067 rate
99	1			1	0.005666	24.81586	0.024816	0.166266
116	3			3	0.010354	45.34944	0.045349	0.303841
				4		70.1653	0.070165	0.470108



Table D6.28 - Annual Transits and Estimated Annual Collisions for Curlew for the



- 500 to 1000
- 200 to 500
- 100 to 200
- 50 to 100
- 1 to 50

>50% of section outside of combined theoretical viewsheds

- Section number
- (a section is 250m x 200m)



Figure D6.1 - Combined Estimated Annual Transits of the Proposed OHL by Target Species - Area B





Estimated annual transits

3000 to 6000
1000 to 3000
500 to 1000
200 to 500
100 to 200
50 to 100
1 to 50
>50% of section outside of combined theoretical viewsheds
Section number

(a section is 250m x 200m)

5km		1.5km		
	1km		2km	

Figure D6.2 - Combined Estimated Annual Transits of the Proposed OHL by Target Species - Area C



- 200 to 500
- 100 to 200
- 50 to 100
- 1 to 50

>50% of section outside of combined theoretical viewsheds

- Section number
- (a section is 250m x 200m)



Figure D6.3 - Combined Estimated Annual Transits of the Proposed OHL by Target Species - Area D



CAPITA LOVEJOY



Estimated annual transits

200 to 500
100 to 200
50 to 100
1 to 50
>50% of section outside of combined theoretical viewsheds
Section number

(a section is 250m x 200m)

5km	1.5km		
1k	m	_ 2km	

Figure D6.4 - Combined Estimated Annual Transits of the Proposed OHL by Secondary Species - Area B



- 200 to 500
- 100 to 200
- 50 to 100
- 1 to 50

>50% of section outside of combined theoretical viewsheds

- Section number
- (a section is 250m x 200m)



Figure D6.5 - Combined Estimated Annual Transits of the Proposed OHL by Secondary Species - Area C




Estimated annual transits

1000 to 3000
500 to 1000
200 to 500
100 to 200
50 to 100
1 to 50
>50% of section outside of combined theoretical viewsheds
Section number
(a section is 250m x 200m)

5km	1.5km	
1k	m 2km	\bigcup

Figure D6.6 - Combined Estimated Annual Transits of the Proposed OHL by Secondary Species - Area D



- 3000 to 6000
- 1000 to 3000
- 500 to 1000
- 200 to 500
- 100 to 200
- 50 to 100
- 1 to 50

>50% of section outside of combined theoretical viewsheds

- Section number
- (a section is 250m x 200m)



Figure D6.7 - Combined Estimated Annual Transits of the Dismantled OHL by Target Species - Area B





Estimated annual transits

1000 to 3000
500 to 1000
200 to 500
100 to 200
50 to 100
1 to 50
>50% of section outside of combined theoretical viewsheds
Section number
(a section is 250m x 200m)

5km		1.5km	_	
	1km		2km	\bigcirc

Figure D6.8 - Combined Estimated Annual Transits of the Dismantled OHL by Target Species - Area C



- 500 to 1000
- 200 to 500
- 100 to 200
- 50 to 100
- 1 to 50

>50% of section outside of combined theoretical viewsheds

- Section number
- (a section is 250m x 200m)



Figure D6.9 - Combined Estimated Annual Transits of the Dismantled OHL by Secondary Species - Area B





Estimated annual transits

200 to 500
100 to 200
50 to 100
1 to 50
>50% of section outside of combined theoretical viewsheds
Section number

(a section is 250m x 200m)

5km	1.5km	
1k	m 2km	

Figure D6.10 - Combined Estimated Annual Transits of the Dismantled OHL by Secondary Species - Area C

Collated Records (Target and Secondary D.7 species)

1 This appendix provides tables of non-confidential bird records from waterbody counts and ad hoc observations during surveys completed from 2007 to 2009.

Little Grebe (Tachybaptus ruficollis) **D.7.1**

Table D7.1 - Ad Hoc Records

Date	Time	Grid Ref	E	N	Notes.
30/05/2008	07:20	NX	692	858	LG brood foraging on water margins, Regland Loch. Pr+2 juvs.
30/05/2008	07:30	NX	673	864	LG foraging track side pond.

Table D7.2 - Waterbody Survey 2007-2009								
Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Bogton Loch	1		3	4			N/A
17/11/2007	Lochinvar				4			N/A
30/11/2007	Lochinvar				6			N/A
04/12/2007	Moss Roddock Loch	1			1			N/A
10/12/2007	Kendoon	2			2			N/A
10/12/2007	Lochinvar	6			6			N/A
31/12/2007	Kendoon	4			4			N/A
31/12/2007	Lochinvar	2		2	4			N/A
16/01/2008	Lochinvar	4			4			N/A
29/01/2008	Bogton Loch			1	1			N/A
07/02/2008	Bogton Loch	1			1			N/A
07/02/2008	Bogton Loch	2			2			N/A
12/02/2008	Kendoon	4			4			N/A
12/02/2008	Kendoon	2			2			N/A
20/02/2008	Bogton Loch		1		1			N/A
20/02/2008	Bogton Loch		4		4			N/A
22/02/2008	Carsfad		4		4			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
22/02/2008	Lochinvar	1			1			N/A
06/03/2008	Carsfad Loch	2			2			N/A
15/03/2008	Bogton Loch	1			1			N/A
23/03/2008	Bogton Loch			1	1			N/A
29/03/2008	Lochinvar	1			1			N/A
31/03/2008	Kendoon Loch	1			1			N/A
08/04/2008	Carsfad Loch	1			1			N/A
08/04/2008	Lochinvar	2			2			N/A
08/04/2008	Moss Roddock Loch	2			2	1	1	Displaying
28/10/2008	Lochinvar	2			2			N/A
28/10/2008	Lochinvar	2			2			N/A
31/10/2008	Bogton Loch			2	2			N/A
04/11/2008	Earlstoun Loch	2			2			N/A
04/11/2008	Lochinvar	2			2			N/A
04/11/2008	Lochinvar	3			3			N/A
17/11/2008	Bogton & Burnton Lochs			1	1			N/A
23/11/2008	Lochinvar	2			2			N/A
23/11/2008	Lochinvar	1			1			N/A
23/11/2008	Lochinvar		4		4			N/A
28/11/2008	Bogton & Burnton Lochs			1	1			N/A
28/11/2008	Bogton Loch			1	1			N/A
30/11/2008	Lochinvar	3			3			N/A
06/12/2008	Lochinvar		2		2			N/A
09/12/2008	Bogton & Burnton Lochs	5			5			N/A
11/12/2008	Loch Doon	1			1			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
29/12/2008	Bogton & Burnton Lochs	3			3			N/A
08/01/2009	Carsfad Loch	2			2			Ice on margins.
11/01/2009	Bogton & Burnton Lochs		2		2			Bogton Loch completely ice free
12/01/2009	Lochinvar	2			2			N/A
13/01/2009	Loch Muck	1			1			N/A
24/01/2009	Lochinvar	4			4			N/A
03/02/2009	Lochinvar	3			3			N/A
16/02/2009	Bogton & Burnton Lochs	2			2			N/A
27/02/2009	Lochinvar	2			2			N/A
09/03/2009	Kendoon	2			2			N/A
09/03/2009	Loch Howie			2	2			N/A
17/03/2009	Loch Doon	1			1			N/A
27/03/2009	Lochinvar	2			2			N/A

.7.2

ble D7.3 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
20/03/2008	Lochinvar			2	2			Displaying
23/03/2008	Lochinvar	2			2			N/A
29/03/2008	Lochinvar	2			2			N/A
31/03/2008	Lochinvar	2			2	1	1	Displaying
04/04/2008	Lochinvar			2	2	1	1	N/A
09/04/2008	Lochinvar	2			2	1	1	Displaying & Nest
27/03/2009	Lochinvar	2			2			N/A
04/04/2008	Lochinvar							The 2x GG at Lochinvar, 1 pair.

Great Crested Grebe (Podiceps cristatus)

D.7.3 Cormorant (*Phalacrocorax carbo*)

Table D7.4 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.
22/10/2007	14:55	NX	659	858	VP9 via Lochinvar 14:55 CAx3 on loch at NX 659 858.
25/10/2007	08:55	NS	470	064	One flew south to north over A713 and dropped into pond by Burnton north of A713. Med - Low heights.
09/11/2007	09:00	NS	659	858	CA(2) - e-w over a713 just n of Dalmellington, med-high heights.
22/05/2009	13:11	NS	512	010	CA flight off Loch Muck- SW at 30m probably down to Loch Doon.
20/02/2008	-	Bogton Loch	-	-	CA roosting, foraging & flying also the same ie, c.6 different CA at the loch.

Table D7.5 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Bogton Loch	1			1			N/A
28/02/2007	Loch Doon	1			1			N/A
29/10/2007	Sillyhole Pond				1			N/A
17/11/2007	Lochinvar				2			N/A
17/11/2007	Carsfard				2			N/A
17/11/2007	Kendoon Loch				23			N/A
30/11/2007	Kendoon Loch				5			N/A
30/11/2007	Loch Doon				1			N/A
30/11/2007	Bogton Loch				2			N/A
04/12/2007	Bogton Loch	2			2			N/A
04/12/2007	Burnton Pool		2		2			N/A
04/12/2007	Carsfad Loch				0			N/A
10/12/2007	Kendoon	2	4		6			N/A
31/12/2007	Burnton Pool			1	1			N/A
31/12/2007	Kendoon	2	2		4			N/A
31/12/2007	Lochinvar	2			2			N/A
08/01/2008	Carsfad Loch			2	2			N/A
08/01/2008	Earlstoun Loch				0			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
16/01/2008	Carsfad Loch				0			N/A
16/01/2008	Kendoon		11	2	13			N/A
16/01/2008	Kendoon	2			2			N/A
16/01/2008	Lochinvar	1			0			N/A
29/01/2008	Loch Doon		1		1			N/A
03/02/2008	Bogton Loch	3			3			N/A
05/02/2008	Loch Doon		1		1			N/A
11/02/2008	Bogton Loch				0			N/A
12/02/2008	Kendoon	7		1	8			N/A
12/02/2008	Kendoon	3	2		5			N/A
13/02/2008	Moss Roddock Loch				0			1 IMM.
18/02/2008	Earlstoun Loch			1	1			N/A
20/02/2008	Bogton Loch	5	1		6			N/A
22/02/2008	Carsfad Loch		2		2			N/A
22/02/2008	Lochinvar	2			2			N/A
06/03/2008	Carsfad Loch	2	1		3			N/A
11/03/2008	Bogton Loch		3		3			N/A
11/03/2008	Loch Doon		4		4			N/A
11/03/2008	Loch Muck			2	2			N/A
20/03/2008	Kendoon Loch		3		3			N/A
20/03/2008	Kendoon Loch			2	2			N/A
20/03/2008	Loch Doon		1		1			N/A
21/03/2008	Kendoon		8		8			N/A
22/03/2008	Carsfad Loch	1	1		2			N/A
22/03/2008	Earlstoun Loch	1			1			N/A
22/03/2008	Kendoon Loch				0			N/A
22/03/2008	Kendoon Loch	1			1			N/A
23/03/2008	Bogton Loch	1			1			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
23/03/2008	Lochinvar			1	1			N/A
29/03/2008	Lochinvar			2	2			N/A
31/03/2008	Kendoon		3		3			N/A
31/03/2008	Kendoon Loch			2	2			N/A
31/03/2008	Lochinvar	1			1			N/A
01/04/2008	Holm of	2			2			CA at NX 548 945.
04/04/2008	Burnton Pool	1			1			N/A
08/04/2008		1			1			On Carspharn Lane to west of VP15.
08/04/2008	Kendoon Loch		14		14			Note: water very low, extensive shallows and sand bars.
24/10/2008	Earlstoun Loch	2			2			N/A
24/10/2008	Lochinvar			2	2			N/A
24/10/2008	Kendoon		4		4			N/A
24/10/2008	Kendoon	11			11			N/A
28/10/2008	Loch Muck	4			4			N/A
28/10/2008	Kendoon	4			4			N/A
28/10/2008	Carsfad Loch		1		1			N/A
31/10/2008	Bogton Loch				2			N/A
04/11/2008	Carsfad Loch				1			N/A
04/11/2008	Kendoon		4		4			N/A
04/11/2008	Kendoon	1			1			N/A
04/11/2008	Lochinvar	1			1			N/A
04/11/2008	Lochinvar	4			4			N/A
09/11/2008	Loch Doon				1			N/A
09/11/2008	Loch Doon		1		1			N/A
13/11/2008	Loch Howie	1			1			E end of loch only.

Ornithology



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Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
17/11/2008	Bogton & Burnton Lochs			(1)	1			N/A
25/11/2008	Loch Howie	1			1			N/A
27/11/2008	Kendoon	1			1			N/A
11/12/2008	Loch Doon		3		3			N/A
11/12/2008	Loch Doon	1			1			1+4 CA - total of 4 birds on the loch
21/12/2008	Carsfad Loch	1			1			N/A
21/12/2008	Kendoon	4	6		10			N/A
22/12/2008	Loch Howie	2			2			N/A
27/12/2008	Loch Muck			1	1			N/A
27/12/2008	Loch Muck				0			N/A
08/01/2009	Carsfad Loch	1		2	3			Ice on margins.
09/01/2009	Loch Howie	3			3			N/A
12/01/2009	Lochinvar	1			1			N/A
16/01/2009	Loch Doon				0			N/A
30/01/2009	Loch Howie	2			2			All birds east end of loch.
03/02/2009	Lochinvar	1	1		2			N/A
10/02/2009	Kendoon	2		2	4			No CA on tree roost at S end of loch
08/03/2009	Carsfad Loch		3		3			N/A
09/03/2009	Kendoon		6		6			N/A
16/03/2009	Kendoon	2			2			N/A
27/03/2009	Loch Muck	1			1			N/A

D.7.4 Grey heron (Ardea cinerea)

Table D7.6 - Waterbody Survey 2007-2009

	,,,,,,,,,,,,,,,,,,,,							
Date	Locations	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
16/11/2007	Bogton Loch				2			N/A
17/11/2007	Lochinvar				1			N/A
17/11/2007	Carsfard				1			N/A
17/11/2007	Kendoon Loch				4			N/A
30/11/2007	Kendoon Loch				3			N/A
04/12/2007	Earlstoun Loch	2			2			N/A
10/12/2007	Kendoon	3			3			N/A
08/01/2008	Carsfad Loch				0			N/A
08/01/2008	Earlstoun Loch	2			2			N/A
16/01/2008	Carsfad Loch				2			N/A
29/01/2008	Burnton Pool	1			1			N/A
07/02/2008	Burnton Pool	1			1			N/A
12/02/2008	Kendoon		1		1			N/A
20/02/2008	Bogton Loch				0			N/A
20/02/2008	Bogton Loch	2			2			N/A
04/03/2008	Loch Muck	1			1			N/A
06/03/2008	Carsfad Loch				2			N/A
11/03/2008	Loch Muck	1			1			N/A
21/03/2008	Burnton Pool	1			1			N/A
31/03/2008	Lochinvar	1			1			N/A
03/04/2008	Loch Muck	1			1			N/A
04/04/2008	Bogton Loch	1			1			N/A
08/04/2008	Kendoon Loch	3			3			N/A
08/04/2008	Kendoon Loch	1			1			N/A
24/10/2008	Earlstoun Loch	1			1			N/A
24/10/2008	Lochinvar	1			1			N/A

Date	Locations
24/10/2008	Lochinvar
24/10/2008	Kendoon
27/10/2008	Bogton Loch
28/10/2008	Kendoon
09/11/2008	Loch Doon
28/11/2008	Bogton & Burnton Lochs
28/11/2008	Bogton Loch
09/12/2008	Bogton & Burnton Lochs
27/12/2008	Loch Muck
27/12/2008	Loch Muck
27/12/2008	Loch Muck
25/01/2009	Burnton Pool
28/01/2009	Loch Muck
20/02/2009	Wee Berbeth Loch
20/02/2009	Wee Berbeth Loch
09/03/2009	Kendoon
27/03/2009	Kendoon
28/03/2009	Bogton & Burnton Lochs
06/05/2008	NX 545 955
30/05/2008	NX 662 855

oraging	Roosting	Loafing	Total	Total M	Total F	Comments
1			1			N/A
2			2			N/A
1			1			N/A
2			2			N/A
			1			N/A
1			1			N/A
1			1			adult
1			1			N/A
1			1			N/A
			1			N/A
			1			N/A
1			1			N/A
1			1			N/A
1			1			N/A
			1			N/A
	2		2			N/A
2			2			N/A
1			1			N/A
						N/A
						N/A

Mute Swan (Cygnus olor) D.7.5

Table D7.7 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Bogton Loch	5			5			N/A
17/11/2007	Grennan Fields				3			N/A
17/11/2007	Moss Roddock				2			N/A
30/11/2007	Burnton Loch				2			N/A
30/11/2007	Moss Roddock Loch				2			N/A
04/12/2007	Moss Roddock Loch		2		2			N/A
10/12/2007	Moss Roddock Loch	2			2			N/A
31/12/2007	Bogton Loch	3			3			N/A
31/12/2007	Burnton Pool	3			3			N/A
08/01/2008	Moss Roddock Loch	2			2			N/A
18/01/2008	Bogton Loch	2			2			N/A
30/01/2008	Moss Roddock Loch			2	2			N/A
03/02/2008	Bogton Loch	4			4			N/A
07/02/2008	Bogton Loch	4			4			N/A
11/02/2008	Bogton Loch	4			4			N/A
18/02/2008	Moss Roddock Loch		2		2			N/A
20/02/2008	Bogton Loch			4	4			N/A
20/02/2008	Bogton Loch	6			6			N/A
04/03/2008	Bogton Loch			3	3			2 ADS, 1 JUV
11/03/2008	Bogton Loch	3			3			3 ADS. 1 JUV
15/03/2008	Bogton Loch	2			2			N/A
15/03/2008	Bogton Loch	1			1			N/A
20/03/2008	Moss Roddock Loch		2		2			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
31/03/2008	Moss Roddock Loch		2		2	1	1	On nest.
04/04/2008	Bogton Loch			5	5			3 ADS, 2 JUVS
08/04/2008	Moss Roddock Loch	2			2	1	1	At nest
27/10/2008	Bogton Loch	4			4			N/A
31/10/2008	Loch William			5	5			N/A
17/11/2008	Bogton & Burnton Lochs	5			5			N/A
17/11/2008	Bogton Loch			2	2			N/A
28/11/2008	Bogton & Burnton Lochs			2	2			N/A
28/11/2008	Bogton Loch			2	2			adults
28/11/2008	Burnton Loch	4			4			adults
06/12/2008	Lochinvar	1			1			N/A
20/02/2008	Bogton Loch				6			N/A
09/12/2008	Bogton & Burnton Lochs	7			7			N/A
29/12/2008	Bogton & Burnton Lochs	5			5			N/A
11/01/2009	Bogton & Burnton Lochs	4	2		6			Bogton Loch completely ice free
25/01/2009	Burnton Pool	2			2			N/A
16/02/2009	Bogton & Burnton Lochs	2			2			N/A
24/02/2009	Bogton & Burnton Lochs	2			2			N/A
28/03/2009	Bogton & Burnton Lochs	2			2			N/A
28/03/2009	Bogton & Burnton Lochs	2			2			N/A
28/03/2009	Bogton & Burnton Lochs	2			2			N/A
29/12/2007	NX633816							N/A

D.7.6	Whooper Swan (Cygnus cygnus)										
Table D7.8 - /	Ad Hoc Rec	ords 200	7-2009								
Date	Time	Grid Ref	E	N	Notes.						
22/10/2007	14:55	NX	659	858	VP9 via Lochinvar 14:55 wsx3 on loch at NX 659 858.						
18/12/2007	16:26	NX	615	831	WSx3 flight - N at 15m off Earlstoun Loch at VP8 end.						
19/12/2007	15:03	NX	632	806	WSx3 on Grennan fields by Dalry.						
16/03/2009	11:08	NX	608	836	WSx7 (4 adult, 3juvs).						
16/03/2009	11:38	NX	492	993	112 WS on Loch Doon.						
17/03/2009	07:50	NX	604	906	WS (60)- SE to NW at Loch Doon, high heights						
26/03/2009	11:45	NX	510	991	WSx4 feeding on sluice down by Loch Doon.						
02/04/2009	16:00	Unk	470	054	WS x 8 on loch feeding on shallow margin						
02/04/2009	08:50	NX	615	831	WS x 20 Earlston loch feeding in shallows. Still present on evening return 17:40						
02/04/2009	09:02	NX	608	865	WS x 2 Carsfad loch						
20/02/2008	-	Bogton Loch	-	-	Flying and foraging WS x 5						

Table D7.9 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Bogton Loch	2			2			N/A
29/10/2007	Sillyhole Pond				2			N/A
29/10/2007	Bogton loch				10			N/A
16/11/2007	Bogton Loch				9			N/A
30/11/2007	Burnton Loch				5			N/A
30/11/2007	Bogton Loch				7			N/A
04/12/2007	Bogton Loch	12			12			N/A
10/12/2007	Lochinvar	6(4juv)			0			N/A
31/12/2007	Bogton Loch	8			8			N/A
31/12/2007	Lochinvar	7(5juv)			0			N/A
18/01/2008	Bogton Loch	8	4		12			N/A
18/01/2008	Burnton Pool	4			4			N/A



Whooper Swan (Cyonus cyonus)

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
29/01/2008	Bogton Loch	2(Ad.)			2			N/A
07/02/2008	Bogton Loch	6			6			N/A
07/02/2008	Bogton Loch	6			6			N/A
11/02/2008	Bogton Loch	6			6			N/A
20/02/2008	Bogton Loch	5			5			N/A
04/03/2008	Bogton Loch	2			2			2 ADS.
11/03/2008	Loch Doon		28		28			5 Juvs. The 28 WS (23 Ads, 5 Juvs) at Loch Doon opposite NX 47854 99327, close in to near edge of loch.
15/03/2008	Holm of Daltallo- chan	5			5			N/A
20/03/2008	Loch Doon	19	(19)		19			The 19 WS were in 1 flock feeding and roosting close in to loch edge opposite NX49192 87874.
21/03/2008	Loch Doon		19		19			Including 3 Juvs. Checked Loch Doon for WS, found same 19 birds at dusk present on NX 492978, Flock made up of 16 adults & 3 Juvs
31/03/2008				27	27			N/A

N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
08/04/2008	Carsp- hairn Lane		4		4			On Carspharn Lane to west of VP15.
27/10/2008	Bogton Loch	12			12			N/A
31/10/2008	Bogton Loch	9			9			N/A
16/11/2008	Knock- man Loch	4			4			N/A
17/11/2008	Bogton & Burnton Lochs	3			3			N/A
17/11/2008	Bogton Loch	9			9			N/A
28/11/2008	Bogton & Burnton Lochs	4			4			N/A
28/11/2008	Bogton & Burnton Lochs	3			3			N/A
28/11/2008	Bogton Loch	4			4			adults
28/11/2008	Bogton Loch	3			3			2 adults, 1 juv
28/11/2008	Burnton Loch	4			4			adults
09/12/2008	Bogton & Burnton Lochs	11			11			N/A
29/12/2008	Bogton & Burnton Lochs	3			3			N/A
25/01/2009	Bogton Loch	7			7			WS - 2+ heard calling on east side of Bogton Loch.
25/01/2009	Bogton Loch			7	7			N/A
20/02/2009	Loch Howie	2			2			N/A
26/02/2009	Loch Howie	4			4			N/A
26/02/2009	Loch Howie	6			6			N/A
09/03/2009	Kendoon	4			4			N/A
09/03/2009	Loch Howie	12			12			N/A
17/03/2009	Loch Doon		88		88			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
17/03/2009	Loch Doon				0			N/A
17/03/2009	Loch Doon			2	2			N/A
17/03/2009	Loch Doon				5			N/A
17/03/2009	Loch Doon				2			N/A
28/03/2009	Loch Doon				4			N/A
28/03/2009	Loch Doon				19			N/A
28/03/2009	Loch Skae	2			2			N/A

D.7.7

Table D7.10 - Ad Hoc records

Date	Time	Grid Ref	E	N	Notes.
31/12/2007	Unk.	NX	744	645	1000+PG on improved grass 2mls N of Castle Douglas. Mains of Greenlaw.

D.7.8

Table D7.11 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.
18/11/2007	06:50	NX	632	806	80+GJ roosting ephemeral pools in riverside field Grennan by Dalry.
19/11/2007	06:55	NX	708	628	60+ GJ on ephemeral pools Grennan.
20/12/2007	Unk.	NX	636	812	GJ(60) including 2 'white' birds
29/12/2007	08:50	NX	632	806	85+GJ in Grennan fields by ephemeral pools in improved (silage) grass.
29/12/2007	12:45	NX	633	816	45GJ (2 Gulf birds assume feral party) on improved grass.
29/12/2007	16:35	NX	632	806	145 GJ at Grennan fields. Geese feeding, bathing, loathing (few). 60GJ feeding in standing stone fields.
01/01/2008	08:50	NX	632	806	Drive in - 180 GJ loafing / feeding, Grennan fields by Dalry.
16/01/2008	16:45	NX	632	806	GJx200 feeding on improved grass by ephemeral pools at Grennan by Dalry.
22/01/2008	08:40	NX	638	698	GJx273 (1 white bird) loafing and feeding in Grennan standing stone fields.
22/01/2008	08:40	NX	655	815	GJx43 (1 white) feeding in field by roadside
21/04/2008	06:04	NX	800	660	8 (M) (F) GJ on Lochinvar.

31/03/2008

Earlstoun

Loch

11

11

Pink-footed goose (Anser brachyrhynchus)

Greylag goose (Anser anser)

Date	Time	Grid Ref	E	N	Notes.
21/04/2008	06:17	NX	100	648	GJ x1 fly over at 50m to southeast.
06/05/2008	13:40	NX	661	659	Lochinvar GJ pr x2 each with 5 goslings. GJ pr x4 also loafing on margins or water.
06/05/2008	16:00	NX	691	858	Regland Loch, GJ pr +5 goslings
30/05/2008	07:45	NX	661	850	GJx24 bathing on Lochinvar.
16/03/2009	11:08	NX	608	836	GJ MFx2.

Table D7.12 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
16/11/2007	Bogton Loch				24			N/A
30/11/2007	Grennan Fields				65			N/A
04/12/2007	Carsfad Loch	4			4			N/A
31/12/2007	Bogton Loch	8			8			N/A
08/01/2008	Earlstoun Loch		4		4			N/A
08/01/2008	Moss Roddock Loch		20		20			N/A
16/01/2008	Lochinvar		4		4			N/A
18/01/2008	Bogton Loch	18			18			N/A
30/01/2008	Moss Roddock Loch				0			Note: 53 birds on improved grass adj to loch. This feral group seem to share roost between Moss Roddock and Barscobe Loch.
07/02/2008	Bogton Loch	7			7			N/A
07/02/2008	Bogton Loch	7			7			N/A
11/02/2008	VP8	59			59			N/A
12/02/2008	Kendoon				0			N/A
18/02/2008	Earlstoun Loch		44		44			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
20/02/2008	Bogton Loch			1	1			N/A
22/02/2008	Lochinvar	14			14			N/A
01/03/2008	Earlstoun Loch	2			2			N/A
04/03/2008	Bogton Loch	3			3			GJ x 3 including 1
15/03/2008	Holm of Daltallo- chan	6			6			2 Bathing
17/03/2008	VP8	16			16			N/A
20/03/2008	Loch Doon	12		1	13			The 12 feeding GJ were all at Beoch Farm and included 1'white' bird.
20/03/2008	Lochinvar				2			N/A
20/03/2008	Moss Roddock Loch	38			38			N/A
22/03/2008	Earlstoun Loch		1		1	1		N/A
22/03/2008	Lochinvar	4			4	2	2	N/A
23/03/2008	Lochinvar	2			2			N/A
29/03/2008	Lochinvar	12		4	16			N/A
31/03/2008	Earlstoun Loch		2	2	4			N/A
31/03/2008	Kendoon Loch		3		3			N/A
31/03/2008	Kendoon Loch	1			1			N/A
31/03/2008	Lochinvar		6		6			N/A
31/03/2008	Lochinvar		4		4			N/A
31/03/2008	Moss Roddock Loch	4		4	8			N/A
03/04/2008	Loch Doon			53	53			The 53 GJ possibly 'wild' GJ - no white / leucistic birds amongst the flock.
04/04/2008	Lochinvar		8		8			AT Lochinvar, one of GJ a ' white' feral bird.

Date	Location	Fora	ging	Roosting	Loafing	Total	Total M	Total F	Comments
08/04/2008	Carsfad Loch				2	2			N/A
08/04/2008	Lochinvar				2	2			N/A
08/04/2008	Lochinvar			2		2			N/A
08/04/2008	Moss Roddock Loch	8				8			N/A
09/04/2008	Lochinvar	25	5			25			Feral birds with 2 white birds.
24/10/2008	Carsfad Loch				7	7			N/A
24/10/2008	Lochinvar			16		16			N/A
27/10/2008	Bogton Loch				1	1			N/A
28/10/2008	Earlstoun Loch			2		2			N/A
04/11/2008	Earlstoun Loch	37	,			37			N/A
06/12/2008	Lochinvar			16		16			GJ flew off before sunrise.
21/12/2008	Lochinvar			3		3			N/A
03/02/2009	Lochinvar	6				6			N/A
22/02/2009	Lochinvar			2	4	6			N/A
27/02/2009	Lochinvar	7		4	8	19			Feral (3 white & 2 buff)
17/03/2009	Loch Doon	4			4	8			One faun 'whitish' bird amongst the eight birds (looked like 4 pairs)
27/03/2009	Lochinvar			9		9			N/A
19/02/	Lochinvar				24	24			N/A
D.7.9 Table D7.13	Cana Ad Hoc re	da C	600	se (Bra	nta ca	nade	nsis)		
Date	Grid Ref	N	E	VP	VP Name		Ac	tivities	
16/03/2009	NX	608	836	N/A	N/A	CG MF Loch	x2. WS a , geese c I	III N end on impro oank.	l of Earlston oved grass

- Ornithology



Table D7.14 - Waterbody Survey 2007-2009

Date	Locations	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
31/12/2007	Bogton Loch		20		20			N/A
06/03/2008	Carsfad Loch	4	2		6			N/A
20/03/2008	Loch Doon			2	2			N/A
20/03/2008	Lochinvar			1	1			N/A
22/03/2008	Carsfad Loch			2	2	1	1	N/A
31/03/2008	Carsfad Loch		1		1			N/A
31/03/2008	Earlstoun Loch		2		2			N/A
31/03/2008	Kendoon			2	2			N/A
31/03/2008	Kendoon Loch		3		3			N/A
31/03/2008	Lochinvar				0			N/A
31/03/2008	Lochinvar				0			N/A
08/04/2008	Carsfad Loch	2			2	1	1	Displaying
24/10/2008	Earlstoun Loch		4		4			N/A
28/10/2008	Lochinvar	2	6		8			N/A
16/02/2009	Loch Doon			2	2			N/A
09/03/2009	Kendoon			2	2			N/A
27/03/2009	Kendoon		2		2			N/A
28/03/2009	Bogton & Burnton Lochs			2	2			N/A
28/03/2009	Loch Doon				0			N/A

Shelduck (Tadorna tadorna) D.7.10

Table D7.15 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
31/12/2007	Bogton Loch	1m			0			N/A

Wigeon (Anas penelope) D.7.11

Table D7.16 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
29/10/2007	Sillyhole Pond				10			N/A
17/11/2007	Lochinvar				18			N/A
30/11/2007	Lochinvar				10			N/A
10/12/2007	Lochinvar			24	24			N/A
31/12/2007	Bogton Loch			4	4			N/A
08/01/2008	Carsfad Loch		11		11			N/A
18/01/2008	Bogton Loch		18		18			N/A
29/01/2008	Burnton Pool		25		25			N/A
20/02/2008	Bogton Loch		20		20			N/A
20/02/2008	Bogton Loch			2	2			N/A
04/03/2008	Burnton Pool		10		10			N/A
29/03/2008	Lochinvar			4	4			N/A
31/03/2008	Kendoon Loch	8			8	4	4	Displaying
31/10/2008	Loch William	8			8			N/A
31/10/2008	Bogton Loch			4	4			N/A
17/11/2008	Bogton & Burnton Lochs		2		2			N/A
28/11/2008	Burnton Loch	3			3			N/A
09/12/2008	Bogton & Burnton Lochs	9	10		19			N/A
29/12/2008	Bogton & Burnton Lochs	10	15		25			N/A
12/01/2009	Lochinvar	6			6			N/A
25/01/2009	Burnton Pool	4			4			N/A
20/02/2009	Knockman Loch		3		3			N/A
22/02/2009	Lochinvar		2		2			N/A
27/02/2009	Knockman Loch		2		2			N/A
27/02/2009	Lochinvar	2			2			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
27/02/2009	Regland Loch	2			2			N/A
09/03/2009	Kendoon	12			12			N/A
12/03/2009	Bogton & Burnton Lochs			4	4			N/A
19/02/	Lochinvar			16	16			N/A

D.7.12

Table D7.17 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.
01/05/2008	10:19	NX	671	864	T. pr on pond pool by log stacks.

Table D7.18 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Loch Doon		5		5	3	2	N/A
16/11/2007	Bogton Loch				14			N/A
17/11/2007	Moss Rod- dock				6			N/A
17/11/2007	Kendoon Loch				11			N/A
17/11/2007	EARL- STOUN LOCH				9			N/A
30/11/2007	Earlstoun Loch				9			N/A
30/11/2007	MOSS RODDOCK LOCH				5			N/A
04/12/2007	Earlstoun Loch	9			9			N/A
10/12/2007	Kendoon	8			8			N/A
10/12/2007	Lochinvar			2	2			N/A
31/12/2007	Bogton Loch	2			2			N/A
16/01/2008	Carsfad Loch	4			4			N/A
18/01/2008	Bogton Loch		5		5			N/A
29/01/2008	Burnton Pool		4		4	2	2	N/A
30/01/2008	Moss Rod- dock Loch	2			2			N/A
07/02/2008	Burnton Pool		8		8			N/A

Teal (Anas castanea)

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
12/02/2008	Kendoon		2		2			N/A
12/02/2008	Kendoon			13	13			N/A
13/02/2008	Loch Muck		3		3	2	1	N/A
18/02/2008	Earlstoun Loch	4			4			N/A
20/02/2008	Bogton Loch		4		4			N/A
20/02/2008	Bogton Loch		2		2			N/A
01/03/2008	Earlstoun Loch	3			3			N/A
04/03/2008	Burnton Pool		8		8			N/A
11/03/2008	Loch Doon			2	2	1	1	N/A
15/03/2008	Bogton Loch	10			10			N/A
20/03/2008	Loch Doon		1		1	1		N/A
21/03/2008	Bogton Loch		2		2			N/A
23/03/2008	Bogton Loch		3		3			N/A
29/03/2008	Lochinvar			3	3			N/A
31/03/2008	Carsfad Loch	2			2			N/A
31/03/2008	Earlstoun Loch	2			2			N/A
31/03/2008	Kendoon		8		8			N/A
31/03/2008	Kendoon Loch	4			4			N/A
31/03/2008	Kendoon Loch	8			8			N/A
31/03/2008	Kendoon Loch	6			6			N/A
31/03/2008	Lochinvar	2			2			N/A
03/04/2008	Loch Doon			2	2			N/A
03/04/2008	Loch Doon			2	2	1	1	N/A
04/04/2008	Bogton Loch		2		2			N/A
04/04/2008	Bogton Loch			2	2	1	1	N/A
08/04/2008	Kendoon Loch	5			5			N/A
08/04/2008	Carsfad Loch	1			1			N/A
24/10/2008	Carsfad Loch	4			4			N/A
24/10/2008	Kendoon	4			4			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/10/2008	Kendoon	5			5			N/A
28/10/2008	Carsfad Loch	2			2			N/A
28/10/2008	Lochinvar			4	4			N/A
31/10/2008	Loch Wil- liam			1	1			N/A
04/11/2008	Carsfad Loch	2			2			N/A
04/11/2008	Earlstoun Loch	3			3			N/A
04/11/2008	Lochinvar	2			2			N/A
09/11/2008	Loch Doon			(2)	0			N/A
09/12/2008	Bogton & Burnton Lochs			3	3			N/A
09/12/2008	Bogton & Burnton Lochs				0			N/A
21/12/2008	Kendoon	5		6	11			N/A
29/12/2008	Bogton & Burnton Lochs		1		1			N/A
08/01/2009	Carsfad Loch	3		4	7			Ice on margins.
09/01/2009	Loch Howie	3			3			N/A
25/01/2009	Bogton Loch			3	3			N/A
25/01/2009	Burnton Pool		1		1			N/A
31/01/2009	Loch Doon				0			N/A
20/02/2009	Regland Loch	2			2			N/A
09/03/2009	Loch Howie	2			2			N/A
28/03/2009	Bogton & Burnton Lochs		5		5			N/A
28/03/2009	Regland Loch	1			1			N/A
29/03/2009	Bogton & Burnton Lochs	1	8		9			N/A
06/05/2008	NX691858							Regland Loch T. pr,

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Bogton Loch	4	2		6			N/A
28/02/2007	Loch Doon	5	3		8	6	2	1 of the foraging (M) MA a 'domes- ticated' type.
28/02/2007	Loch Doon		2	3	5	3	2	N/A
28/02/2007	Loch Doon	3			3	2	1	All the roosting waders at Loch Doon just S of beach on loch edge at NX478997
29/10/2007	Loch Muck				2			N/A
29/10/2007	Sillyhole Pond				3			N/A
29/10/2007	Bogton loch				2			N/A
16/11/2007	Bogton Loch				16			N/A
16/11/2007	Burnton Pool				8			N/A
16/11/2007	Loch Doon				2			N/A
17/11/2007	Grennan Fields				6			N/A
17/11/2007	Lochinvar				14			N/A
17/11/2007	Carsfard				3			N/A
17/11/2007	Kendoon Loch				8			N/A
17/11/2007	Earlstoun loch				6			N/A
30/11/2007	Earlstoun Loch				6			N/A
30/11/2007	Kendoon Loch				6			N/A
30/11/2007	Burnton Loch				4			N/A
30/11/2007	Bogton Loch				16			N/A
30/11/2007	Lochinvar				7			N/A
04/12/2007	Bogton Loch			6	6			N/A
04/12/2007	Burnton Pool		6		6			N/A



Mallard (Anas platyrhynchos)

Table D6.19 - Waterbody Survey 2007-2009

D.7.13

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
04/12/2007	Carsfad Loch	2	4		6			N/A
04/12/2007	Earlstoun Loch	6			6			N/A
10/12/2007	Kendoon	6			6			N/A
10/12/2007	Lochinvar	6			6			N/A
31/12/2007	Bogton Loch	2			2			N/A
31/12/2007	Kendoon			8	8			N/A
31/12/2007	Loch Doon	2prs			4			N/A
31/12/2007	Lochinvar			6	6			N/A
08/01/2008	Carsfad Loch		4		4			N/A
08/01/2008	Earlstoun Loch		7		7			N/A
16/01/2008	Carsfad Loch		6		6			N/A
16/01/2008	Carsfad Loch		4		4			N/A
16/01/2008	Kendoon		3		3			N/A
16/01/2008	Lochinvar		4	4	8			N/A
18/01/2008	Bogton Loch	4			4			N/A
18/01/2008	Bogton Loch	6			6			N/A
18/01/2008	Burnton Pool		4		4			N/A
29/01/2008	Burnton Pool		8		8	4	4	N/A
29/01/2008	Loch Muck			2	2	1	1	N/A
05/02/2008	Loch Doon	4			4	4		N/A
05/02/2008	Loch Muck			2	2	1	1	N/A
07/02/2008	Burnton Pool		8		8			N/A
07/02/2008	VP11			2	2	1	1	N/A
11/02/2008	Loch Doon	4			4	3	1	N/A
11/02/2008	VP9	8			8			N/A
12/02/2008	Kendoon		6	4	10			N/A
13/02/2008	Loch Muck	3			3	1	2	N/A
18/02/2008	Earlstoun Loch			2	2			N/A
20/02/2008	Bogton Loch		10		10	1	1	N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
20/02/2008	Bogton Loch		2		2			N/A
22/02/2008	Carsfad Loch		6		6	3	3	N/A
22/02/2008	Lochinvar			3	3			N/A
04/03/2008	Bogton Loch		2	2	4	2	2	N/A
04/03/2008	Burnton Pool		4	4	8			N/A
04/03/2008	Loch Muck			6	6	3	3	N/A
06/03/2008	Carsfad Loch		1	2	3	2	1	N/A
11/03/2008	Loch Doon	3	5		8	6	2	N/A
15/03/2008	Bogton Loch			10	10			N/A
15/03/2008	Bogton Loch	1			1			N/A
20/03/2008	Kendoon Loch		6		6			N/A
20/03/2008	Loch Doon	9	2		11	2		N/A
20/03/2008	Loch Doon	2			2	1	1	N/A
21/03/2008	Burnton Pool			2	2	3		N/A
22/03/2008	Carsfad Loch		5		5	4	1	N/A
22/03/2008	Carsfad Loch	4			4	2	2	N/A
22/03/2008	Kendoon Loch		9		9	7	2	N/A
22/03/2008	Lochinvar		2		2	1	1	N/A
23/03/2008	Lochinvar	2			2			N/A
31/03/2008	Carsfad Loch		4		4			N/A
31/03/2008	Earlstoun Loch			2	2			N/A
31/03/2008	Kendoon	15			15			N/A
31/03/2008	Kendoon Loch	2			2			N/A
31/03/2008	Kendoon Loch	4		4	8			N/A
31/03/2008	Kendoon Loch		2		2			N/A
31/03/2008	Lochinvar		2		2			N/A
03/04/2008	Loch Doon	3	6		9			N/A
08/04/2008	Carsfad Loch	2			2			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
08/04/2008	Kendoon Loch	4			4			N/A
08/04/2008	Lochinvar				0			N/A
09/04/2008	Lochinvar	5			5	4		N/A
24/10/2008	Earlstoun Loch			3	3			N/A
24/10/2008	Lochinvar	4		4	8			N/A
24/10/2008	Kendoon	2		6	8			N/A
27/10/2008	Bogton Loch		2	9	11			N/A
28/10/2008	Kendoon	7			7			N/A
28/10/2008	Carsfad Loch	4	2		6			N/A
28/10/2008	Earlstoun Loch		3		3			N/A
28/10/2008	Earlstoun Loch		3		3			N/A
28/10/2008	Lochinvar	2	6		8			N/A
31/10/2008	Loch Wil- liam	5			5			N/A
31/10/2008	Bogton Loch		2	2	4			N/A
31/10/2008	Loch Muck	2			2			N/A
04/11/2008	Carsfad Loch			8	8			N/A
04/11/2008	Earlstoun Loch		8		8			N/A
04/11/2008	Kendoon	9			9			N/A
04/11/2008	Lochinvar			5	5			N/A
04/11/2008	Lochinvar	8			8			N/A
09/11/2008	Loch Doon			10	10			N/A
17/11/2008	Bogton & Burnton Lochs		1		1			N/A
23/11/2008	Lochinvar		13		13			N/A
25/11/2008	Knockman Loch			2	2			N/A
25/11/2008	Loch Muck			2	2			N/A
27/11/2008	Carsfad Loch	23			23			Mid water and mar- gin
28/11/2008	Bogton & Burnton Lochs			1	1			N/A
28/11/2008	Bogton Loch			1	1	1		N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/11/2008	Burnton Loch	2	2		4	2	2	N/A
29/11/2008	Loch Doon	8			8			N/A
30/11/2008	Lochinvar		6		6			N/A
06/12/2008	Kendoon			2	2			N/A
06/12/2008	Kendoon				0			N/A
06/12/2008	Lochinvar		12		12			N/A
09/12/2008	Bogton & Burnton Lochs			3	3			N/A
11/12/2008	Loch Doon	9			9			N/A
21/12/2008	Carsfad Loch		21		21			N/A
21/12/2008	Kendoon	2		2	4			N/A
21/12/2008	Lochinvar		12		12			N/A
27/12/2008	Loch Muck	6			6			N/A
29/12/2008	Bogton & Burnton Lochs	4			4			N/A
30/12/2008	Loch Doon	4			4			N/A
08/01/2009	Carsfad Loch	2	7	3	12			Ice on margins.
09/01/2009	Loch Howie	5	2	3	10			N/A
11/01/2009	Bogton & Burnton Lochs	2	6		8			Bogton Loch com- pletely ice free
12/01/2009	Lochinvar	4		12	16			Extensive frozen margin on Lochinvar.
13/01/2009	Wee Ber- beth Loch			2	2			N/A
16/01/2009	Loch Doon		4		4			N/A
24/01/2009	Lochinvar		20		20			N/A
25/01/2009	Bogton Loch		4		4			N/A
25/01/2009	Burnton Pool		4		4			N/A
25/01/2009	Carsfad Loch		15		15			N/A
26/01/2009	Kendoon			5	5			N/A
28/01/2009	Wee Ber- beth Loch		4		4			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/01/2009	Wee Ber- beth Loch				0			N/A
30/01/2009	Loch Howie	6	4		10			All birds east end of loch - nothing west end.
31/01/2009	Loch Doon			7	7			N/A
10/02/2009	Kendoon		4		4			N/A
16/02/2009	Bogton & Burnton Lochs		2	1	3			N/A
16/02/2009	Bogton & Burnton Lochs				1			N/A
16/02/2009	Loch Doon		8		8			N/A
16/02/2009	Loch Doon			7	7			N/A
18/02/2009	Loch Muck			4	4			N/A
20/02/2009	Loch Howie			3	3			N/A
20/02/2009	Loch Skae	2	2		4			N/A
20/02/2009	Wee Ber- beth Loch			2	2			N/A
24/02/2009	Bogton & Burnton Lochs			2	2			N/A
24/02/2009	Bogton & Burnton Lochs	1			1			N/A
24/02/2009	Bogton & Burnton Lochs				2			N/A
26/02/2009	Loch Howie	2			2			N/A
26/02/2009	Wee Ber- beth Loch			2	2			N/A
27/02/2009	Loch Doon	3			3			N/A
27/02/2009	Lochinvar		2		2			N/A
09/03/2009	Kendoon	2		2	4			N/A
09/03/2009	Loch Brack			2	2			N/A
09/03/2009	Loch Howie		4		4			N/A
12/03/2009	Bogton & Burnton Lochs				0			N/A
12/03/2009	Bogton & Burnton Lochs				1			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments		
12/03/2009	Bogton & Burnton Lochs				2			N/A		
16/03/2009	Kendoon	2			2			N/A		
17/03/2009	Loch Doon			7	7			N/A		
17/03/2009	Loch Muck			2	2			N/A		
27/03/2009	Loch Muck			2	2			N/A		
27/03/2009	Lochinvar		2		2			N/A		
28/03/2009	Bogton & Burnton Lochs			1	1			N/A		
28/03/2009	Loch Howie	5			5			N/A		
30/03/2009	Bogton & Burnton Lochs	1			1			N/A		
06/05/2008	NX691858				4	4		Regland Loch, MAx4(M).		
29/12/2007	NX632806				8			8MA on ephemeral pools.		
D.7.14	Pocha	rd (Ayt	hya feri	na)						
Table D7.20 - Waterbody Survey 2007-2009										
Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments		
13/11/2008	Loch Howie			4	4			N/A		
17/11/2008	Bogton Loch			2	2			N/A		

D.7.15

Date	Time	Grid Ref	E	N	Notes.
23/01/2008	Unk.	NX	606	910	20 on reservoir near Carminnows fish farm.
26/01/2009	-	Kendoon	-	-	Roosting TU

Date	Locations	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Bogton Loch	1			1	1		N/A
29/10/2007	Sillyhole Pond				2			N/A



Ornithology

Tufted Duck (Aythya fuligula)

Table D7.21 - Ad Hoc Records 2007-2009

Table D7.22 - Waterbody Survey 2007-2009

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Date	Locations	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
16/11/2007	Bogton Loch				17			N/A
16/11/2007	Burnton Pool				2			N/A
17/11/2007	Lochinvar				3			N/A
04/12/2007	Burnton Pool			7	7			N/A
31/12/2007	Bogton Loch		5		5			N/A
31/12/2007	Burnton Pool	2			2			N/A
16/01/2008	Kendoon		5		5			N/A
16/01/2008	Kendoon	7	5		12			N/A
18/01/2008	Bogton Loch		3		3			N/A
18/01/2008	Bogton Loch	4			4			N/A
29/01/2008	Bogton Loch	2			2	1	1	N/A
29/01/2008	Burnton Pool			8	8	1		N/A
30/01/2008	Moss Roddock Loch		7		7			N/A
07/02/2008	Bogton Loch	1			1	1		N/A
07/02/2008	Bogton Loch	1			1	1		N/A
07/02/2008	Burnton Pool	3			3			N/A
07/02/2008	VP11			20	20			N/A
11/02/2008	VP8	3			3			N/A
12/02/2008	Kendoon	30			30			N/A
13/02/2008	Moss Roddock Loch				0	1	1	N/A
20/02/2008	Bogton Loch	7			7			N/A
04/03/2008	Burnton Pool		6		6			N/A
11/03/2008	Bogton Loch	1			1	1		N/A
15/03/2008	Bogton Loch	3			3			N/A
20/03/2008	Kendoon Loch		24		24	17	7	N/A
20/03/2008	Lochinvar				2	1	1	N/A

Date	Locations	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
21/03/2008	Burnton Pool	7			7			N/A
22/03/2008	Kendoon Loch	25			25	16	9	N/A
31/03/2008	Kendoon	6			6			N/A
31/03/2008	Kendoon Loch	24			24			N/A
04/04/2008	Burnton Pool			6	6			N/A
08/04/2008	Kendoon Loch	16			16			N/A
09/04/2008	Lochinvar	2			2	1	1	N/A
27/10/2008	Bogton Loch			2	2			N/A
31/10/2008	Bogton Loch			3	3			N/A
04/11/2008	Kendoon	5			5			N/A
17/11/2008	Bogton & Burnton Lochs			4	4			N/A
27/11/2008	Kendoon	12			12			N/A
28/11/2008	Burnton Loch		5		5		2	N/A
09/12/2008	Bogton & Burnton Lochs	6			6			N/A
21/12/2008	Kendoon	10	12		22			N/A
09/01/2009	Loch Howie	2			2			N/A
11/01/2009	Bogton & Burnton Lochs	4			4			Burnton Loch still partially frozen over
25/01/2009	Burnton Pool	2			2			N/A
26/01/2009	Kendoon		48		48			N/A
30/01/2009	Loch Howie	11			11			All birds east end of loch. No birds at west end.
10/02/2009	Kendoon	15	28		43			All birds by fish farm. Open water agitated near cages.
16/02/2009	Bogton & Burnton Lochs	3			3			N/A

Date	Locations	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
24/02/2009	Bogton & Burnton Lochs	4	2		6			N/A
08/03/2009	Kendoon	10			10			All birds at south of fish farm. Note water level down 1.5m
12/03/2009	Bogton & Burnton Lochs	1			1			N/A
12/03/2009	Bogton & Burnton Lochs	4			4			N/A
16/03/2009	Kendoon	18			18			N/A
27/03/2009	Kendoon	37			37			Water Choppy
28/03/2009	Bogton & Burnton Lochs	6			6			N/A
19/02/	Lochinvar	2		9	11			N/A

Scaup (Aythya marila) D.7.16

Table D7.23 - Waterbody Survey 2007-2009

		/ /						
Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
21/03/2008	Bogton Loch		1		1		1	N/A
21/03/2008	Bogton Loch		1		1		1	N/A
21/03/2008	Bogton Loch		1		1		1	N/A
27/10/2008	Bogton Loch	1			1			N/A
27/10/2008	Bogton Loch	1			1			N/A
27/10/2008	Bogton Loch	1			1			N/A
26/01/2009	Kendoon		1		1			Roosting.
26/01/2009	Kendoon		1		1			Roosting.
26/01/2009	Kendoon		1		1			Roosting.
10/02/2009	Kendoon	2			2			N/A
10/02/2009	Kendoon	2			2			N/A
10/02/2009	Kendoon	2			2			N/A
27/03/2009	Kendoon	2			2			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
27/03/2009	Kendoon	2			2			N/A
27/03/2009	Kendoon	2			2			N/A

Goldeneye (Bucephala clangula) D.7.17

Table D7.24 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.
29/12/2007	12:45	NX	633	816	Moss Roddock Loch GN pr.

Red-Breasted Merganser (Mergus serrator) D.7.18

Table D7.25 - Waterbody survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
03/04/2008	Loch Doon			1	1	1		The drake RM close in to west edge of Loch Doon, north of Berch, it then took off and flew south along the loch, low height.

Goosander (Mergus merganser) D.7.19

Table D7.26 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Bogton Loch	1			1		1	N/A
17/11/2007	Carsfard				1			N/A
04/12/2007	Earlstoun Loch	2			2			N/A
10/12/2007	Moss Roddock Loch	2			2			N/A
31/12/2007	Bogton Loch	2			2			N/A
31/12/2007	Kendoon	1f			1			N/A
08/01/2008	Moss Roddock Loch	5			5			N/A
16/01/2008	Carsfad Loch	1		2	3			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
18/01/2008	Bogton Loch		2		2			N/A
30/01/2008	Moss Roddock Loch	4	5		9			N/A
07/02/2008	Bogton Loch			1	1		1	N/A
11/02/2008	Bogton Loch			5	5	2	3	N/A
12/02/2008	Kendoon	1			1			N/A
13/02/2008	Moss Roddock Loch				5	3	2	N/A
20/02/2008	Bogton Loch	2		3	5	1	1	N/A
20/02/2008	Bogton Loch	5			5		1	N/A
22/02/2008	Lochinvar	6		4	10			N/A
04/03/2008	Bogton Loch		3		3	1		N/A
04/03/2008	Bogton Loch		2		2	1	1	N/A
15/03/2008	Bogton Loch	6			6			N/A
22/03/2008	Carsfad Loch	2			2	2		N/A
23/03/2008	Bogton Loch			1	1		1	N/A
31/03/2008	Carsfad Loch	1			1			N/A
04/04/2008	Lochinvar		2		2			N/A
08/04/2008	Kendoon Loch	1			1			N/A
08/04/2008	Lochinvar	2			2			N/A
04/11/2008	Carsfad Loch				2			N/A
09/11/2008	Loch Doon		1		1			N/A
16/11/2008		2			2			N/A
23/11/2008	Lochinvar	1			1			N/A
23/11/2008	Lochinvar		10		10			N/A
06/12/2008	Kendoon	3			3			N/A
06/12/2008	Kendoon				3			N/A
06/12/2008	Lochinvar		10	8	18			Very Cold -5°c, loch partially frozen but remained largely free.

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
06/12/2008	Lochinvar				5			N/A
06/12/2008	Lochinvar				5			N/A
06/12/2008	Lochinvar		2		2			N/A
09/12/2008	Bogton & Burnton Lochs			5	5			N/A
09/12/2008	Bogton & Burnton Lochs				1			N/A
29/12/2008	Bogton & Burnton Lochs			3	3			N/A
30/12/2008		2			2			N/A
11/01/2009	Bogton & Burnton Lochs		2		2			Bogton Loch completely ice free
24/01/2009	Lochinvar		3		3			N/A
24/01/2009	Lochinvar		22		22			N/A
25/01/2009	Carsfad Loch		2		2			N/A
26/01/2009	Kendoon				1			N/A
26/01/2009	Kendoon				2			N/A
03/02/2009	Lochinvar	4			4			N/A
10/02/2009	Kendoon	1			1			N/A
22/02/2009	Lochinvar		2		2			N/A
09/03/2009	Kendoon	2			2			N/A
27/03/2009	Loch Muck	1			1			N/A
19/02/	Lochinvar			3	3			N/A
29/12/2007	NX 633 816							GD pr.

D.7.20

Table D7.27 - Ad Hoc Records 2007-2009

Date	Time
22/02/2008	11:23

Ornithology



Red Kite (Milvus milvus)

Grid Ref	E	N	Notes
NX.	607	830	KT(1) - just N of VP8, green tag on left wing, orange tag on right = D&G 2005 bred bird. Low to ground, loosely associating with 3xBZ ('grappled' with one at one point), circled higher then flew N into Earlstoun Estate.



Date	Time	Grid Ref	E	N	Notes
31/05/2008	13:40	NS	NS 61	86	2cy Red Kite, left wing green, right wing purple, mobbed by Kestrel.
31/05/2008	17:10	NS	NS 60	90	Adult Red Kite left wing green, right wing red, hunting around Kendoon Loch up to the Water of Deugh.
08/03/2009	15:20	NX	621	896	KT- green wing tags on both wings, MI- low heights. Mobbed by male PE.
10/03/2009	16:17	NX	630	900	KT soaring spiralling rise turn and drift/ drop out of view at 15m-40m- 15m.

Hen Harrier (Circus cyaneus) D.7.21

Table D7.28 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.		
22/10/2008	16:24	NX	6390	8712	HH juv male drifting hunting flight at 3-10m.		
22/10/2008	17:00	NX	6413	8723	Juv HH male (1) drifts over hill and settles on a fence post 3-1m.		
22/10/2008	18:18	NX	6334	8612	HH male flight down slope to drop into mire roost at 1-3m.		
24/02/2009	17:36	NX	469	054	Male Hen Harrier at SE end of Bogton Loch, crossed to N side of loch then crossed B741, L height,		
24/02/2009	-	Bogton & Burnton Lochs	-	-	Male HH from N side of Bogton L.		

Merlin (Falco columbarius) D.7.22

Table D7.29 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.			
28/11/2007	15:52	NX	644	812	ML (F) perched on telephone line wing stretch NX 644 812 jct of A702 and B7075.			
30/12/2007	Unk.	NX	61447	87689	ML(1) - (F) on telegraph pole at side of road, took off, flew S low height.			
31/12/2008	14:32	NX	565	932	ML - (F)/ imm, prob (M) (on size, seen flying N-S over A713 then back N c. 1mile SE Carsphairn. Initially high height then medium + then low heights, when chasing small passerine sp was at OHL.			

Peregrine Falcon (Falco peregrinus) D.7.23

Table D7.30 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.
12/02/2008	08:05	NX	610	902	PE(1) - Ad (M) inadvertently disturbed whilst it was roosting on dam wall at S end of Kendoon Loch, took off and landed on top o Pine at SW end of loch, shown on waterbody map for 12/02, med-low heights.
20/02/2008	07:05	NS	46321	05978	PE(1) - ad, perched on pylon on N side of B741 still present here at 0800 on 20/02
08/03/2009	15:21	NX	621	896	PE M mobbed KT, M2- M1- low heights

Black Grouse (Tetrao tetrix) D.7.24

Table D7.31 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.
31/05/2008	14:30	NS	558	962	Male Black Grouse feeding at north side of Holmehill, cotton grass - bog
06/05/2008	Unk.	NX.	685	855	Advised no records for BK this year at 685855 clearfell area and Regland Loch area 691858.

Water Rail (Rallus aquaticus) D.7.25

Table D7.32 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
04/03/2008	Bogton Loch		7		7			Several WA heard at N end of Bogton Loch.

Moorhen (Gallinula chloropus) D.7.26

Table D7.33 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Bogton Loch	2			2			N/A
16/11/2007	Burnton Pool				2			N/A
30/11/2007	Burnton Loch				2			N/A
18/01/2008	Burnton Pool	2			2			N/A
18/02/2008	Moss Roddock Loch	1			1			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
20/02/2008	Bogton Loch	1			1			N/A
04/03/2008	Bogton Loch	2			2			N/A
04/04/2008	Bogton Loch			1	1			N/A
04/04/2008	Bogton Loch	2			2			N/A
27/10/2008	Bogton Loch	1			1			N/A
31/10/2008	Loch William	2			2			N/A
17/11/2008	Bogton Loch	1			1			N/A
09/12/2008	Bogton & Burnton Lochs	2			2			N/A
16/02/2009	Bogton & Burnton Lochs		2		2			N/A
24/02/2009	Bogton & Burnton Lochs	2			2			N/A

D.7.27

Table D7.34 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	Ε	N	Notes.
22/02/2008	Unk.	NX	613	829	OC(1) - on edge of Earlstoun Loch, marked on map 2 on 22/02/08.
04/04/2008	Unk.	NX	528	991	Oystercatcher (OC) 2 on grassy bank to north of road.
03/04/2008	-	Loch Doon	-	-	OC flights over Loch Doon

Table D7.35 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Bogton Loch		1		1			N/A
28/02/2007	Loch Doon		2		2			N/A
31/12/2007	Loch Doon	2prs			4			N/A
22/02/2008	Lochinvar	1			1			N/A
01/03/2008	Earlstoun Loch	2			2			N/A
04/03/2008	Bogton Loch		7		7			N/A
06/03/2008	Carsfad Loch		4		4			N/A

Oystercatcher (Haematopus ostralegus)

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
11/03/2008	Loch Doon	15	4		19			At Loch Doon S1, all feeding OC at Beoch Farm.
11/03/2008	Loch Doon				1			N/A
15/03/2008	Bogton Loch		12		12			N/A
20/03/2008	Earlstoun Loch		11		11			N/A
20/03/2008	Loch Doon	14	2		16			N/A
20/03/2008	Lochinvar			5	5			N/A
21/03/2008	Bogton Loch		3		3	2	1	N/A
22/03/2008	Earlstoun Loch		8		8			N/A
29/03/2008	Lochinvar	4			4			N/A
31/03/2008	Carsfad Loch				4			N/A
31/03/2008	Lochinvar			2	2			N/A
31/03/2008	Lochinvar		2		2			N/A
03/04/2008	Loch Doon		15		15			Displaying birds on east side of minor road, the OC flights over Loch Doon
04/04/2008	Lochinvar		4		4			N/A
08/04/2008	Carsfad Loch			2	2			N/A
08/04/2008	Kendoon Loch			2	2			N/A
08/04/2008	Lochinvar		4		4			N/A
08/04/2008	Lochinvar		2		2			N/A
09/04/2008	Lochinvar			4	4			N/A
26/02/2009	Wee Berbeth Loch			1	1			N/A
27/02/2009	Loch Doon		2		2			N/A
27/02/2009	Loch Doon		2		2			N/A
09/03/2009	Kendoon		1		1			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
12/03/2009	Bogton & Burnton Lochs		8		8			Bogton Loch. Roosting at SE end of Loch
16/03/2009	Wee Berbeth Loch	5	2		7			N/A
17/03/2009	Loch Doon	1	6		7			N/A
27/03/2009	Lochinvar		2		2			N/A
28/03/2009	Bogton & Burnton Lochs		10		10			N/A
28/03/2009	Loch Doon		6		6			N/A

Ringed Plover (Charadrius hiatcula) D.7.28

Table D7.36 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Commer
27/02/2009	Loch Doon		2		2			N/A

Lapwing (Vallenus vallenus) D.7.29

Table D7.37 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.
18/02/2008	13:36	NX	632	815	L.(c.65) - circling over A702 just E of Moss Roddock Loch, eventually dropped down into field N of road, high-med-low heights.

Table D7.38 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Loch Doon		2		2			N/A
20/02/2008	Bogton Loch		1		1			N/A
15/03/2008	Bogton Loch	2			2			N/A
20/03/2008	Loch Doon		1		1			N/A
03/04/2008	Loch Doon				2			Flying L. displaying birds on east side of minor road,
30/11/2008	Lochinvar		1		1			Frozen over, no birds.

Common Snipe (Gallinago gallinago) D.7.30

Table D7.39 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.
04/10/2007	16:30	NX	56719	92213	SN flushed off bog at 5-10 -NE
05/10/2007	Unk.	NX	55496	95078	Flushed SNx2 off patch of M25 flush / heath 55496 / 95078 - E at 3-5m.
22/05/2009	12:08	NX	515999	512990	SN male 'chipping' male by VP 18.

Table D7.40 - Waterbody survey 2007-2009

		,						1
Date	Location	Foraging	Roosting	Loafin	g Total	Total M	Total F	Comments
22/02/2008	Carsfad Loch	2			2			Feeding on loch edge at SW end.
17/11/2008	Bogton & Burnton Lochs				0			N/A
29/11/2008	Loch Doon	1			1			N/A
24/02/2009	Bogton & Burnton Lochs				13			13, L-M-H heights
24/02/2009	Bogton & Burnton Lochs			1	1			N/A
03/04/2008	Loch Doon							3 chipping SN heard on west side of Loch Doon.
04/03/2008	Burnton Pool							SN (1) Chipping at Burnton Pool, then displaying / drumming at dusk
27/02/2009	Knockman Loch							Note. 3xSN flushed on walk in and out
D.7.31 Woodcock (Scolopax minor) Table D7.41 - Ad Hoc Records 2007-2009								
Date	Time	Grid Ref	E	N		N	otes.	
18/11/2007	07:20	NX.	558	938	WK(1) on the road (B729) SE of Carsphain, flushed by me, flew into forestry on N side of road, low			



05/01/2009

27/02/2009

11:50

-

Grid Ref	E	N	Notes.			
NX.	558	938	WK(1) on the road (B729) SE of Carsphain, flushed by me, flew into forestry on N side of road, low height.			
NX.	555	948	Juncus grassland - Holm Hill - 2x Woodcock near shelter block.			
Knockman Loch	-	-	WK near White Cairn			

Table D7.42 - Woodland Owl Survey, Ad Hoc Records, 2009

Date	Grid Ref	N	E	Sex	Notes
08/04/2009	NS	516	088	Unk.	Roding
03/06/2009	NX	586	926	Unk.	Roding
11/06/2009	NX	686	848	Unk.	Roding
11/06/2009	NX	689	859	Unk.	Roding
17/06/2009	NX	665	876	Unk.	Roding
15/06/2009	NX	587	877	Unk.	Roding

Curlew (Numenius arquata) D.7.32

Table D7.43 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	Е	N	Notes.		
30/05/2008	08:00	NX	662	855	CU (M) calling		
26/03/2009	11:45	NX.	515	000	VP18 CUx5 on rough grazings		
11/03/2008	-	Loch Doon	-	-	CU at Beoch Farm.		
22/05/2009	12:08	NX.	515999	512990	Could hear CU M/F calling down by sluice down next to Loch Doon		

Table D7.44 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Loch Doon		3		3			N/A
06/03/2008	Carsfad Loch		1		1			N/A
11/03/2008	Loch Doon	2			2			N/A
15/03/2008	Bogton Loch		8		8			N/A
20/03/2008	Loch Doon		4		4			N/A
21/03/2008	Bogton Loch		1		1			Flying CU displaying bird at Northern end of loch
31/03/2008	Carsfad Loch				0			N/A
03/04/2008	Loch Doon		1		1			N/A
04/04/2008	Burnton Pool		1		1			N/A
24/02/2009	Bogton & Burnton Lochs		1		1			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
12/03/2009	Bogton & Burnton Lochs		28		28			Bogton Loch. Roosting at NW end of Loch
28/03/2009	Bogton & Burnton Lochs				1			Bogton Loch. 1, H-M heights, displaying. Several other displaying/ singing CU heard in addition to these birds
28/03/2009	Bogton & Burnton Lochs				1			Bogton Loch. 1, H-M-L heights, landed, displaying
28/03/2009	Bogton & Burnton Lochs		2		2			Bogton Loch
28/03/2009	Bogton & Burnton Lochs				3	3		Burnton Loch. 3, M Height, displaying
28/03/2009	Loch Doon		11		11			N/A
22/05/2009	NX 515999 512990							Could hear CU M/F calling down by sluice down next to Loch Doon

Black Headed Gull (Chroicocepahalus ridibundus) D.7.33

Table D7.45 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Bogton Loch		20		20			N/A
28/02/2007	Loch Doon		1		1			N/A
29/01/2008	Loch Doon		5		5			N/A
07/02/2008	Bogton Loch			8	8			N/A
11/02/2008	Loch Doon			6	6			N/A
20/02/2008	Bogton Loch		15		15			N/A
20/02/2008	Bogton Loch			16	16			N/A
04/03/2008	Bogton Loch		16		16			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
11/03/2008	Loch Doon				0			N/A
20/03/2008	Loch Doon		40		40			N/A
20/03/2008	Loch Doon		2		2			N/A
21/03/2008	Bogton Loch				0			N/A
23/03/2008	Bogton Loch		2		2			N/A
31/03/2008	Kendoon	3			3			N/A
03/04/2008	Loch Doon				0			N/A
04/04/2008	Bogton Loch				0			N/A
04/04/2008	Bogton Loch				0			N/A
04/04/2008	Burnton Pool				0			N/A
04/04/2008	Lochinvar		6		6			N/A
09/04/2008	Lochinvar			2	2			N/A
11/04/2008	Bogton Loch			28	28			N/A
31/10/2008	Bogton Loch			1	1			N/A
16/02/2009	Loch Doon		6		6			N/A
27/02/2009	Loch Doon			9	9			N/A
28/03/2009	Loch Doon	60			60			N/A

Common Gull (Larus canus) D.7.34

Table D7.46 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
28/02/2007	Bogton Loch		7		7			N/A
29/01/2008	Loch Doon		4		4			N/A
11/02/2008	Loch Doon			2	2			N/A
20/02/2008	Bogton Loch			2	2			N/A
20/02/2008	Burnton Pool				0			N/A
20/03/2008	Loch Doon		7		7			N/A
20/03/2008	Loch Doon		4		4			N/A

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
23/03/2008	Lochinvar		2		2			N/A
31/03/2008	Kendoon	6			6			N/A
03/04/2008	Loch Doon		6		6			N/A
04/04/2008	Lochinvar		16		16			N/A
08/04/2008	Carsfad Loch			2	2			N/A
09/04/2008	Lochinvar			28	28			N/A
11/04/2008	Bogton Loch			26	26			N/A
16/01/2009	Loch Doon				0			N/A
16/02/2009	Loch Doon		7		7			N/A
27/02/2009	Loch Doon			2	2			N/A
17/03/2009	Loch Doon				0			N/A
27/03/2009	Lochinvar		2		2			N/A
28/03/2009	Loch Doon	50			50			N/A
30/05/2008	NX 662 855							CM activity
04/04/2008	Lochinvar							CM at Lochinvar all at south end, displaying birds.
06/05/2008	NX661659							CMx18prs on nests.
30/05/2008	NX661850							CMx12 foraging over loch and on road.

D.7.36 Herring Gull (Larus argentatus)

Table D7.48 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
12/02/2008	Kendoon		1		1			N/A
22/03/2008	Earlstoun Loch		2		2			N/A

D.7.37 Great Black-backed gull (Larus marinus)

Table D7.49 - Waterbody Survey 2007-2009

Date	Locations	Section	Foraging	Roosting	Loafing	Total	Accuracy	Total M	Total F	Comments
31/12/2007	Kendoon	\$3		1		1	ОК			N/A
21/03/2008	Kendoon	S3		2		2				N/A
22/03/2008	Kendoon Loch	S3		1		1	ОК			N/A
31/03/2008	Kendoon	S3	1			1				N/A
04/04/2008	Lochinvar	S4		2		2	100%			N/A
08/04/2008	Kendoon Loch	S3			1	1	ОК			N/A
31/01/2009	Loch Doon	S3			1	1				N/A
27/02/2009	Lochinvar	S4			2	2				N/A
09/03/2009	Kendoon	S3		1		1				N/A

D.7.35 Lesser Black-Backed Gull (Larus fuscus)

Table D7.47 - Waterbody Survey 2007-2009

Date	Location	Section	Foraging	Roosting	Loafing	Total	Accuracy	Total M	Total F	Comments
03/04/2008	Loch Doon	S3		2		2	100%			
04/04/2008	Burnton Pool	S1				0	100%			N/A
11/04/2008	Bogton Loch	S1			2	2	ОК			N/A
28/03/2009	Loch Doon	\$3	2			2				W side L Doon, 1841, L height, moved off N, shown A on map

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D.7.38 Cuckoo (Cuculus canorus)

Table D7.50 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.
22/04/2008	Unk.	NX.	595	874	CK (M)

D.7.39 Barn owl (Tyto alba)

Table D7.51 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.
27/10/2008	16:46	NX	625	858	BO - one hunting, dropped down on 2 occasions, M1 - low heights.
27/10/2008	17:18	NX	625	858	BO - presumably same as above bird, M1 height.
11/12/2008	16:03	NX.	607.	904	BO - seen during Kendoon Loch dusk waterbody survey. E-W over road, landed on telegraph wires then flew back to E side of road and into forestry behind the house on the E side of the road. M1 height.
02/02/2009	17:37	Unk.	645	859	BO female quartering hunting flight at 2-6m over rush pasture and scattered broad leaf plantation fringe.
25/01/2009	-	-	-	-	BO hunting over rough / marshy ground on N side of Bogton Loch, >17:18, low height.

D.7.40 Tawny Owl (Strix aluco)

Table D7.52 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	VP	VP Name	Notes
31/12/2008	14:32	NX	565	932	-	-	TO on OHL.

D.7.41 Long Eared owl (Asio otus)

Table D7.53 - Ad Hoc Records 2007-2009

Date	Time	Grid Ref	E	N	Notes.
21/04/2008	05:41	NX	681	825	LE (M) Corriedo Forest.
22/04/2008	06:22	NX	530	965	LE (M) heard against road traffic.

D.7.42 Swift (Apus apus)

Table D7.54 - Ad Hoc Records 2007-2009

Date	Grid Ref	E	N	VP	VP Name	Notes
20/05/2009	NS	250659	601833	9	Glenmuck	SI above hill NE of VP

D.7.43 Sand Martin (Riparia riparia)

Table D7.55 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comment
27/02/2009	Loch Doon		2		2			N/A

D.7.44 Pied flycatcher (*Ficedula hypoleuca***)**

Table D7.56 - Waterbody Survey 2007-2009

Date	Location	Foraging	Roosting	Loafing	Total	Total M	Total F	Comments
25/01/2009	Carsfad Loch							Party heard flying overhead, moving north

D.8 Woodland Point Count Survey Results

Table D8.1 - South Kyle & Margree Point Counts 2008

	Grid				Di	stance Ba	and	Pogistratio
Site	Square	E	N	Date	0-50m	51- 100m	>100m	Notes
					WR			
					R.			
					ww			
South	NS	51647	7386	07/05/2008			WR	
Kyle		51017	/ 500	0,,00,2000			WR	
							В.	
							CR	15 CR overhead.
					WR			
					ww			
						R.		
South	NC			07/05/2008		WW		
Kyle		IN/A		07/05/2008			B.	
							В.	
							ST	
							ST	
						WR		
South	NIC	51072	6751	07/05/2008		R.		
Kyle		510/2	0/51	07/03/2008		СН		
						ww		

					Di	stance Ba	ind	Desistuation
Site	Square	E	N	Date	0-50m	51- 100m	>100m	Notes
					WW			
					СН			
Couth					2 SL			Flying
South Kyle	NS	N/A	N/A	08/05/2008		СН		
, -						СН		
						WW		
						WR		
					2 CT			
					СН			
South	NS	N/A	N/A	08/05/2008		СН		
Kyle				,,		WR		
						WW		
						SK		
					2 LR			Flying
					2 CT			
South	NS	48847	5718	08/05/2008		WW		
Kyle				,,		WW		
						СН		
						WR		
					LR			Flying
						TP		Song and flight.
						СН		
South	NC	10000	E122	00/05/2000		СН		
Kyle	113	49009	5422	08/05/2008		СН		
						WR		
						WW		
						2 M.		Flying
						BZ		Flying
					WW			
South	NS	48980	5115	08/05/2008		СН		Flying
Kyle						R.		
						WR		
					СТ			
South					WR			
Kyle	NS	13757	78460	07/05/2008	CU			
						CU		
							В.	
					ST			Song Thrush c. 30m away in full song.
South Kyle					СТ			
	NC	F3440	7544	07/05/2000	WR			
	NS	52449	/514	07/05/2008	ww			
					СТ			
					SK			
						WW		
						В.		

					Di	stance Ba	nd							Di	stance Ba	and							Di	stance Ba	nd	
Site	Grid Square	E	N	Date	0-50m	51- 100m	>100m	Registration Notes	Site	Grid Square	E	N	Date	0-50m	51- 100m	>100m	Notes	Site	Grid Square	E	N	Date	0-50m	51- 100m	>100m	Registration Notes
					WR									М.												WW?
					WW									В.									WW			singing in
					СТ									WR												ITv2 fooding
South					СТ									R.									1.7			in larch
Kyle	NS	51530	6818	07/05/2008	R.									CU												trees / fly
						CU									CU											оп.
								Song Thrush	South	NS	N/A	N/A	09/06/2008		CU			Cauth					ww			ww on small tree
						51		singing c. 80m away.	Kyle						WW			Kyle	NS	N/A	N/A	08/05/2008				singing.
					WR			,							ww											☑CH flying
					ww												Song Thrush						СН			tree top to
South	NS	67311	85234	13/05/2008		R.									ST		away from							R.		Singing
кује						GU											point count									ST singing in
						S.									D		location.								51	distance.
					R.										В.										СК	CK calling in
				10/06/2008		СН								14/14/			singing on									distance.
-	-	-	_	10/00/2008		WW								vvvv			top of Ash						GC			
							CU										Tree	Margree	NX	67894	84676	12/06/2009				
								Song Thrush						СН			Birch tree									
							ST	side of road									singing.						WR			
								+100.									R. in middle						x 2			
								Song Thrush						R.			of Birch singing -	South					GC			Alarm call
							ST	towards									moving	Kyle	NS	50370	6058	09/05/2008	СТ			
South	NS	N/A	N/A	11/06/2008				access track									around.						СН			
кује								+100m.	South	NS	N/A	N/A	08/05/2008				S. rising into air. gliding							СТ		
					R.				Kyle				00,00,2000		S.		and soaring						WR			
					WR												back down.						WW			
					WW	<u></u>									СН		Male	South	NS	51315	6950	07/05/2008		R.		
						CH											CK (1) calling for	Kyle						WW		
					\A/D	CU										СК	several								B. x 2	
					SK SK												minutes.								ST x 2	
				18/06/2008	31	тс										м.	M.						WW			
				10/00/2000		ww										\\\\\\\	Male						CH			
						СТ										GT	Male	South	NS	49930	5939	08/05/2008	SL x 2	<u></u>		
					WR	01										ww	Male	Kyle								
						CU											WWR							WW W		
_	_	-	-	18/06/2008		ww								14/14/			singing on							VVK		
							WR							~~~~			top of larch									
							WR		South	NC		NI/A	00/05/2000				tree.									
					R.				Kyle				00/05/2008	СН			singing.									
-	-	-	-	18/06/2008		ww											WWD									
					CU											ww	singing on									
					R.												top of tree.									
South	NS	N/A	N/A	09/06/2008		В.																				
кује							ww																			

R.

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1.10		
100	_	
100	-	

	Crid				Dis	stance Ba	and	Desistation		Crid				Di	stance Ba	ind	Desistration		Crid				Dis	tance Ba	nd	Desistuation
Site	Square	E	N	Date	0-50m	51- 100m	>100m	Notes	Site	Square	E	N	Date	0-50m	51- 100m	>100m	Notes	Site	Square	E	N	Date	0-50m	51- 100m	>100m	Notes
								Male in									Full song						ww			
								full song in pole stage									off mature						ТР			
								Sitka on								ST	Sitka edge						WR			
						ст		north-facing									overlooking	Margree	NX	67098	85757	13/05/2008	R.			
						31		to 10m over									Sitka						СН			
								plantation									plantation.							M.		Singing @
								song 70+m						ТР									\A/P			11160
South	_							SE of point.						WR									x 2			
Kyle	NS	50264	6412	09/05/2008	СН			Male in						WW									ww			
								flight															CT x 2			
					СТ			Male in flight	South Kyle	NS	51020	6514	09/05/2008	GC x 2				Margree	NX	66750	85954	13/05/2008	CH x 2			
								Male circled	, injie					CT									GC x 2			
					MP			over alarm-							SK								LR			
								calling							СТ								R.			
							B. x 2	Both in singing							WR									CC		
							СН	Singing							WW								ST			Singing @
					CH x 2										LR x 2								CH v 2			50111
					WR										СН								WP			
					R.										R.								R.x2			
Margroo	NV	60207	02702	22/05/2008		WW									TP								WH			
wargiee	INA	09397	03703	22/03/2008		x 2										В.		Margree	NX	68611	84787	14/05/2008	WW			
						WP								ww			Singing						WR			
							CK x 2							D.			Singing						SK			
							ST							WW			Singing						В.			
					GI				Margree	NX	68709	83446	20/05/2008		R.		Singing							ст		Singing @
					СН										TP		Singing							51		60m
																ТР	Singing from perch							PH		
														WR			Singing						CH x 4			
Margree	NX	69319	83640	22/05/2008	x 2												Flying /						WR x 2			
Ū					D.												calling						GC			
						ST									WR		Singing						СТ			
						WP			Margree	NX	68612	83212	20/05/2008		R.		Singing						В.			
						R.		Singing							ТР		Singing						R.			
							CK x 2								GS		Calling	Margree	NX	69010	84283	14/05/2008	ww			
					WW											СК	Singing							м		Singing @
					X Z											ST	Singing									65m
														WW			20m and							ST		Singing @ 80m
														x 2			40m									Singing @
South	NC	50000	co74	00/05/2000		WW								GC			Singing @								СК	at least
Kyle	NS	50699	6374	09/05/2008		x 3											25m									200m
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						LR x 6		4 plus two						CH x 3												
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Margree Name Margree						SK			45111 In flight						WR									SK			Flying /
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												69611	84707	12/06/2009	60.43	ст _у э		song x 2.									
												00011	04/0/	12/00/2008				(Male)									
																		in song c									

- Ornithology



Carcass Search Study at Kendoon and Carsphairn

D.9.1

D.9

- results and conclusions.
- to collision with overhead OHLs.

D.9.2 Methodology

D.9.2.1 **Field Survey Methods**

	Crid				Di	stance Ba	ind	Posistration
Site	Square	E	N	Date	0-50m	51- 100m	>100m	Notes
					ww			Singing @ 30m
	NX	67097	85760	10/06/2008	CH x 2			
					WR			
					СТ			
					WR x 2			
	NX	68708	84600	12/06/2008	R.			
		00/00	04000	12,00,2000		СН		
							ST x 2	Singing @ 120m and 135m
					BT			Calling
					CH x 2			1 foraging 1 calling
					WW x 2			Singing
					R.			Foraging
	NS	49054	04751	10/06/2008		ТР		Singing
				, _ , ,		WW x 4		Singing
						CH x 3		2 singing 1 foraging
						SK		Singing
							C.	Flying through

	Cuid				Di	stance Ba	ind	Decisturation
Site	Square	E	N	Date	0-50m	51- 100m	>100m	Notes
					ww			
					x 2			
					MP x 2			
					WR			
					ТР			
	NC	F0071	00051	10/06/2008		LR		Family
		50671	00051	19/00/2008		ww		
						СН		Male
							WH	
							ST	Singing @ 500m from farm stead trees
					CT x 3			
					CH x 2			
					GC			
						CH x 4		
						ww		
	NS	50264	06412	19/06/2008		x 3		
						CI	<u></u>	
							ST	Singing @ 300+m on plantation margin in valley floor
					СН			Singing
					SK			Flying / calling
					ww			Singing
						WW		Singing
	NIV	c0207	02702	10/00/2000		WR		Singing
	NX	69397	83783	19/06/2008		CR x 4		Calling in flight and landed in larch trees
						WH		Singing
						WP		In flight
						СН		Singing
					GC			Singing @ 20m
	NY	65112	866/17	09/06/2008	CH x 2			
		03442	00047	05/00/2008	В.			
	NX				R.			
					GC		RO x 2	Singing @
		67114	00000	10/06/2000	R			4011
		o/114	85506	10/06/2008	СН			
					WR			
					VVI\			l

Introduction

1 MBEC were commissioned by SPEN / Capita Lovejoy to carry out a bird carcass search study as part of the Blackcraig and Margree windfarm grid connection EIA project. This appendix to the ornithology ES Chapter briefly describes the study methodology,

2 The purpose of this study was to systematically search for bird remains under sections of an existing overhead transmission line (OHL), which was being monitored as part of a bird flight activity survey, with the aim of providing data to help inform the assessment of collision risk for the proposed Blackcraig and Margree windfarm OHL. Currently, there is a paucity of published studies on bird OHL collision rates in a UK context. It is necessary when undertaking assessments of collision risk for proposed OHLs to draw on data from research studies from the USA and Europe, which often relate to bird species that are not native to the UK and to OHL configurations that differ from typical OHL development proposals in the UK.

3 The Blackcraig and Margree windfarms OHL project area offered a useful opportunity for a study to improve the accuracy of bird - OHL collision risk assessment, as the existing OHL (due to be replaced as part of the Blackcraig and Margree project) passes through an important movement corridor for waterbirds that are considered to be a relatively high risk of collision with overhead OHLs. In particular, species of international conservation concern, such as whooper swan (Cygnus cygnus), listed on Annex 1 of the EC Birds Directive (Council Directive 79/409/EEC on the conservation of wild birds) and Schedule 1 to the Wildlife and Countryside Act (1981 as amended), and other species of wildfowl of lower conservation concern status, such as greylag goose (Anser anser), but also considered to be of relatively high potential susceptibility

1 The carcass searches were carried out weekly from the 17th of October 2008 to the 12th of January 2009 (inclusive) and were timed to coincide with the peak period for autumn migration and the early winter when large numbers of wild geese and swans are present within the UK and in South West Scotland in particular. Weekly visits were deemed appropriate based on scavenger removal trials at other sites in Scotland as part of similar OHL collision monitoring studies undertaken by MBEC.

2 Searches were carried out by a small team of ornithological surveyors that were also undertaking baseline bird surveys as part of wider ecological EIA studies for Blackcraig and Margree windfarm grid connection project.

3 Two sections of the existing OHL were selected, within the bird flight activity survey corridor for the proposed OHL, at Carsphairn and Kendoon (see Figures D9.2 and D9.3). Habitats within the Carsphairn Study Area are predominantly comprised of

semi-improved grassland, wet modified bog with smaller areas of marshy grassland. Improved grasslands within the floodplain of the Water of Deugh provide some suitable foraging habitat for wild geese. The existing OHL also crosses the Water of Deugh within this Study Area, which is a locally important movement corridor for a range of waterbird species many of which would be considered at relatively high risk of collision with overhead lines (e.g. cormorant, grey heron and duck/geese/swan species). The Study Area near Kendoon is comprised mainly of marshy grassland located in close proximity to the point at which the lines cross over the Water of Ken, which also forms a locally important movement corridor for waterbirds.

- 4 Searches were carried out once a week following pre-determined routes for each survey area (Carsphairn and Kendoon). Two surveyors were required for each visit, walking in a 'zig-zag' pattern centred along the line of the pre-determined route (see Figures D9.1, D9.2 and D9.3). The first surveyor walked c. 5m from the centre line (i.e. which is directly under the OHL earthwire) and out to 10m. The second surveyor started 15m from the centre line walking out to 20m and back towards the 10m line.
- 5 Surveyors were supplied with maps to follow whilst on site so as to minimise any variability in the routes walked. At Carsphairn the whole transect was completed, however, on some occasions some small sections had to be done in reverse order due to access restrictions, so transect sections were not necessarily walked in number order. At the Kendoon site transects were walked in number order.
- When a 'carcass' was found (NB:'feather spots' were also searched for and recorded), it was subsequently marked on the survey map, noting the grid reference and where possible species, age and sex of the bird on the accompanying recording form. The carcass was then photographed with a laminated ID card beside it (see Photo 1). The ID card contained details including date, time, location and ID number in order that photographs and notes could be cross referenced. The condition of the carcass was assessed based on the following criteria:
 - (I) Intact carcass, no definitive evidence of scavenging;
 - (S) Body intact but some minor scavenging evident;
 - (R) Remains, heavily scavenged/ torn apart, but some tissue, bones, flesh and feathers present;
 - (F) Obvious feather spot, abundant feathers but no flesh, or bone present;
 - (O) Only a very few feathers, or all traces of carcass removed; and
 - (N) No feathers remaining and all traces of carcass removed.
- 7 If the surveyor was not able to identify species based on inspection of the remains in the field the carcass/feathers were collected and sent to the MBEC office for later identification. If a notable species was found intact (for example goose, swan or raptor), it was proposed to send to a suitably experienced vet for necroscopy to establish, where possible, cause of death. Once a bird / feather spot had been accurately documented the area was marked using biodegradable non-toxic spray paint so that it was not inadvertently re-recorded in subsequent searches. During the survey if swans or geese were seen flying over the OHL and/or roosting/feeding in local fields an ad hoc record was made, including the location.

Figure D9.1 - Carcass transect route layout and recording map.



Photo D9.1 - Barn owl feathers recorded as evidence of a potential collision with the overhead line.



D.9.2.2 **Determining Total Number of Collisions**

- - search bias (i.e. detection ability of the surveyor);
- removal bias (i.e. proportion of dead birds removed by scavengers);
- habitat bias (i.e. the influence of habitat-type on search ability/ efficiency); and
- crippling bias (i.e. the proportion of collisions that are not immediately fatal and result in the bird flying/ moving outside of the search area).

D.9.2.2.1 Scavenger Removal / Carcass Decomposition Trial

- height to that found under the OHLs.



8 Flight activity surveys from strategically located vantage points were carried out to record the number of birds flying over the existing (and proposed) OHL throughout the duration of the carcass search study. This data gives not only the numbers of birds flying over the line, but an approximate height, direction, time and date, allowing flight activity data to be correlated to any carcass records. Details of the flight activity survey method are provided in Appendix 9.1.

1 There are various biases that can influence the accuracy of estimates of collision mortality through the under-counting of dead birds. The main biases can be summarised as follows (from APLIC 1994):

2 Scavenger and search accuracy values were not estimated specifically for this study; instead values previously estimated for a broadly similar lowland bird carcass OHL study were used. Ideally, such bias estimation studies should be carried out for each Study Area to give a more accurate picture of the variables concerning each particular location. Search and removal biases were estimated through scavenger removal and surveyor search accuracy trials carried out by MBEC at two high voltage OHL sites near South Alloa and Bannockburn in 2007. The resulting bias estimates from these trials were used in the equation given below to estimate the total number of collisions that were likely to have occurred for the two Study Areas established for the Blackcraig and Margree OHL EIA project.

3 The methods used in the South Alloa and Bannockburn trials are described below.

1 Individual scavenger study plots were established at Study Areas in Stirlingshire, at Bannockburn and South Alloa, in order to estimate rates of potential removal of carcasses by scavengers (e.g. buzzards, corvids and foxes) and rates of decomposition. Two plots were located in enclosed fields that were of similar vegetation type and

2 Fresh carcasses of two species representing large birds (e.g. geese and swans) and smaller species (e.g. grebes, ducks and thrushes) were obtained from a game butcher and used in scavenger removal trials. A total of five and eight pheasants (Phasianus colchicus) and five and eight red-legged partridges (Alectoris rufa) were distributed randomly in Bannockburn and South Alloa scavenger areas respectively.

3 The scavenger trial in Bannockburn commenced 19th January 2007 and continued for ten days. The scavenger trial in South Alloa commenced 3rd February 2007 and continued for seven days. The locations of the carcasses were recorded with handheld GPS and each carcass was given a unique number.



Start and finish points for transects

Pylon location and number

OHL route

Transect route - Surveyor 1

Transect route - Surveyor 2

m		0.75km		
	0.5km		1km	\bigcirc

Figure D9.2 - Carsphairn OHL Bird Carcass Survey Autumn/ Winter 2008



CAPITA LOVEJOY





- Pylon location and number
- Transect route Surveyor 1
- Route points Surveyor 1
- Transect route Surveyor 2
- Route points Surveyor 2
- OHL route



Figure D9.3 - Kendoon OHL Bird Carcass Survey Autumn/ Winter 2008

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- 4 Each carcass was checked every day for up to ten days. At the end of 10 days all remaining birds were removed. A 5-point descriptive scale of scavenging damage was used based on Johnson et al. 2003, see para. 2.1.6 above.
- 5 The mean proportion of carcasses not scavenged (i.e. $r_{\rm a}$) which was the length of time a carcass is expected to remain in each Study Area and be available for detection by the searchers, was determined. To be conservative, r_{re} was calculated as the mean proportion of carcasses that were visible per day for the first seven days. This proportion was used to increase the accuracy of the results from the OHL plots.

D.9.2.2.2 Surveyor Search Accuracy Trials

- 1 A surveyor search accuracy trial was carried out to determine a mean search accuracy rate (r_). A total of six trials were carried out using a 'low' number of birds (see below) and then repeated using a 'high' number of birds. Under each 500m section of OHL at each plot a random number of carcasses that represented a 'low' number of dead birds (i.e. between 1-2 pheasants and 1-2 partridges) were randomly scattered in the field at a distance not greater than 25m from the centre of the OHL on either side. The two surveyors then searched 'blind' (i.e. they had no prior knowledge of the location or number of any of the randomly placed carcasses which had been put out by a third field worker) using the same search technique that had been employed in the walked OHL search. The trail was then repeated using a 'high' number of dead birds (i.e. between 3-4 pheasants and 3-4 partridges). 'High' and 'low' numbers of birds were used to reflect the skewed distribution of carcasses under the OHLs.
- 2 A mean search accuracy rate (r_{a}) for pheasant-sized (i.e. large) and partridge-sized (small) birds was determined for each of the two search areas based on the proportion of birds an average field worker would expect to find if birds are randomly distributed in a plot.
- 3 To assess the distance from the OHL at which large sized bird carcasses (i.e. geese) are still visible to surveyors walking the overhead OHLs, a further search trial was undertaken in the South Alloa Study Area. Five repeated trials were carried out in which a random number of carcasses (which were represented by using greylag geese decoys with the plastic head and neck removed) were placed by a third surveyor at a distance of 25m, 50m or 75m perpendicular to the OHL. The length of OHL walked for each trial was 200m. The two surveyors then searched 'blind' (i.e. they had no prior knowledge of the location or number of any of the randomly placed carcasses which had been put out by a third field worker) using the search technique employed for the search accuracy trial (1). For each trail between 1-3 'carcasses' were set out.

D.9.2.2.3 **Crippling Bias**

1 Crippling bias is a potential cause of under-estimating collision rates. There is the potential for some birds to collide with wires, sustain injuries which are not immediately fatal, and fall/ die outside the search area (e.g. in this study beyond c. 50m either side of the OHL)1. Therefore they remain undetected in the weekly walkover under the

OHL. For example a Dutch study (Heijnis, 1980) found that wounded radio tagged birds were traced as far as 2km from the point of collision. Crippling bias can be estimated empirically from the number of birds observed colliding with the OHLs and falling within the search area. However in this study, and several similar studies undertaken by MBEC in the past 5 years, no birds were observed colliding with the OHL. Therefore an empirical value could not be estimated.

- 2 Reported estimates of the proportion of collisions with transmission lines that are not immediately fatal range from as high as 75% to 20%. For waterfowl an estimate of 75% for collisions that are not immediately fatal has been reported (Anderson 1978, Savereno et al. 1996). A Dutch study (Rensenn et al. 1975) estimated that 50% of collision victims were undetected due to crippling bias. Alonso and Alonso (1999) used the crippling bias estimates of two other studies to determine an average rate (i.e. 74%; the same figure was applied to small and large sized birds) in their study to assess an overhead transmission line in Spain. Whilst Bevenger (1995) estimated a crippling bias rate for capercaillie (Tetrao urogallus), black grouse (Tetrao tetrix) and willow ptarmigan (Lagopus lagopus) of between 20-30% (depending on season). Bevanger (1999) concluded that crippling bias estimates are highly variable and are dependent on factors such as bird size (e.g. difference in flight dynamics), meteorological factors, season and light conditions. It is noted in APLIC (1994) that using estimates from other studies may be inappropriate due to variability in bird size influencing flight dynamics such that smaller sized birds may have a higher crippling bias than larger birds. There is also the potential for different types of overhead line to influence crippling bias (e.g. high-tension high voltage lines in comparison low tension low voltage lines).
- 3 With respect to the crippling bias, this study aims to be conservative and whilst it was not possible to estimate a crippling bias rate due to the lack of observed bird collisions with the OHL, the crippling bias was estimated as 74%, which is one of the higher of the estimates reported in the literature. Therefore, it was assumed that the percentage of birds that were killed by collision and fell within the search area was 26%. Evidently, the estimate is subjective and must be regarded as a conservative approximation and, as this value of crippling bias greatly influence the collision risk estimate, a range of crippling bias estimates is also presented (using low: 20%; medium: 50% and high: 74%).
- 4 In order to improve the estimates of total collision mortality, a single modifying factor was derived from the scavenger removal (i.e. removal bias) and surveyor accuracy (i.e. search bias) trials. This factor is an estimate of recovery probability (derived from number of birds (not scavenged and the number of birds seen) and is applied to the unmodified raw count C to obtain a more accurate estimate of total collisions (TC).
- 5 Thus, the total collision estimate (TC) was calculated as follows:

 $TC = \frac{C_s}{r_{ns} \times r_a \times r_{bk}}$

Equation 1

- the literature).
- 2 Explanation of Equation 1:
- Let TC = estimate of total count;
- Let C_{m} = number of birds not scavenged;
- r = search accuracy.

Equation 2

Therefore:

Equation 3

Therefore:



1 Where TC is the total collision estimate; r_{r} is the proportion of birds not scavenged (estimated empirically), r_{i} is the search accuracy (estimated empirically), and r_{i} is the proportion of birds hitting the OHL and falling within search area (obtained from

Let C_{int} = number of birds remaining within search area

Let C_{i} = number of birds seen (i.e. raw count data), where

 r_{m} = proportion of birds not scavenged

 r_{μ} = proportion of birds hitting the OHL and falling within search area.

3 It is assumed that some birds are crippled by colliding with the OHL, but are able to move themselves to a location outwith the search area.

$$TC = \frac{C_{nc}}{r_{bk}}$$

1 It is assumed that some birds are scavenged before searching takes place.

$$C_{nc} = \frac{C_{ns}}{r_{ns}}$$

1 Furthermore, of the birds not scavenged, not all birds will be seen.

^{1 -} Crippling bias = 1 - the percentage of birds colliding that were killed and fell on the search area

Therefore:

Equation 4

2 Substituting for C_{pc} and C_{pc} in Equation 2 gives:

$$TC = \frac{C_s}{r_{ns} \times r_a \times r_{bk}}$$

3 This formula is therefore used to estimate the total count, allowing for scavenging, crippling bias and search accuracy.

D.9.3 Results

- 1 During the study period (Oct 2008 Jan 2009) no bird carcasses were found at either search area. Details of all notes made during the three month survey period are provided in Table 3 (at the end of this report).
- 2 Two feather spots were noted, belonging to a barn owl at the Carsphairn site and a woodcock at the Kendoon site (the barn owl feather spot is shown in Photo 1). Without a carcass to examine it was not possible to rule out other causes of death for both birds. For example, given the proximity of the barn owl feather spot to the A713 (within c. 10m of the road) it is possible that this bird was killed in collision with a moving vehicle, a cause of death that is considered to account for a relatively high proportion of barn owl annual mortality. Due to the small number of bird remains found and the potential for feather spots to be the result of alternative causes of death than collision with overhead lines it is questionable whether this data can be used to generate a useful estimate of TC. Taking this into consideration it was determined not to use this data in the assessment of collision risk for barn owl (as an identified important receptor within the EIA for the Blackcraig and Margree OHL project). However, the calculations of TC based on this single feather spot are provided for information only below.
- 3 The data appropriate to barn owl ($C_{r} = 1$) were applied to the TC equation. This involved using scavenger (r_c) and search accuracy (r_s) trial data for a smaller bird (red-legged partridge). The scavenger trials showed that a bird of approximately barn owl size would have roughly a 76.92% chance of being present up to 7 days following collision with a OHL. The search accuracy for such a bird would be approximately 80%. Finally three values were derived for the likelihood a bird would hit the line and fall within the survey area $(r_{\mu\nu})$, these were set at a high, medium and low level (80%, 50% and 26% respectively). The results can be found in Table 1. These results give the estimated number of birds to hit the lines within the search area and within the three month study period.

Table D9.1 - Collision rate c	alculation for the 3 month	study period for barn ow
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Collision Bias	Equation	Total Count (TC) (no. birds)
High	TC = 1/0.7692 × 0.8 × 0.26	6.25
Medium	$TC = 1/0.7692 \times 0.8 \times 0.5$	3.25
Low	TC = 1/0.7692 × 0.8 × 0.8	2.03

D.9.4 Conclusions

- 1 Due to the number of geese or swan carcasses found being zero, it is not possible to obtain an estimate of the number of collisions during the study period. Although it is entirely possible that no birds struck the lines, and hence none were found, there is a small possibility that a small number of birds did hit the OHLs fatally and were not found due to the bias that affect such searches as described and discussed above.
- 2 A tentative calculation and estimate of the number of collisions during the study period for barn is given for information only. This estimate has not been used in the assessment of collision risk for this species for the EIA of the proposed Blackcraig and Margree OHL project due to small sample size and uncertainty as to the actual cause of death for this bird.
- 3 Bird OHL collisions tend not be randomly distributed in time or space along an OHL. There appear to be a wide range of factors that influence OHL collision risk. Such as weather conditions, bird species, age and sex, time of year, OHL design, position of the OHL relative to important habitats and landscape features. Due to the large number of potential influencing variables and the non-random nature of the phenomenon of bird OHL collision it is difficult to obtain useful data during shortterm studies at a small number of locations. However, in this case a short-term study was considered a useful exercise as it did not require significant additional time and therefore cost to undertake due to the existing presence of surveyors in the area for baseline studies being completed for the EIA of the proposed OHL. This study also provided a useful indication that collision rates for the key species of interest for the EIA of the proposed OHL must be relatively low. There do not appear to be any sections of the existing OHL, which was subject to carcass searches and which for the most part follows very similar alignment to the proposed OHL, where there are likely to be frequent bird collisions (i.e. apparent collision 'hot spots'). Although the data form this study did not allow a quantitative estimate for current collision rates to be made it has provided useful background information for the assessment of the proposed OHL, particularly given that the OHL search locations were specifically selected for their proximity to larger watercourses and relatively high levels of bird flight activity, as noted during surveys for the proposed OHL.

D.9.5 References

- Alonso, J.C., Alonso, J.A. (1999). Collision of birds with overhead transmission lines in Spain. In: Ferrer M. Janss F.E. Birds and Power lines. Quercus Publishers. pp 57-82.
- Anderson, W. L. (1978). Waterfowl collisions with power lines at a coal-fired power plant. Wildlife Society Bulletin 6 (2):77-83.
- APLIC (Avian Power line Interaction Committee). (1994). Mitigating bird collisions with power lines: the state of the art in 1994. Edison Electric Institute, Washington, DC.
- Bevanger, K. (1995). Estimates and population consequences of tetraoid mortality caused by collision with high tension power lines in Norway. Journal of Applied Ecology 32: 745-753.

with power lines; a review of the methodology. In Ferrer M. Janss F.E. Birds and Power lines. Quercus Publishers.pp 29-56.

24(4):636-648.

Table D9.2 - Field notes from carcass searches under the two sections of OHL

Site Name	Date	Notes			
Carsphairn	17/10/2008	Pylon numbers 3-4 & 10-11 not walked as vegetation considered too 'dense'.			
Kendoon (Green)	17/10/2008	BO feather spot (photos taken) at 60278 / 87453 - proximity to the main road (A713) suggest potentially a road kill rather than as a result of collision with overhead wires? Flight feathers, reasonably intact, appeared to have been scavenged by fox. No other evidence / remains of the BO found, just the neat group of flight feathers.			
Carsphairn	24/10/2008	Nothing found.			
Carsphairn (Red)	24/10/2008	Nothing found.			
Kendoon (Green)	24/10/2008	BO primaries still at 60278 / 87453, 5m in from dyke on green line 8-9 (9 end)			
Kendoon (Red)	24/10/2008	Nothing found.			
Cairsphairn	26/10/2008	Not surveyed (Pylons 11-12). Nothing found.			
Carsphairn (Red)	26/10/2008	Single BZ primary found by pylon 13, molt loss. Single C. primary found by pylon 17, molt loss.			
Carsphairn (Green)	31/10/2008	Nothing found.			
Carsphairn (Red)	31/10/2008	Nothing found.			
Kendoon (Green)	31/10/2008	BO primaries still present.			
Kendoon (Red)	31/10/2008	Nothing found.			
Carsphairn (Red)	02/11/2008	Nothing found.			
Carsphairn	06/11/2008	Nothing found.			
Kendoon (Green)	06/11/2008	Nothing found.			
Kendoon (Red)	06/11/2008	Nothing found.			
Carsphairn (Green)	13/11/2008	Not surveyed due boggy wet ground (Pylon 3-4 & 10- 11). Nothing else found.			
Carsphairn (Red)	13/11/2008	Nothing found.			
Kendoon (Green)	13/11/2008	Nothing found.			
Kendoon (Red)	13/11/2008	Nothing found.			
Kendoon (Green)	27/11/2008	Nothing found.			
Kendoon (Red)	27/11/2008	Nothing found.			
Carsphairn (Red)	28/11/2008	WP plucking at GR 54582/95712, 229m. Most probably a GI kill.			
Carsphairn (Green)	04/12/2008	Pylons 3-4 & 10-11 not surveyed due boggy wet ground. Snow on ground. Light covering of snow on all the area surveyed. Although present on all the ground, only a light covering, 1-2cm deep, so any fresh carcasses (i.e. within the last week) would have been visible during the walkover.			
Carsphairn (Red)	04/12/2008	Nothing found.			
Kendoon (Green)	08/12/2008	Nothing found.			
Kendoon (Red)	08/12/2008	Nothing found.			

Bevanger K. (1999). Estimating bird mortality caused by collision and electrocution



• Savereno, A.J., Savereno, L.A., Boettcher, R. and Haig, S. (1996). Avian behaviour and mortality at power lines in coastal South Carolina. Wildlife Society Bulletin

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Site Name	Date	Notes
Carsphairn (Green)	11/12/2008	Nothing found.
Carsphairn (Red)	11/12/2008	Few scattered WP primaries from previous raptor kill. Note some feather quills eaten by voles, has been scavenged by fox.
Kendoon (Green)	11/12/2008	Nothing found.
Kendoon (Red)	11/12/2008	Nothing found.
Carsphairn	21/12/2008	Nothing found.
Kendoon (Red)	21/12/2008	Nothing found.
Carsphairn (Green)	29/12/2008	Nothing found.
Carsphairn (Red)	29/12/2008	Nothing found.
Kendoon (Green)	29/12/2008	Nothing found.
Kendoon (Red)	29/12/2008	Nothing found.
Carsphairn (Green)	05/01/2009	Woodcock feathers scattered over c. 4m ² area at NX 57112 92534. Large fox scat next to feathers.
Kendoon (Red)	06/01/2009	Nothing found.
Carsphairn (Red) 12/01/2009		Pylons 3-4 & 11-12 not surveyed due boggy wet ground. Nothing found.
Kendoon (Green)	12/01/2009	Nothing found.
Kendoon (Red)	12/01/2009	Nothing found.

D.10 Confidential Ornithological Appendix

1 This Appendix is held by Scottish Natural Heritage due to its confidentiality.





Archaeology & Cultural Heritage

Blackcraig and Margree Windfarms Grid Connection **Technical Appendices**



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E.0 Archaeology & Cultural Heritage

E.1 Gazetteer of Cultural Heritage Features within the Broad Corridor Study Areas

Site Number	Site	NMRS/SMR no.	Sensitivity (Status)	Easting	Northing	Source	Description
1	Smithston Bridge Upper		Low	24191	61262	Historic maps, field survey	A farmstead arranged around a courtyard is depicted on the Ordnance Survey 1st Edition 6" map (1 wing survives of the original buildings around the courtyard. Those on the north side appear to have
2	Smithston, Roman road	(NS41SW 12)	Negligible	24214	61237	Historic maps, field survey	A Roman road is depicted on the on the Ordnance Survey 1st Edition 6" map (1857), Sheet XL. Its ro Road a little further north (NMRS ref NS41SW 12), and there is no particular reason to believe this t Field survey did not identify any visible remains of a track or road at the previously recorded location
3	Polnessan, Houldsworth Colliery	NS41SW 6 7240	High (NSR Code V)	24242	61195	NMRS, SMR	Former coal mine associated with Dalmellington Ironworks. Production commenced 1901/05, cease
4	Polnessan, Farmstead and bridge	NS41SW 20 21313	Low	24175	61167	NMRS, SMR	Recorded by West of Scotland Archaeology Service in 1997 as a well-preserved farmstead of four bu construction. The site plan is as shown on the Ordnance Survey 1st Edition 6" map (1857), where na
5	Polnessan Bridge		Low	24191	61165	Historic maps	A road bridge is shown on the Ordnance Survey 1st Edition 6" map (1857), Sheet XL, where the A71
6	Dalmellington, Dalharco Mines	NS41SW 9 7243	High (NSR Code V)	24207	61148	NMRS, SMR	Former coal mine associated with Dalmellington Ironworks. Production commenced 1901/05, cease
7	Patna, 6-8 Ayr Road, Cottages	NS42SW 45	Low	24172	61067	NMRS	Cottages.
8	Patna, 4 Ayr Road, Inn	NS41SW 47 47186	Low	24175	61064	NMRS, SMR	Inn.
9	Patna Bridge, main street	HBNum 1090 NS41SW 44	Medium (B Listed)	24169	61063	NMRS	Described in the Statutory List supplementary information as an early 19th Century single segmentary parapet splayed at both ends, terminal piers with low pyramidal caps (concreted at E), and flat ashla
10	Jellieston, old coal pit		Negligible	24195	61020	Historic maps, field survey	An old coal pit is depicted on the Ordnance Survey 1st Edition 6" map (1857), Sheet XL, and on the a has been built at this location and no trace of the pit was visible.
11	Meikleholm, farmstead	51158	Low	24212	60918	SMR	The SMR contains a record of this farmstead based upon information supplied in 2004. The farmste Survey map of 1860, where it was depicted as comprising two roofed buildings, one of which was a depicted as unroofed on the 2nd Edition. Only three walls of the long building are shown on the cur fallen out of use at some point after the mid 19th century.
12	Low Kiers, tram road		Low	24316	60845	Historic maps	A tram road from Kiers Bridge to Burnfoot is depicted on the Ordnance Survey 1st Edition 6" map (1 Survey map. This feature now appears to be the access road to Low Kiers and High Kiers.
13	Low Kiers, limekilns		Low	24316	60845	Historic maps	Two limekilns are depicted on the Ordnance Survey 1st Edition 6" map (1857), but not on the 2nd E
14	Drumgrange Estate, Low Kiers	NS40NW 54	Low	24324	60830	NMRS	A farmstead named Burnfoot is depicted on the Ordnance Survey 1st Edition 6" map (1857) and the relating to alterations.
15	Waterside Bing, iron slag bing	SM 7544 NS40NW 15.03 17739	High (Scheduled Monument)	24388	60828	NMRS, SMR	The NMRS records that this monument comprises an impressive iron slag bing (650m NW-SE and 38 slag and reaches 30m high. It was formed as an essential by-product of the operation of the former This waste material helps chart the stages of technological development in smelting iron at Dalmelli the manufacture of common iron and the upper layer composed of waste from the production of he diversion of the River Doon and was regraded at the E and N in 1986/87.
16	River Doon, sheepfold	NS40NW 38 47401	Low	24431	60770	NMRS, SMR	Two unroofed structures lying approximately 110m apart, which are both annotated Sheep Ree, are sheet xlvi). Only the unroofed structure to the NE is shown on the 1979 edition of the OS 1:10000 n
17	River Doon farmstead	NS40NW 12 / 7141	High (NSR Code V)	24433	60760	NMRS, SMR, Historic maps, South West Scotland Project ES	The NMRS records that the remains of the farmstead of Nether Grimmet are situated 1.2km north- 3.7m within stone walls standing up to 1m in height with outshots on the north-north-east and east overall). A possible second building (9.3m by 3.4m within stone wall-footings) lies within one of the The SMR records that the site is shown on several old maps, the earliest dating to 1654. It is situate furrow cultivation. The extent of the field system is not defined accurately. The site has been prover the 17th century. A potential medieval origin can be suggested for the site. 'N. Grimmet' is annotated on Blaeu's map of 1654. A farmstead named 'Grimatt' comprising a single farmstead named as 'Grimmethill' is depicted on Armstrong's map (1775) and it is named 'Nether O Grimmet and comprising three unroofed buildings and one enclosure with a length of wall attached maps.
18	Rig and furrow		Low	24470	60740	South West Scotland Project ES	Field survey for the South West Scotland Project identified a substantial spread of generally well pre- fields just north of Grimmet Farm. The rigs measure 2m wide and 0.1-0.2m high, with 1m wide furn towards the Doon River and are truncated in several places by later field drains.
19	Clearance spread		Negligible	24447	60732	South West Scotland Project ES	Field survey for the South west Scotland Project identified a roughly rectangular spread of stone and pasture field. The stone spread is aligned north-west / south-east and measures 15m long, 6m wide
20	Nether Grimmet, sheepfold		Low	24432	60727	Historic maps	A sheepfold is depicted on the Ordnance Survey 1st Edition 6" map (1857).



1857), Sheet XL. Field survey recorded that it appears that only one ve been replaced with modern buildings.

oute is not that later recorded as the alleged Wiston to Patna Roman to be the route of a Roman Road.

on of a 'Roman road' shown on the Ordnance Survey 1st Edition map.

ed 1965.

uildings, a bridge and enclosures, together showing several phases of amed 'Polnessan'.

13 is now carried over the Polnessan Burn.

ed 1965.

al span bridge, with set back ashlar voussoirs rising from plinth, a low lar coping.

2nd Edition map. Field survey recorded that a modern housing estate

ead identified as Meikleholm was shown on the 1st Edition Ordnance a long building, with two associated enclosures. Both buildings are rrent Ordnance Survey Landline map, indicating that the farmstead has

1857). The tram road is not depicted on the 2nnd Edition Ordnance

Edition map.

2nd Edition map. The NMRS holds architectural records from 1836

80m E-W) which contains an estimated 1,470,000 tonnes of ironstone r Dalmellington Ironworks.

lington from 1850 to 1920; the lower layer containing slag material from naematite iron. The bing was extended to the W in 1915 following the

e depicted on the 1st edition of the OS 6-inch map (Ayrshire 1860, map.

north-east of Grimmet and comprise a rectangular building (10m by st-south-east), at least two enclosures, and a kiln-barn (11.5m by 5.1m e enclosures.

ed on a track between Kiers Castle and Grimmet, in an area of rig and n to be of early date, but occupation may date back even further than

le building with six enclosures is depicted on Roy's map (1747-55). A Grimmat' on Thomson's map (1828). A farmstead annotated Nether d is depicted on the Ordnance Survey 1st (1860) and 2nd (1897) Edition

eserved rig and furrow cultivation remains surviving in a number of rows. Several different rig alignments are noted running down slope

Id rock on the north side of a farm track and at the edge of a rough e and 1.2m high.



Site Number	Site	NMRS/SMR no.	Sensitivity (Status)	Easting	Northing	Source	Description
21	Whinstone quarry		Negligible	24459	60703	Historic maps, field survey, South West Scotland Project ES	A whinstone quarry is depicted on the Ordnance Survey 1st Edition 6" map (1860). Field survey for the S situated to the west of the current farm track. The quarry is circular in plan and cut into an east facing h quarry is covered in turf and no rock faces are visible. Occasional loose stone and boulders are piled up a north-east than depicted on the Ordnance Survey 1st Edition map.
22	Whinstone quarry		Negligible	24457	60696	Historic maps, field survey, South West Scotland Project ES	A whinstone quarry is depicted on the Ordnance Survey 1st Edition 6" map (1860). Field survey for the S the west of the current farm track. The quarry is semi-circular in plan and cut into a south-east facing hil small section of rock face is visible in the side of the quarry although no worked faces were observed. O quarry; much of these stones appear to have been recently placed there to create a animal feeding stati the Ordnance Survey 1st Edition map.
23	Clearance spread		Negligible	24499	60692	South West Scotland Project ES	Field survey for the South West Scotland Project recorded a spread of stones at the top of a slope, near area c.10m by c.4m and up to c.1m high. The stones appear to have been dumped over a natural slope.
24	Grimmet farmstead		Low	24472	60639	Historic maps, aerial photographs, South West Scotland Project ES	A large house within parkland, annotated 'Grimmet', is depicted on Armstrong's map of 1775. The farms Thomson's map of 1828. A large farmstead comprising a roofed C-plan building and three roofed rectand (1860). An additional roofed building to the north is also depicted on the 2nd Edition map (1897). An oc between 1947 and 2000. Field survey for the South West Scotland Project identified a large working farmstead comprising the lar- roofed building to the north appears to have been modified over time from a house to farm outbuilding
25	Auchenroy Farmsteading	NS40NE 79	Low	24517	60614	NMRS, historic maps, South West Scotland Project ES	The NMRS entry related to a Sales Brochure dating to 1919. Auchenroy farmstead comprising a single C- Ordnance Survey 1st Edition map (1860). The C-plan building, six enclosures and a further roofed buildir map (1897).
26	Auchenroy building	NS40NE 43 47416	Negligible	24550	60616	NMRS, SMR, South West Scotland Project ES, field survey	The NMRS records that one unroofed building is depicted on the Ordnance Survey 1st Edition map (1860 No upstanding remains of the building were visible during field survey.
27	Auchenroy enclosure	NS40NE 42 / 47417	Low	24564	60616	NMRS, SMR, South West Scotland Project ES, field survey	The NMRS records that one unroofed building attached to a field wall is depicted on the Ordnance Surve of the OS 1:10000 map. The remains of a rectangular dry-stone enclosure, 11m long by 9m wide and 0.3m high, were visible atta field wall has been destroyed during the construction of an existing N-Route tower situated immediately at NS 45608 06155 c. 40m east of the enclosure abutting the south side of the field wall.
28	Old Quarry (freestone)		Negligible	24545	60595	Historic maps, South West Scotland Project ES	An 'old freestone quarry' is depicted on the Ordnance Survey 1st Edition map (1860).
29	Doon Bridge on Straiton Road	HB Num 1113 NS40NE 70 47146	Medium (B Listed)	24619	60598	NMRS, South West Scotland Project ES	Hump-backed, single round-arch bridge carrying the B741 over the River Doon. Located immediately ou
30	Craigengillan		High (GDL)	24719	60374	Inventory, South West Scotland Project ES	The Inventory describes Craigengillan GDL as a rare example of a complete and unfragmented estate lan family for almost 400 years. Much of the designed landscape visible today dates from the latter half of the for the A listed Craigengillan House, and incorporate formal gardens, a range of gardens and garden buil archaeological remains. There are panoramic views of the surrounding hills from Craigengillan House an The Inventory assesses the GDL as having outstanding value in all assessment categories (work of art, hi archaeological). The outstanding value of the GDL as a work of art results from the way in which its design historical value reflects the continuity of ownership and stewardship by the McAdam family, the present various distinguished visitors. The 18th century A listed house, together with the Stable Block, Home Fan outstanding architectural value to the GDL. Its archaeological value is provided by the Dalnean Hill scheor within the GDL.
31	Bogton Loch curling pond	51299	Negligible	24690	60563	SMR	The SMR records that the Ordanance Survey 1st edition 6" map shows a curling pond at this location. Th may still be visible in the field.
32	Loch Doon Gunnery School, railway	NS40NE 78.1 47821	Medium	24729	60547	NMRS, field survey	A railway, built to assist in the construction of the First World War Loch Doon Gunnery School is situated course from the bridge over the Muck Water and approximates that of the driveway to Craigengillan Ho it diverges and continues S. The railway was built to standard gauge and ran from about 200m NW of Dalmellington Station via Bogt completed during April 1917. It was the proposal to extend this railway by blasting a tunnel from the rai Air Ministry examining the whole concept of the gunnery school and the halting of all work on this projective field survey did not identify any visible remains of the railway.

South West Scotland Project identified a small whinstone quarry nill slope. The quarry measures 10m in diameter and 3m deep. The at the base of the quarry. The quarry was located c.50m further

South West Scotland Project identified a small quarry situated to ill slope. The quarry measures 20m long, 10m wide and 3m deep. A Occasional loose stone and boulders are present at the base of the ion. The quarry was located c.10m further south than depicted on

the edge of a field. The spread is irregular in plan and covers and

stead of 'Grimmat' is depicted on Ainslie's map of 1821 and gular buildings is depicted on the Ordnance Survey 1st Edition map ccupied farm complex is visible on aerial photographs dating to

rge C-plan building with attached modern barns and sheds. The

-plan roofed building and five enclosures is depicted on the ng to the north are depicted on the Ordnance Survey 2nd Edition

i0), but it is not shown on the 1978 edition of the OS 1:10000 map.

ey 1st Edition map (1860), but it is not shown on the 1978 edition

ached to the north side of the remains of a field wall. Part of the y opposite the enclosure. A possible clearance cairn was also visible

utside Craigengillan GDL.

ndscape, with 16th century origins and held by the McAdam the 18th century. The grounds and gardens provide the setting Idings, extensive policy woodland, a rocky gorge and industrial and from different parts of the GDL.

istorical, horticultural, architectural, scenic, nature conservation, ign blends the GDL into the wider landscape. Its outstanding ice of historic and archaeological features, and associations with irm, and garden buildings including an Ice House provide an duled monument (SM4390) and 22 other archaeological sites

his may have been completely removed, but traces of this feature

d to the W and S of Dalmellington. The railway takes a southerly puse to a point about NS 4755 0480 (on map sheet NS40SE), where

ton airfield to a point near Dalfarson NS 4792 0262. It was ilhead at Dalfarson to the northern end of the loch that led to the ect.
Site Number	Site	NMRS/SMR no.	Sensitivity (Status)	Easting	Northing	Source	Description
33	Loch Doon Gunnery School, Bogton Loch Airfield	NS40NE 78 47872	Medium	24700	60600	NMRS	This First World War airfield which formed part of the Loch Doon Gunnery School, was built at this I 489 986) prevented its construction there. Seaplane hangars had also been built at NX 4820 9935 (t was chosen after aerial reconnaissance by Colonel Strange during 1916. Nothing can now be seen o Also built at the airfield were workshops, stores and 18 brick-built barrack blocks capable of housing West of Scotland Archaeology Service reported in 1999 that a series of concrete footings were visib which formerly had several structures standing on it. The locations of these features are not cited in
34	Craigengillan Bridge	HB Num 1087 NS40NE 67 47149	High (B Listed, within GDL)	24741	60592	NMRS, SMR, South West Scotland Project ES	Described in the Statutory List, supplementary information, as a low flat single-arch bridge spanning over the Muck Water. Located within Craigengillan GDL.
35	Lodge at entrance to Craigengillan	HB Num 1086 NS40NE 66 47150	High (B Listed, within GDL)	24743	60593	NMRS, SMR, South West Scotland Project ES	Described in the Statutory List, supplementary information, as a 1-storey lodge building located alor the Craigengillan policies in the late 18th or early 19th century. Located within Craigengillan GDL.
36	Dalmellington, Bogton colliery	NS40NE 38 22049	Low	24753	60575	NMRS, SMR	Surface mine, commenced production in 1931 and abandoned in 1954. There were no bath building
37	Dalmellington, Waterside Street	NS40NE 29 12477 & event 480	Unknown	24788	60574	NMRS, SMR	The NMRS and SMR record that an archaeological excavation took place at this location, but no deta
38	Gatefauldhead, enclosure	NS40NE 111	Unknown	24791	60557	NMRS	The remains of a sub-circular enclosure, measuring about 20m in diameter, have been record on ob Dalmellington village.
39	Dalmellington, New Street	NS40NE 40 Ev722	Negligible	24810	60570	NMRS, SMR	A watching brief was carried out c. 1998 on trenches excavated for services in an area of Dalmelling archaeology of this or any earlier period was recorded. The excavated areas revealed a combination profile.
40	Dalmellington		Medium; Conservation Area	24803	60586	South West Scotland Project ES	Well-preserved historic townscape of predominantly 18th / 19th century residential, commercial, e located beside the Muck Water. The Conservation Area contains several Listed Buildings dispersed a
41	Dalmellington, Roman road (alleged)		Medium	24859 24899	60575 60349	SMR, historic maps	A Roman road is depicted on the Ordnance Survey 1st Edition (1857). The road is depicted as the 'tr route of a track is shown on current Ordnance Survey maps. The northern end of the track, through taken in1948. The road appears to be continuation of that depicted further south at Salt Knowe (87
42	Gatefauldhead, building		Low	24810	60552	Historic maps, field survey	A building is depicted on Ordnance Survey 1st Edition (1857) and subsequent editions. A large two-st field survey. The outside has been harled and no building details are visible.
43	Bellsbank	NS40NE 84	Low	24812	60523	NMRS, field survey	A farmstead is depicted on the 1st and 2nd Edition Ordnance Survey 6" maps. A one storey building recorded during the field survey. The outside of the building was harled.
44	Pennyarthur, whinstone quarry		Negligible	24853	60495	Historic maps	An old whinstone quarry is depicted on the Ordnance Survey 1st Edition map (1857), sheet XLVI. No
45	Stone setting		Negligible	25233	60856	Kyle Wind Farm ES, South West Scotland Project ES	Field survey relating to the proposed Kyle Wind Farm identified a curvilinear mound comprising par of this notch is a setting of apparently artificially set boulders comprising two alignments of boulder circular setting radiating from the stone setting.
46	Beoch cairn	NS50NW 1 7989	High (NSR Code V)	25222	60844 (SMR) 608494 corrected	NMRS, SMR, Kyle Wind Farm ES, South West Scotland Project	The NMRS records that in 1954 the remains of this prominent kerbed cairn were situated in moorla excavated in 1937, revealing at least three cists of which a double one was still exposed in 1954. Par urns found as well as a ring-marked stone. In line with two stones in the cairn, two more stones pro late 1970s forestry ploughing displaced a number of stones, however the double cist and the genera. Field survey for the Kyle Wind Farm EIA identified the remains as an oval stone setting measuring c. evident in the south-east side. The location of the cairn is marked by a tree in the NE side. Field survey for the South West Scotland Project identified the kerb cairn as described in the Kyle W visible as a stone lined depression. A few kerb-stones remain defining the outer edge of the cairn.
47	Quarry		Negligible	25228	60849	Maps, South West Scotland Project ES	A gravel pit is depicted on the Ordnance Survey 1st Edition map (1860). Field survey for the South V by c.11m and c.2m deep. The quarry is roughly oval in plan and is no longer in use.
48	Flush farmstead	NS50NW 11 47360	Low	25234	60843	NMRS; SMR; aerial photographs; Kyle Wind Farm ES; South West Scotland Project ES	The NMRS records that a farmstead annotated 'Flush (Ruin)' and comprising one unroofed building map (1860). A large rectangular enclosure is depicted on the Ordnance Survey 2nd Edition map (188 survey for the Kyle Wind Farm identified a rectangular enclosure at this location. Field survey for the South West Scotland Project recorded a large rectangular enclosure which meas 1m high. An entrance c.2m wide was identified in the north wall.



location after the failure to drain an area on the W side of the loch (NX the site is now submerged under the reservoir). This alternative site of this airfield on the post-war vertical air photorgaphs taken by the RAF. If around 500 men and two centrally heated hangars. Dole, the largest 100m by 20m and standing on a brick plinth 1.2m high, n the SMR record

g with railed parapet, carrying the main drive to Craigengillan House

ng main approach to Craigengillan House. This gatehouse was built into

ngs associated with this colliery.

ails are provided.

plique aerial photographs (RCAHMSAP 2002) on a knoll to the S of

gton known to be the centre of the medieval burgh. No surviving n of recently dumped make-up deposits overlying a natural alluvial

ecclesiastical and civic buildings that form the core of Dalmellington, around the designated area.

rack of old road' on the Ordnance Survey 2nd Edition map (1897). No h Dalmellington Town Common, may be visible on aerial photographs 7).

-storey building, possible early 19th century, was recorded during the

g, date stone 1796, and associated steading type outbuildings were

ot shown on the 2nd Edition map. Not visible on aerial photographs.

rt of a natural bedrock outcrop with a central notch. 12m to the south rs 2m apart. There are further boulders detected in a roughly semi-

and. Measuring 11.0m in diameter and 0.5m maximum height, it was irt of a beaker of indeterminate type, and fragments of three cinerary otrude through the turf between the cairn and the B741 road. In the ral outline of the kerb could still be identified in September 1980. .9m north-east / south-west and 4m transversely. An open cist was

Vind Farm EIA. It lies at the north edge of the forest and the cist is still

West Scotland Project recorded a large quarry scoop measuring c.15m

; and two enclosures is depicted on the Ordnance Survey 1st Edition 197), and is visible on aerial photographs dating to 1948 and 2000. Field

sures c.55m by c.60m defined by drystone walls c.0.6m wide and up to



Site Number	Site	NMRS/SMR no.	Sensitivity (Status)	Easting	Northing	Source	Description
49	Linn Water, sheepfold		Negligible	25228	60785	Historic maps, Kyle Wind Farm ES, South West Scotland Project ES	A small circular enclosure on north bank of a crook in Linn Water is depicted on the Ordnance Survey 1s identified a circular sheepfold c.10m in diameter and much disturbed by forestry ploughing. The South V previously described.
50	Ashbeugh Glen, sheepfold		Low	25133	60756	Historic maps, Kyle Wind Farm ES, South West Scotland Project ES	A small circular enclosure is depicted on the east bank of Cummock Burn close to its confluence with the Field survey for the Kyle Wind Farm EIA located a well preserved circular sheepfold c.20m in diameter w quarter and a 6m long radial arm aligned north-west attached to the outside of the enclosure.
51	Parrie Burn, shieling huts and dyke	NS40NE 32 14172	Low	24945	60553	NMRS, SMR	Shieling huts are recorded in the NMRS. These huts are not depicted on the 1st Edition Ordnance Survey
52	Kirn Bridge	NS40NE 110	Low	24881	60522	NMRS	A bridge is depicted from the 1st Edition Ordnance Survey map onwards. Field survey recorded a masonry bridge at this location. The bridge is still in use to carry the A713 road of
53	Craig, farmstead		Low	24901	60530	Historic maps, Kyle Wind Farm EIA	A settlement, named as Craig, is depicted on Armstrong's map.
54	Linn Water, sheep pen		Low	25251	60764	Kyle Wind Farm ES	Above the east bank of the Linn Water field survey for the Kyle Wind Farm EIA identified the remains of north-west corner. The structure measures 3.5m square internally between walls roughly built of boulde
55	Snabb, cairn		Low	24942	60487	Kyle Wind Farm ES	A cairn c. 3m in diameter and 0.6m high was located during field survey for the Kyle Wind Farm EIA.
56	Mossdale, enclosure, field system, hollow-way	NS40SE 22 & 23 14176-7	Low	24929	60461	NMRS, SMR, Kyle Wind Farm ES, field survey	The NMRS records a sub-rectangular enclosure and associated field-system, (details in Strathclyde Regio Armstrong's map. APs show a series of adjoining curvilinear fields on the SW slopes of Snabb hill. Field survey for the Kyle Wind Farm EIA located a complex of turf and stone field banks extending aroun and forming at least five separate fields. A substantial linear dyke 1m high on the upslope side and 1.5m northwards from the NW corner of a modern field wall from NS 4916 0462 to 4912 0475 with a break 6i enclosure 20m N-S by 10m wide internally, defined by turf and stone banks 2m wide and 0.5-1m high. 5 aligned N-S, which appear to be house stances, with traces of stone alignments in heavy bracken cover. measures 9m N-S by 5m. The smaller, which adjoins to the S, at NS 4903 0491 measures 6m N-S by 4m. During the present field survey, a possible hollow way was recorded midway up the hillside (249130 604 3m in width and up to 1m in depth. The faint traces of possible rig and furrow cultivation, aligned north northeast of Mossdale Farm in an area of improved pasture.
57	Corbie Craig, sheep rees		Low	25003	60435	Historic maps, field survey	Sheep rees are depicted on the OS 1st Edition (1850). One large, single compartment sheep ree was recovered wall was 0.7m in height. A section of bank was visible 15m to the east of the site. The bank measured 2r
58	Brown Hill, hollow way / head dyke / rig and furrow		Low	25009 25008	60419 60426	Field Survey	A single large bank with a depression running along its upslope side may be a hollow way or head dyke. the other side and out of the Study Area. The bank measures 2m in width and is approximately 0.5m in was recorded to the west of the bank on the north side of the burn.
59	Mossdale, building	NS40SE 29 / 39 47408	Low	24922	60411	NMRS, SMR	One unroofed building attached to a wall is depicted on the Ordnance Survey 1st edition map, but it is n
60	Craig House, sheepfold	NS50SW 8 47275	Low	25059	60279	NMRS, SMR	The Ordnance Survey Name Book of 1859 states that 'A steep portion of the SW of Glenmuck Craig adjace tradition says that there was once a house on it for which reason it is called 'Craig House' but there is not amongst the rocks used as a stall for sheltering sheep'. An enclosure is depicted on the 1st edition of the OS 6-inch map (Ayrshire 1859, sheet LIII) and on the 1
61	Peat Burn, enclosure	NS50SW 6 47277	Low	25182	60282	NMRS, SMR	A sub-divided enclosure of unequal compartments is depicted on the Ordnance Survey 1st Edition map
62	Peat Burn, enclosure	NS50SW 7 47276	Low	25180	60253	NMRS, SMR	An enclosure of is depicted on the Ordnance Survey 1st Edition map (1859). It is shown with one compa
63	Craig Bridge		Low	25063	60248	Historic maps	A bridge is depicted from the Ordnance Survey 1st Edition map (1856) onwards, as carrying the road (no
64	Glenmuck House	NS50SW 10	Low	25142	60213	NMRS, field survey	A building is depicted at this location on Roy's map (1747-55). One roofed building, a sheep ree, one large and 2nd Editions of the Ordnance Survey map. On aerial photographs from 1948. Field survey recorded
65	Glenmuck Bridge		Low	25111	60214	Historic maps	A bridge is depicted from the Ordnance Survey 1st Edition map (1856) onwards, as carrying the road (no
66	Mossdale, sheepfold		Low	24927	60386	Historic maps	A sheepfold is depicted on the Ordnance Survey 1st Edition map (1856) on land that is now under conife
67	Polnaskie Bridge		Low	25157	60063	Historic maps	A bridge is depicted from the Ordnance Survey 1st Edition map (1856) onwards, as carrying the road (no
68	Meadowhead, quarry pit		Negligible	25176	60038	Field Survey	A large quarry pit was recorded at this location. It measured 30m by 25m and 5m deep.
69	Glenmuck, sheepfold		Low	25176	60195	Historic maps	A sheepfold is depicted on the Ordnance Survey 1st Edition map (1856) on land that is now under conife
70	Small Burn Bridge		Negligible	25168	60028	Historic maps, field survey	A bridge is depicted from the Ordnance Survey 1st Edition map (1850) onwards, as carrying the road (no bridge has been replaced by a culvert at this location.

st Edition map (1860). Field survey for the Kyle Wind Farm West Scotland Project field survey identified a circular sheepfold as

e Bubbly Burn on the Ordnance Survey 1st Edition map (1860). vithin 1m high. There is a possible entrance in the north-east

y map and are not visible on aerial photographs.

over the Muck Water.

a square structure with a wall projecting north-west from the ers and 0.6m wide by 0.5m high.

onal Council SMR). The site is shown and named as Mossdale on

nd the SW slopes of Snabb hill from NS 4918 0462 to 4962 0444 m high on the downslope and 3-4m wide was found running im wide at NS 4913 0469. At NS 4903 0490 there is a rectangular 50m to the N of the enclosure are two adjoining revetted platforms The largest of the platforms is at the N end, at NS 4903 0490 and

4699 to 249105 604763). It measured approximately 50m in length, hwest to southeast, was visible running down a slope c. 150m

corded during the field survey. It measured 25m by 15m and the m wide, 50m long and 0.5m in height.

The feature leads to a small ford across a burn and continues on height. The hollow is also 2m wide. A small area of rig and furrow

not shown on the 1978 edition 1:10,000 map.

icent to the road, partly rocky and partly grassy but very steep, o vestige of the house on it apparent, there is a small enclosure

1978 edition of the OS 1:10000 map.

(1859), and on the 1978 1:10,000 edition map.

artment on the 1978 1:10,000 edition map.

ow A713) over the Craig Burn.

ge enclosure and eight small enclosures are depicted on the 1st a two storey building with modern outbuildings surrounding it.

ow A713) over a burn.

er plantation.

ow A713) over the Polnaskie Burn.

er plantation.

ow A713) over the Small Burn. Field survey recorded that the

Site Number	Site	NMRS/SMR no.	Sensitivity (Status)	Easting	Northing	Source	Description			
71	Meadowhead, gravel pit		Negligible	25176	59991	Historic maps	A gravel pit is depicted on the Ordnance Survey 1st Edition map (1850).			
72	Water of Deugh		Medium (ASA)	25300	56000	SMR	An Archaeologically Sensitive Area as defined by Dumfries and Galloway Council.			
73	Meadowhead, gravel pit		Negligible	25180	59950	Historic maps, field Survey	A gravel pit is depicted on the OS 1st Edition map (1850). Three conjoined pits were recorded durin up to 1m deep.			
74	Meadowhead, quarry		Negligible	25190	59950	Historic maps, field survey	A quarry is depicted on the OS 1st Edition map (1850). A large quarry was recorded at this location 3m deep. It is filled with corrugated iron sheets and old household appliances.			
75	Meadowhead	NX59NW 41	Low	25188	59940	NMRS	Field survey recorded a small two storey house with attached outbuilding. The outside of the buildi			
76	Meadowhead, sheep ree		Low	25220	59930	Historic maps	A sheep ree is depicted on the OS 1st Edition map (1850). This site was not found during the field survey.			
77	Lamford, natural feature	NX59NW 1 MDG2439	Negligible	25210	59918	NMRS, SMR	A natural esker, now partly quarried away, which was thought in the 19th century to be an artificial			
78	Meadowhead, quarry pit		Negligible	25212	59920	Field survey	A large quarry pit was recorded at this location during the field survey. It measured 40m by 30m an			
79	Meadowhead, rig and furrow		Low	25212	599153	Field survey	Rig and furrow cultivation covering 40m by 30m. Individual rigs measure 1.2m wide, the furrows ar (78).			
80	Lamford, byre, farmhouse	NX59NW 39 MDG17318	Low	25208	59910	NMRS, field survey	The NMRS records a byre and farmhouse. Field survey recorded a harled two storey building with a the rear.			
81	Lamford, Toll Bridge		Low	25210	59913	Historic maps, field survey	A toll bridge is depicted on the OS 1st Edition (1850). Field survey recorded a small masonry built b			
82	Lamford, quarries and sheep ree		Negligible	25210	59880	Historic maps, field survey	Two quarries and a sheep ree are depicted the Ordnance Survey 1st Edition map (1850). A quarry w located. The quarry measured 20m by 10m and 2m in depth.			
83	Lamford, sheep ree		Negligible	25228	59880	Historic maps	A sheep ree is depicted on the OS 1st Edition (1850). No remains of this site were visible de			
84	Lamford Mote, natural feature	NX59NW 3 MDG3448	Negligible	25222	59880	NMRS, SMR	An entirely natural feature once thought to be a manmade mound.			
85	Lamford Bridge		Low	25209	59875	Historic maps, field survey	A bridge is depicted from the Ordnance Survey 1st Edition map (1856) onwards, as carrying a minor still standing.			
86	Lamford Bridge, old road		Low	25206	59862	Field survey	A road is depicted on the Ordnance Survey 1st Edition map (1856). Field survey recorded that the n road between Lamford Bridge (85) and the current main road is used as a farm track. The southern to trace its route.			
87	Salt Knowe, Road	NX59NW 16	Medium	24980 25295	50190 59735	NMRS, SMR, field survey	The NMRS records the route of the 17th/18th century Old Galloway road. It follows the same route 1st Edition map (1856) as running from Bryan's Heights to the north and joining with the existing m Field survey did not identify any visible remains of the road at Drumjohn, where the feature is cross			
88	Lamford, cairn	NX59NW 7 MDG3452	Low	25190	59850	NMRS	The Ordnance Survey Name Book (1849) recorded 'A considerable heap of stones having the appear farm, which lie 300m SW of Lamford Mote (site 84). There is no local knowledge of this cairn. In 197 local knowledge of a cairn in this vicinity.			
89	Lamford, gravel pit		Negligible	25207	59858	Historic maps	A gravel pit is depicted on the Ordnance Survey 1st Edition map (1850). No remains of this site were			
90	Lamford, gravel pit		Negligible	25226	59812	Historic maps	A gravel pit is depicted on the Ordnance Survey 1st Edition map (1850). No remains of this site were			
91	Crooked Rig, gravel pit		Negligible	25236	59788	Historic maps	A gravel pit is depicted on the Ordnance Survey 1st Edition map (1850).			
92	Crooked Rig, gravel pit		Negligible	25201	59834	Historic maps	A gravel pit is depicted on the Ordnance Survey 1st Edition map (1850).			
93	Horse Mote, natural feature	NX59NW 5 MDG3450	Negligible	25288	59822	NMS, SMR	An entirely natural feature once thought to be a manmade mound.			
94	Drumjohn, shepherds house	NX59NW 42	Low	25246	59767	NMRS	Three roofed buildings and three enclosures are depicted on the 1st Edition of the Ordnance Survey the 2nd Edition map.			
95	Lamford Hill, sheep ree		Low	25321	59768	Historic maps	A sheep ree is depicted on the OS 1st Edition (1850). On current OS map.			
96	Deugh Tunnel, Galloway hydro electric scheme	NX59NW 46 MDG22098	Low	25254	59751	NMRS, SMR	The pre-existing Loch Doon was dammed and the water level raised to form a major element of sta			
97	Drumjohn Knowe, farmstead, field system	NX59NW 18 MDG15537	Low	25245	59742	NMRS, SMR	A farmstead, comprising two unroofed buildings annotated 'Ruins' and a field system are depicted on the 1977 1:10,000 edition.			
98	Drumjohn, gravel pits		Negligible	25281	59750	Historic maps; field survey	Five gravel pits are depicted beside the old road (87) on the Ordnance Survey 1st Edition map (1850 survey; they measured 8m by 4m approximately.			
99	Brockloch Craig, gravel pit		Negligible	25333	59697	Historic maps	A gravel pit is depicted on the OS 1st Edition (1850). No remains of this site were visible during the			
100	Brockloch Craig, old fences		Low	25370	59695	Historic maps	An old fence and sheepfold are depicted on the OS 1st Edition map (1853), Kirkcudbrightshire sheet now covers much of this area.			
101	Brockloch, sheep ree		Low	25345	59655	Historic maps	A rectangular, six-compartment, sheep ree is depicted on the Ordnance Survey 1st Edition map (18)			



ng field survey at this location. In total they measured 35m by 10m and

during the field survey. The quarry measures 25m by 25m and is up to

ing was harled so no details were visible.

I mound.

nd up to 4m deep.

re 1m wide and 0.1m deep. The area of rig and furrow is cut by a quarry

a modern extension to the rear. A large modern barn is also situated to

ridge beside an inhabited farmstead (80).

was recorded during the field survey but the sheep ree could not be

e field survey.

r road over the Lamford Burn. Field survey recorded that the bridge is

majority of the road is still used as a minor road. A short section of the n end beside the main road has been ploughed up but it is still possible

e as an alleged Roman Road which is depicted on the Ordnance Survey nain road at Drumjohn to the south.

sed by a proposed temporary access track.

arance of an ancient cairn' lies about 100m west of the ruins of Lamford 76 Ordnance Survey surveyors found no trace of this feature and no

re visible during the field survey.

re visible during the field survey.

y map. Only one roofed building and three enclosures are depicted on

age II of the Galloway Hydro-electric Scheme.

on the Ordnance Survey 1st edition map (1853), but they are not shown

0). Two quarry pits were recorded at this location during the field

field survey, possibly due to construction of an access track for a forest. et 5. The sheepfold is visible on aerial photographs from 1950. Plantation

53), Kirkcudbrightshire, sheet 5. On current Ordnance Survey map.



Site Number	Site	NMRS/SMR no.	Sensitivity (Status)	Easting	Northing	Source	Description
125	Lagwine, sheep ree		Low	25610	59403	Historic maps	A sheep ree is depicted on the Ordnance Survey 1st Edition map (1850-51) and 2nd Edition map. Th recorded a circular sheep ree at this location. It measured 18m in diameter and the wall stands to a
126	Lagwine Castle	NX59SE 19 MDG3465	Unknown	25580	59390	NMRS, SMR	The reputed site of the castle of Banck or Lagwine, said to have been destroyed by fire, describes th external appearance is a modernised 18/19th century cottage, and the outhouses and grounds show
127	Lagwyne, farmstead	NX59SE 30 MDG13633	Low	25581	59391	NMRS, SMR	A farmstead, comprising one roofed, one partially roofed, one unroofed building annotated 'Ruin', a Survey 6-inch map (Kirkcudbrightshire 1853, sheet 5). One roofed building and one enclosure are sh
128	Holm of Lagwyne	NX59SE 59 MDG17321	Low	25569	59391	NMRS, SMR	The NMRS contains architectural details of this property.
129	Carsphairn, field bank		Negligible	25621 25629	59376 59374	Field Survey	A field bank measuring approximately 100m in length, 1.5m in width and 0.3m in height was record
130	Carsphairn, field bank		Negligible	25635 25634	59357 59359	Field Survey	A field bank measuring approximately 25m in length, 1.5m wide and 0.2m in height was recorded d
131	Carsphairn Parish Church	HBNum 3677 NX59SE 63.00 MDG13025	Medium (C(s) Listed but part of B Group)	25625	59316	NMRS, SMR	Described in the Statutory List, supplementary information, as a rectangular hall church with apse a and porch to the west. The church has pointed harled walling with polished red sandstone margins. tracery, leaded panes. Small open belicote at the east gable. The church has a slate roof. The interior
132	Carsphairn Parish Churchyard	HBNum 3678 NX59SE 63.01 MDG13025	Medium (B Listed and part of B Group)	25623	59315	NMRS, SMR	Described in the Statutory List, supplementary information, as a rubble-walled churchyard containin McAdam mausoleum dates from 1838. It is a square rubble walled burial enclosure with bolection r over the entrance with an iron grille gate. An inscription in tympanum records this as the burial place the roadmaker. Inside an heraldic panel, presumably of 17th/18th century date is resited within a 19
133	Cairnsmore House, Manse and Barns	NX59SE 64	Low	25630	59313	NMRS	The NMRS records the manse for Carsphairn Parish Church.
134	Knockgray		Medium (NIDL)	25769	59329	SMR	The SMR records a non inventory designed landscape around Knockgray. The full extent of the design (1894). The landscape comprises small copses of mixed trees within farmland. Aerial photographs s recently.
135	North Liggat, gravel pit		Negligible	25673	59309	Historic maps, field survey	A gravel pit is depicted on the OS 1st Edition (1850-51). A quarry was recorded at this location durin old tree stump remains within it.
136	North Liggat Bridge, track	NX59SE 27 MDG3473	High (HER)	25681	59295	NMRS, SMR	The course of this trackway, crossing the SW flank of Braidenoch Hill, was noted during a pre-affores served Braidenoch at the time of the 2nd edition of the OS map (Kirkcudbrightshire 1894, sheet 9).
137	North Liggat Bridge, field system	NX59SE 32 MDG13635	Negligible	25670	59280	NMRS, SMR	A field-system annotated 'Old Fences' is depicted on the 1st edition of the Ordnance Survey 6-inch edition of the OS 1:10000 map. No trace of this site was found within the field survey corridor.
138	North Liggat, sheep ree		Negligible	25703	59296	Historic maps	A sheep ree is depicted on the Ordnance Survey 1st Edition (1850-51). The site is not depicted on the This site was not visited during the field survey as agricultural work was being undertaken within the visible from the road was well cultivated.
139	North Liggat, gravel pit		Negligible	25712	59265	Historic maps	Gravel pit on 1st edition of the Ordnance Survey 6-inch map (Kirkcudbrightshire 1853, sheet 5).
140	North Liggat, rig and furrow		Low	25685	59314	Field survey	Field survey recorded rig and furrow within an oblong shaped area of improved ground measuring 2 furrows measured approximately 0.7m wide.
141	Cumnock Knowes, Cross incised stone, mound	NX59SE 8 MDG3480	Medium	25768	59251	NMRS, SMR	A cross-incised stone, formerly standing at this location, had been moved to the entrance to Dalsha Kirkcudbright. The Cumnock Knowes are now forestry planted and nothing of archaeological signific
142	Bardennoch, hay ree		Negligible	25740	59230	Historic maps, field survey	A hay ree is depicted on the OS 1st Edition (1849-50) sheet 9. The site is not depicted on the 2nd Ed the field survey. The poorly preserved foundations, 1 course high, of a semi rectangular structure m
143	Bardennoch, field system, sheepfold	NX59SE 58 MDG17316	Low	25740	59200	NMRS, SMR, field survey	Three fields, one of which is partly marked by pecked lines which are annotated 'Old Fence' and two 6-inch map (Kirkcudbrightshire 1853, sheet 9). One field is shown on the 1980 edition of the OS 1:10 photographs from 1950. The poorly preserved remains of a field bank were recorded during the field survey, diverging from a length, 1.5m wide and up to 0.2m in height. Field survey recorded a three compartment sheep fold built of dry stone walling at NGR 25740 5920 height.
144	Bardennoch, gravel pit		Negligible	25779	59197	Historic maps, field survey	A gravel pit is depicted on the Ordnance Survey 1st Edition map (1849-50). A quarry was recorded a was up to 2m deep.
145	Bardennoch, gravel pit		Negligible	25782	59180	Historic maps	A gravel pit is depicted on the Ordnance Survey 1st Edition (1849-50).
146	Bardennoch, building, enclosure	NX59SE 53 MDG13624	Low	25789	59180	NMRS, SMR	One unroofed building and one enclosure are depicted on the 1st edition of the Ordnance Survey 6 on the 1980 edition of the OS 1:10000 map. Also shown on Roy's map (1747-55). No remains of this
147	Braidenoch Hill, sheepfold	NX59SE 44 MDG13589	Low	25767	59143	NMRS, SMR	A possible sheepfold, situated to the NE of a mature plantation on Braidenoch Hill, was noted durin spread to 2m in width and standing up to 0.5m in height.
148	Braidenoch Hill, sheepfold	NX59SE 45 MDG13590	Low	25767	59132	NMRS, SMR	An open-ended enclosure, possibly a sheepfold, situated on the E slope of Braidenoch Hill, was note terrace, it measures 14m by 14m with grass-covered stony banks spread up to 2m in width and stan embanked and a gap in the SE corner may be the entrance. The enclosure was probably replaced by



- he sheepfold is on the current Ordnance Survey map. Field survey a height of 1.2m.
- he present site of Lagwine house and grounds. However, this house on w nothing significant.
- and two enclosures is depicted on the 1st edition of the Ordnance hown on the 1980 edition of the OS 1:10000 map.

ded during the field survey.

during the field survey.

added to the east, late 19th/early 20th century. Mid 20th century vestry . The windows are 3-bay nave with round-arched with round-arch or was remodelled in the 20th century.

ng many good late 17th/early 18th century carved gravestones. The moulded eaves band and flat coping. Small central pediment is situated ce of the McAdams of Waterhead, ancestors of John Loudon McAdam, 19th century architrave, the lintel of which is dated 1838.

gned landscape is first depicted on the Ordnance Survey 2nd Edition show that a large area of forest within the landscape has been felled

ng the field survey. It measured 10m by 5m and 3m in height and it had

estation survey undertaken by Biggar Museum Trust. The trackway A modern access track was recorded within the field survey area.

map (Kirkcudbrightshire 1853, sheet 5), but it is not shown on the 1980

he 2nd Edition map.

ne field. However, it was noted that the majority of the field which was

100m by 30m. The rigs measured 1.1m wide and 0.1m in height; the

angan House by 1911, and thereafter to the garden of Broughton House, cance was noted on survey of the area in 1978.

dition map. The possible location of the hay ree was recorded during neasuring 15m by 10m were recorded.

o Sheep Rees are depicted on the 1st edition of the Ordnance Survey L0000 map. The sheep ree and field boundaries are visible on aerial

a standing wall and heading down hill. The bank measured 60m in

03. The complex measures 13m by 6.5m and the walls are up to 1.2m in

at this location during the field survey. It measured 10m by 10m and

5-inch map (Kirkcudbrightshire 1853, sheet 9), but they are not shown is site were found during the field survey.

ng a pre-afforestation survey. It measures 8m by 4m with a grassy bank

ed during a pre-afforestation survey. Situated on an elevated natural nding up to 0.75m in height. The N end does not appear to have been y the sheepfold 25764 59131.



Site Number	Site	NMRS/SMR no.	Sensitivity (Status)	Easting	Northing	Source	Description
149	Braidenoch Hill	NX59SE 42 MDG13586	Low	25772	59129	NMRS, SMR	Two clearance cairns, situated on an area of improved grassland on the NE-facing slope of Braidenoch Hi by 3m by 0.4m in height and 4.5m by 2.5m by 0.4m in height respectively.
150	Bardennoch, gravel pit		Negligible	25802	59116	Historic maps, field survey	A gravel pit is depicted on the Ordnance Survey 1st Edition (1849-50). Field survey recorded a pit at this
151	Polquhanity Burn, enclosure & cairns	NX59SE 12 & 56 MDG3458 & 13641	Local	25800 25797	59040 59049	NMRS, SMR	A subrectangular drystone-walled enclosure, situated on the SE flank of Irongallows, was noted during a measures 18m from east to west by 17m. There is a 2m wide entrance at the east end of the north wall rock which bears a natural cup mark. A group of clearance cairns was also noted during a pre-afforestation survey. The cairns range in size up to
152	Bardennoch to Garryhorn		Medium (ASA)	255558	592210	SMR	An Archaeologically Sensitive Area as defined by Dumfries and Galloway Council.
153	Bardennoch, old fence line		Low	25824	59091	Historic maps, field survey	An old fence line is depicted on the Ordnance Survey 1st Edition map (1849-50). Field survey recorded a Ordnance Survey map.
154	Bardennoch, gravel pit		Negligible	25828	59070	Historic maps, field survey	A gravel pit is depicted on the Ordnance Survey 1st Edition map (1849-50). Field survey recorded a pit at
155	Bardennoch, gravel pit		Negligible	25844	59051	Historic maps, field survey	A gravel pit is depicted on the Ordnance Survey 1st Edition map (1849-50). Field survey recorded a pit at
156	Bardennoch, gravel pit		Negligible	25865	59028	Historic maps	A gravel pit is depicted on the Ordnance Survey 1st Edition map (1849-50). Field survey recorded that th planted over during the planting of the forest.
157	Bardennoch, gravel pit		Negligible	25881	59011	Historic maps	A gravel pit is depicted on the Ordnance Survey 1st Edition map (1849-50). Field survey recorded that th planted over during the planting of the forest.
158	Polquhanity, cairn	NX58NE 4 MDG3419	Unknown	2584	5898	NMRS, SMR	A kerbed round cairn reported at this location in 1969 could not be relocated by Ordnance Survey survey
159	Polquhanity Bridge and gravel pit		Negligible	25919	58974	Historic maps	A bridge and a gravel pit are depicted on the Ordnance Survey 1st Edition map (1849-50). The bridge is of there is a modern bridge at this location.
160	Polquhanity, gravel pit		Negligible	25918	5896060	Historic maps, field survey	A gravel pit is depicted on the Ordnance Survey 1st Edition map (1849-50).
161	Polquhanity, hay ree		Low	25893	58949	Historic maps, field survey	A hay ree is depicted on the Ordnance Survey 1st Edition map (1849-50). An enclosure is depicted on the recorded during the field survey. The enclosure measured 50m by 20m with dry stone walls 1.2m in heig
162	Dalshangan, field system	NX58NE 49 MDG15315	Low	25939	58934	NMRS, SMR	A field-system annotated 'Old Fences' is depicted on the 1st edition of the Ordnance Survey 6-inch map Edition or the 1979 edition of the OS 1:10000 map. Field survey located no trace of these features.
163	Dalshangan, clump plantation boundary		Low	25938	58924	Field survey	An oval enclosure bounded by a broken-down wall may be the remains of a clump plantation boundary a Ordnance Survey 1st Edition map (1849-50) depicts other clump plantations a little to the south of this lo
164	Dalshangan, sheep ree		Negligible	25918	58918	Historic maps	A sheep ree is depicted on the Ordnance Survey 1st Edition (1849-50). The site is not depicted on the 2n the sheep ree at the location depicted on the Ordnance Survey 1st Edition map.
165	Dalshangan Stables	HBNum 3679 NX58NE 16 MDG3408	Low (C(S) Listed)	25961	58904	NMRS, SMR	The Statutory List, supplementary information, describes an earlier 19th century, 4 ranges of single store entrance pend, dated 1865 on tower. Single storey ranges of painted rubble grouped around cobbled contower rises above depressed-arch pend in centre of E range. The settlement is depicted on Roy's map (1)
166	Dalshangan, dovecot	HBNum 3680 NX58NE 17 MDG3409	Low (C(S) Listed)	25950	58889	NMRS, SMR	The Statutory List, supplementary information, describes a late 19th century cylindrical dovecot with rub
167	Dundeugh, field system	NX68NW 76 MDG16001	Low	26031	58879	NMRS, SMR	A field-system annotated 'Old Fences' is depicted on the 1st edition of the Ordnance Survey 6-inch map edition of the OS 1:10000 map. This site lies within plantation.
168	Dundeugh, hay ree	NX68NW 85 MDG16010	Low	26076	58861	NMRS, SMR	A single unroofed structure annotated 'Hay Ree' is depicted on the Ordnance Survey 1st Edition map (Kir 1:10,000 edition map.
169	Dundeugh, flint findspot	NX68NW 14 MDG3839	Medium	26010	58830	NMRS, SMR	A scatter of Mesolithic flints was found here in 1975, on the banks of the Water of Deugh.
170	Dundeugh, corn-drying kiln	MDG12735	Low	26007	58821	SMR	A small natural mound has a bowl-shaped depression in its east side. Both the kiln bowl and the forecou
171	Dundeugh Castle	SM2476 NX68NW 1 MDG3834	High (Scheduled Monument)	26010	58802	NMRS, SMR, field survey	The remains of Dundeugh Castle are situated on level ground above the E bank of the Water of Deugh an overgrown. Only the SE angle walls and the E wall of the N wing are partially extant, the overall 'L' shape the N wing is best preserved and is 2.0m high, of rough faced blocks and rubble pinning, and 1.0m wide. maximum height of 0.8m.
172	Sheepfold/ enclosure		Low	26035	58844	Historic maps; field survey	A sheepfold is depicted on the 2nd Edition Ordnance Survey map and aerial photographs from 1952. A p during the field survey. It appeared to measure over 50m by 20m and up to 0.7m in height. It was not po over by dense pine plantation.
173	Carse of Dundeugh, hay ree		Low	26050	58820	Historic maps	A hay ree is depicted on the Ordnance Survey 1st Edition (1849-50) and 2nd Edition map. Field survey re pine forest, and the feature could not be located.

ill, were noted during a pre-afforestation survey. They measure 4m

location; it measured 25m by 15m and 2m in depth.

a pre-afforestation survey of Braidenoch Hill. The enclosure whilst in the southwest the enclosure wall abuts a large outcrop of

to 8m by 5.5m and stand up to 0.5m in height.

a dry stone dyke at this location, it is depicted on the current

this location, it measured 12m by 10m and was 2m deep.

t this location, it measured 17m by 10m and was 2.5m deep.

ne gravel pit was no longer visible, it may have been removed/

he gravel pit was no longer visible, it may have been removed/

eyors in 1978.

on the current Ordnance Survey map. Field survey recorded that

e 2nd Edition Ordnance Survey map. A rectangular enclosure was ght.

(Kirkcudbrightshire 1853, sheet 9), but it is not shown on the 2nd

associated with a former designed landscape at Dalshangan. The location.

nd Edition map. Field survey recorded that there are no remains of

ey and loft farm buildings around courtyard, with later tower and burtyard, roofed partly in slate, partly with corrugated iron. 3-stage L747-55) and subsequent Ordnance Survey maps.

bble walling. No nest boxes survive.

(Kirkcudbrightshire 1853, sheet 9), but it is not shown on the 1981

irkcudbrightshire, 1853, sheet 9), but it is not shown on the 1981

urt of the flue are visible on aerial photographs.

and within a fire break within mature plantation. The remains are e being detectable only in amorphous buried outline. The S wall of e. The other extant walls are again 1.0m wide but are tumbled to a

possible sheepfold or a section of large enclosure was recorded ossible to record the exact limits of the site as it had been planted

ecorded that the location of this site has been planted over with

Site Number	Site	NMRS/SMR no.	Sensitivity (Status)	Easting	Northing	Source	Description
174	Kendoon Power Station	NX68NW 105.00 MDG23014	Low	26055	58779	NMRS, SMR	A power station forming a major element of Stage II of the Galloway Hydro-Electric Scheme.
175	Kendoon, flint flakes	NX68NW 23 MDG3849	Medium	2605	5876	NMRS, SMR	The discovery of prehistoric flint flakes in the gardens of houses at Kendoon was reported in 1983.
176	Kendoon Power Station, electricity sub-station	NX68NW 105.03 MDG22116	Low	26051	58767	NMRS, SMR	An electricity sub-station associated with Kendoon Power Station.
177	Kendoon, Suspension Bridge	NX68NW 27 MDG3853	Low	26044	58766	NMRS, SMR	Water of Ken Suspension Foot Bridge is recorded in the NMRS.
178	Kendoon Power Station, surge tower	NX68NW 105.2 MDG22105	Low	26071	58793	NMRS, SMR	The Surge Tower is associated with providing a water supply to Kendoon Power Station.
179	Kendoon Power Station, penstocks	NX68NW 105.1 MDG22104	Low	26071	58792	NMRS, SMR	The penstocks provide an underground piped water supply to Kendoon Power Station.
180	Glenhoul farmhouse, findspot	NX68NW 7 MDG3864	Low	26080	58790	NMR, SMR	A damaged stone axe-hammer was found in 1966 in the garden of Glenhoul farmhouse, and was do
181	Glenhoul House	NX68NW 18 MDG3843	Low	26092	58784	NMRS, SMR	The NMRS records a country house at this location.
182	Glenhoul, farmstead	NX68NW 18.02 MDG9184	Low	26091	58788	NMRS, SMR	A farmstead, comprising three roofed buildings, one partially roofed, one unroofed building and on 6-inch map (Kirkcudbrightshire 1853, sheet 9). A courtyard farmstead of five roofed buildings and fo
183	Dundeugh, structure	NX68NW 87 MDG16012	Low	26102	58824	NMRS, SMR	A single unroofed structure annotated 'Hay Ree' is depicted on the 1st edition of the Ordnance Survino on the 1981 edition of the OS 1:10000 map.
184	Kendoon, buried pipeline	NX68NW 109 MDG22095	Low	26143 26071	58834 58792	NMRS, SMR	This buried pipeline supplies water from Kendoon Loch to Carsfad Power Station, and is a major cor
185	Deil's washing Tub, Blackwater	NX68NW 80 MDG16005	Low	26127	58853	NMRS, SMR	An unroofed structure annotated 'Hay Ree' is depicted on the 1st edition of the Ordnance Survey 6- 1981 edition of the OS 1:10000 map.
186	Kendoon, aqueduct, dam	NX68NW 108.1 MDG22094	Low	26143	58847	NMRS, SMR	These structures control the supply of water from the Black Water Burn into the buried pipeline (18 of Ken, which the burn joins at NX 6018 8853. The structures form a major component of Stage II or
187	Blackwater Cottage	NX68NW 61 MDG9183	Low	26162	58831	NMRS, SMR	The NMRS records a cottage at this location. It is not depicted on the 2nd Edition Ordnance Survey
188	Chapel Linn, enclosure	NX68NW 34 MDG8754	Low	26190	58830	NMRS, SMR, historic maps, field survey	The NMRS records an enclosure at this location, and is depicted on the 1st Edition Ordnance Survey. The poorly preserved remains of part of the enclosure wall were recorded during the field survey. It 50m long.
189	Mackilston Hill, sheep shelter	NX68NW 36 MDG8748	Low	26182	58809	NMRS, SMR, field survey	The NMRS records a sheep shelter at this location. It is first depicted on the Ordnance Survey 2nd E the survey. Each arm of the shelter measured approximately 14-17m in length.
190	Green Haas, lime kiln, rig-and- furrow		Low	26303	58816	Field Survey	A lime kiln was recorded during the field survey. It remained to five courses high and measured 4m and furrow cultivation remains was recorded beside the kiln. These features may be associated with
191	Mosshead, farmstead	NX68NW 73 MDG15998	Low	26275	58866	NMRS, SMR	What may be a farmstead annotated 'in ruins', comprising two unroofed buildings, one of which is a 6-inch map (Kirkcudbrightshire 1853, sheet 9), but the farmstead is not shown on the 2nd Edition n
192	Green Hass, cultivation remains, farmstead, head dyke	NX68NW 35 MDG8755	Low	26310	58810	NMRS, SMR, field survey	This farmstead, named as 'Leys' on the 1st Edition of the Ordnance Survey map (Kirkcudbrightshire compartments, a field, and a head-dyke annotated 'Old Fence'. Only one enclosure is shown on the 1:10000 map. Field survey recorded a dry stone walled enclosure at this location, measuring 16m by 16m with wa
193	Green Haas, cairnfield	NX68NW 37 MDG8749	Medium	26292	58789	NMRS, SMR, field survey	The NMRS records a cairnfield at this location. No clearance cairns were identified within the field s
194	Green Haas, enclosure	NX68NW 38 MDG8750	Unknown	2632	5877	NMRS, SMR	An enclosure has been recorded at this location.
195	Cullys Knowe, clearance cairns	NX68NW 13 MDG3838	Medium	26370	58780	NMRS, SMR	A single group of eleven clearance cairns extends over approximately 2.0 hectares of a low plateau in sub-circular diameter and 0.5m high, are randomly placed and no field patterns or occupation trashow no special features. No clearance cairns were recorded within the field survey corridor.
196	Culleys Knowe, clearance cairn		Negligible	26376	58803	Field survey	Field survey recorded a long, narrow clearance cairn to the south of the burn. An area of cleared la
197	Butterhole Bridge and gravel pit		Negligible	26400	58800	Historic maps. field survey	A bridge and a gravel pit are depicted on the Ordnance Survey 1st Edition (1849-50). Field survey re could not be located.



onated to Dumfries Museum.

ne enclosure is depicted on the 1st edition of the Ordnance Survey four enclosures is shown on the 1981 edition of the OS 1:10000 map. rvey 6-inch map (Kirkcudbrightshire 1853, sheet 9), but it is not shown

mponent of Stage II of the Galloway Hydro-Electric Scheme.

5-inch map (Kirkcudbrightshire 1853, sheet 9), and is not shown on the

84) leading to Carsfad Power Station; any excess passes into the Water of the Galloway Hydro-Electric Scheme.

map.

y map.

t remained to 1 course of stone high and wide and was approximately

Edition (1894). A Y-shaped shelter was recorded at this location during

by 4m. The kiln was built into the slope of the hill. A small area of rig th a settlement (site 192).

a long building, is depicted on the 1st edition of the Ordnance Survey map or on the 1981 edition of the OS 1:10000 map.

e 1853, sheet 10), comprises two unroofed buildings, each of two e 2nd Edition map and on the 1981 edition of the Ordnance Survey

alls 1.5m in height. There were two possible small entrances.

survey corridor, which runs close to the recorded site location.

on the SW side of Cullys Knowe at 700ft OD. The cairns, averaging 4.0m aces are evident. Some have been superficially disturbed or robbed but

nd was visible between the cairn and the burn.

ecorded that the bridge is a modern concrete bridge, but the gravel pit



Site Number	Site	NMRS/SMR no.	Sensitivity (Status)	Easting	Northing	Source	Description
198	Butterhole, clearance cairns	NX68NW 11 MDG3836	Low	26433	58799	NMRS, SMR	On N slope of hill was once a group of sixteen small cairns, with a further group of sixteen on the S slope. of archaeological significance. The cairns referred to, though not found in the numbers stated, appear sin and land improvement. The deserted farmstead of Butterhole (NX 6432 8798) is nearby. The farmstead of Butterhole annotated 4 edition of the OS 6-inch map (Kirkcudbrightshire 1853, sheet 10) and on the 1981 edition of the OS 1:100 No features relating to these sites were found within the survey corridor during the field survey.
199	Rig of Mire, natural feature	NX68NW 32 MDG3859	Negligible	2640	5877	NMRS, SMR	What was previously recorded on aerial photographs is now believed to be a natural feature.
200	Rig of Mire, sheepfold	NX68NW 39 MDG8751	Low	26425	58760	NMRS, SMR, field survey	A sheepfold is depicted on the 1st Edition of the Ordnance Survey map. A circular sheepfold was recorded diameter.
201	Kilnair, clearance cairn, farmstead, field system, hut circle	NX68NE 6 MDG3830	Low	2664	5868	NMRS, SMR	The farmstead of Kilnair, comprising one partially roofed building and two unroofed buildings annotated Ree' are depicted on the 1st edition of the Ordnance Survey 6-inch map (Kirkcudbrightshire 1853, sheet 2 on the 1981 edition of the Ordnance Survey 1:10000 map. Outside of the field survey corridor but field survey did record that the farmstead comprised one roofed to it. A number of clearance cairns and field walls surround the farmstead. No associated features were reforms the western boundary of the farmstead.
202	Glenshimmeroch, clearance cairns	NX68NE 11 MDG5183	Medium	26585	58640	NMRS, SMR	At least six turf-covered clearance cairns occupy a sheltered E-facing slope.
203	Hog Hill, enclosure		Low	26681	58633	Historic maps, field survey	A large square enclosure is depicted on the Ordnance Survey 1st Edition (1849-50) and subsequent maps Field survey recorded that the enclosure remained in good condition. Drainage and recently felled trees v
204	Kirk Rig, cairns	NX68NE 7 MDG3831	Negligible	26720	58610	NMRS, SMR	A cairn is shown at this location on the 2nd Edition Ordnance Survey map. Five cairns were recorded in 19 had been deep ploughed and planted. Field survey recorded that the area had been deep ploughed and that the trees had been recently felled.
205	Knockdollochan, field system	NX68NE 33 MDG16096	Low	26685	58570	NMRS, SMR	A field-system is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1854, sheet 16), bu OS 1:10000 map. Field survey recorded that this site has been planted over by dense pine plantation fore
206	Knockdollachan, sheep ree		Low	26664	58590	Historic maps	A sheep ree is depicted on the 1st Edition Ordnance Survey map (Kirkcudbrightshire 1854, sheet 16).
207	Knockdollachan, sheep ree		Low	26711	58551	Historic maps	A sheep ree is depicted on the 1st Edition Ordnance Survey map (Kirkcudbrightshire 1854, sheet 16). The
208	Shield Willie Hill, farmstead, field system	NX68NE 8 MDG3832	Low	26752	58560	NMRS, SMR	A farmstead named Regland, comprising four unroofed buildings, three of which are arranged around a c annotated 'Old Fence' are depicted on the 1st Edition of the Ordnance Survey 6-inch map (Kirkcudbrights not shown on the 1981 edition of the OS 1:10000 map (1981). Field survey recorded that this site appears to have been planted over by pine plantation forest.
209	Shield Willie Hill, sheep ree		Low	26777	58514	Historic maps	A sheep ree is depicted on the 1st Edition Ordnance Survey map (Kirkcudbrightshire 1854, sheet 16), and field survey due to dense plantation forest.
210	Stroan, hay ree	NX68SE 41 MDG16103	Low	26802	58489	NMRS, SMR	One unroofed structure annotated 'Hay Ree' is depicted on the 1st edition of the Ordnance Survey 6-inch the 1982 edition of the OS 1:10000 map. The site could not be located during the field survey due to dense plantation forest.
211	Stroan, farmstead, head dyke	NX68SE 53 MDG16098	Low	26863	58469	NMRS, SMR	A farmstead annotated 'Stroan (Ruins of)', comprising two unroofed buildings and one enclosure annotat is also attached to NX68SE 54; site 212) is depicted on the 1st edition of the Ordnance Survey 6-inch map shown on the 1982 edition of the Ordnance Survey 1:10000 map.
212	Stroan, farmstead, field system, head dyke	NX68SE 54 MDG16099	Low	26891	58451	NMRS, SMR	A farmstead, comprising one unroofed building and one large enclosure or field, and a head-dyke, are de (Kirkcudbrightshire 1854, sheet 16), but they are not shown on the 1982 edition of the Ordnance Survey
213	Marian's Knowe, structure	NX68SE 45 MDG16107	Low	26887	58414	NMRS, SMR	One unroofed structure annotated 'Hay Ree' is depicted on the 1st edition of the Ordnance Survey 6-inch of the OS 1:10000 map. It may be visible on aerial photographs taken in 1950.
214	White Cairn, enclosure, farmstead, field boundary	NX68SE 55 MDG16100	Low	26837	58373	NMRS, SMR	A farmstead annotated 'Whitecairn (Ruins)', comprising two unroofed buildings and three enclosures, tw on the 1st edition of the Ordnance Survey 6-inch map (Kirkcudbrightshire 1854, sheet 16). Two enclosure enclosure and a building are visible on aerial photographs taken in 1950.
215	Wallace's Rig, quarry		Negligible	26884	58376	Historic maps, field survey	A quarry is depicted on the Ordnance Survey 1st Edition map (1849-50). Field survey recorded a quarry n
216	Wallace's Rig, enclosure, structure	NX68SE 50 MDG16112	Low	26918	58380	NMRS, SMR	One unroofed structure annotated 'Hay Ree' is depicted on the 1st edition of the Ordnance Survey 6-inch enclosure is shown on the 1982 edition of the OS 1:10000 map.
217	Wallace's Rig, farmstead	NX68SE 39 MDG16101	Low	26882	58337	NMRS, SMR	A farmstead, comprising one roofed building, one unroofed building and one enclosure is depicted on the (Kirkcudbrightshire 1854, sheet 16). One unroofed building and one enclosure are shown on the 1982 ed
218	Craig Lignal, enclosure	NX58NE 51 MDG15317	Low	25861	58930	NMRS, SMR	A single unroofed structure annotated 'Old Sheep Ree' and the pecked outline of an attached enclosure a map (Kirkcudbrightshire 1853, sheet 9). A small enclosure is shown on the 1979 edition of the Ordnance
219	Polquhanity, enclosure		Negligible	25876	58979	Historic maps, field survey	An enclosure is depicted on the 2nd Edition Ordnance Survey map but not on the 1st Edition. A rectangular enclosure was recorded during the field survey. The enclosure measured 100m by 50m wit
220	Lamford Hill, peat cutting		Negligible	25237	59831	Field Survey	A large area of peat cutting was recorded during the field survey, measuring 60m in length, 40m wide and

. Perambulation of this area in 1978 failed to locate any features mple stone dumps associated with relatively modern clearance

'Ruins of', comprising one unroofed building is depicted on the 1st 000 map.

ed during the field survey. It measured approximately 16m in

'Ruins', a field-system and one unroofed structure annotated 'Hay 10). One roofed, one unroofed building and two fields are shown

building and the poorly preserved remains of a second attached recorded on the open hillside to the west of a field wall which

were visible within it.

.971. Resurvey in 1978 found no trace of the cairns as the area

ut it is not shown on the 2nd Edition or on the 1981 edition of the est.

site is not depicted on the 2nd Edition map.

courtyard and two enclosures, a field-system and head-dyke each shire 1854, sheet 16) and on the 2nd Edition map, but the site is

l on the 2nd Edition map. This site could not be located during the

n map (Kirkcudbrightshire 1854, sheet 16), but it is not shown on

ted 'Sheep Ree', and a head-dyke annotated 'Old Fence' (which (Kirkcudbrightshire 1854, sheet 16). One unroofed building is

epicted on the 1st edition of the Ordnance Survey 6-inch map 1:10,000 map.

map (Kirkcudbrightshire 1854, sheet 16) and on the 1982 edition

vo field walls, one of which has an enclosure attached, is depicted es are shown on the 1982 edition of the OS 1:10000 map. A large

measuring 15m by 10m and approximately 3m deep.

n map (Kirkcudbrightshire 1854, sheet 16). A two compartment

e 1st edition of the Ordnance Survey 6-inch map lition of the OS 1:10000 map.

are depicted on the 1st edition of the Ordnance Survey 6-inch Survey 1:10000 map.

th dry stone walls 1m in height.

d up to 0.5m deep.

Site Number	Site	NMRS/SMR no.	Sensitivity (Status)	Easting	Northing	Source	Description
221	Smithston Upper Bridge, tramway		Low	24222	61272	Historic maps, field survey	A tramway is depicted on Ordnance Survey 1st Edition 6" map (1857), Sheet XL, connecting ironston use) to the west. Field survey recorded the remains of the disused tramway. The trackbed measures 4m wide and is s remaining.
222	Green Haas, peat cutting		Negligible	26243	58840	Field Survey	A large area of peat cutting was recorded during the field survey. It measured 50m by 25m and 0.1m
223	Glenhoul, bridge		Low	26092	58836	Historic maps, field survey	A substantial arched masonry bridge carries a track over the Water of Ken, which runs through a nar
224	Glenshimmeroch, sheep ree		Low	26503	58687	Historic maps	A rectangular sheepfold containing four smaller rectangular compartments, is depicted on the 1st Ed location, although it has a different arrangement of compartments.
225	Meadowhead, enclosure, turf and stone banks		Low	251853	599764	Field survey	Field survey identified the remains of a sub-oval enclosure, 106m long by 58m wide, defining and ar to Meadowhead Farm. The enclosure is defined by a poorly preserved turf and stone bank, 1m wide trampling. The southwest side of the enclosure no longer survives as upstanding remains, and a sho probably during the construction of a tower along the existing N-Route.
226	Polquhanity, gravel pit		Negligible	259191	589343	Field survey	Field survey identified a square gravel pit, c.10m to the west of the A713 public road, within an area and c.1.5m deep. The gravel pit is turfed over and no worked faces are visible.



ne mines to the east with the Ayr and Dalmellington Railway (still in

ituated on an embankment c.0.6m high. There are no tram rails

n deep.

rrow wooded gorge at this point.

dition of the Ordnance Survey map. A sheepfold is still mapped at this

rea of improved ground immediately northeast of the access road e and 0.4-0.5m high, which has been eroded in places by animal ort section of bank in the northwest corner has been destroyed

of improved pasture. The quarry measures 13m long by 11m wide,

E.2 Characterisation of the Settings of Cultural Heritage Features within the ZTV Study Areas from where one or more Parts of the Proposed OHL are Predicted to be Theoretically Visually Perceptible

- 1 The characterisation and assessment of setting have been conducted with reference to the methodology set out in Chapter 10. Where particular factors that could contribute to setting (e.g. potential / actual educational value) are not mentioned in specific cases, this means that such factors are not considered to form important contributions to the setting of that receptor.
- 2 One Non-Statutory Register Site (Beoch Mines, 7993) has been excluded from analysis, as field survey and map-based study confirmed that this site has been considerably altered by previous opencast coal operations, and can therefore no longer be considered as being of national importance. One unscheduled site of national importance in Dumfries and Galloway (MDG13159) is excluded as the reference appears to be generic and the specific site is covered by MDG17237. In the 'ID' column, numbers in brackets are concordances to site numbers in Appendix E.1.

E.2.1 Scheduled Monuments

ID	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
1006	Scheduled, in ASA	Cairn Avel, cairn 800m S of Carsphairn	NX59SE 2 / MDG3466	255934	592457	NMRS / SMR description – A prehistoric long cairn (burial monument) surviving as a well preserved mound.	Although this site was not visited, map evidence indicates that it is located on the lower northern slopes of Bardennoch Hill. Map and photographic evidence (www.themodernantiquarian.com/ site/6155/cairn_avel.html) and a wireframe indicate that there are extensive views from the site to the north, west and east, with rising ground providing shorter views to the south. The cairn has an open aspect, and consists of a locally distinctive mound of stones which cannot be discerned clearly from distance. The site is promoted as part of a heritage trail (www.carsphairnheritage.co.uk), and has good aesthetic and experiential values. (desk-based)	High	High	High
1029 (117)	Scheduled, in ASA	Holm of Daltallochan, stone circle & standing stone	NX59SE 4 & 10 / MDG3456 & 3476	252811 255297	594207 594229	NMRS / SMR description – The stone circle survives as an oval arrangement of 13 stones, varying greatly in shape and size, and measuring c. 24m by 20m. A whinstone standing stone is present c. 100m ESE of the stone circle.	These related monuments are located in a pasture field on low-lying ground west of Holm of Daltallochan. From the stone circle there are wide views of the surrounding landscape, including towards the proposed OHL route and existing N-Route OHL, in which direction partial screening is provided by trees. Visual links between a stone circle and the topography of the surrounding landscape are commonly held to form an important element in understanding the context of a stone circle. The standing stone is located immediately beside a post-medieval field wall, in the lee of a mature conifer tree, at the east edge of the field containing the stone circle. The stone circle has good aesthetic appeal, and potential educational / recreational value, although access is not promoted. (viewed from local vantage points; photographs at www.themodernantiquarian.com/site/8632/holm_of_daltallochan.html).	High	Moderate – the monument is preserved in a more recent agricultural landscape.	High
1034	Scheduled, in ASA	Lamford Burn, cairn 800m NE of Lamford Bridge	NX59NW 6 / MDG3451	252811	599125	NMRS / SMR description – The remains of a prehistoric burial cairn that were severely damaged by unauthorised excavations in 2004.	The severely disturbed remains of this cairn are located on a grassy area between the Lamford road and the irregular grassed remains of a disturbed borrow pit. The site location has an open aspect that affords extensive views westwards across the Water of Deugh ASA and beyond to Loch Doon and surrounding hills. The existing N-Route OHL proposed for dismantling forms a visible if minor built element in the wide views from this receptor. (field visit)	High	Low – the presence of the adjacent borrow pit and the condition of the cairn detract from an appreciation of the setting of the monument.	Medium
1047	Scheduled	White Cairn, cairn, Corriedow Bridge	NX68SE 2 / MDG3869	268140	583330	NMRS / SMR description – A prehistoric burial cairn, 31m in diameter and 3.5m high, situated on the end of a promontory.	This well-preserved cairn is located on a promontory between the confluence of two burns, and is visible as a prominent feature when viewed from the A702 to the south-east. From the cairn there are long views broadly westwards across moorland and plantation, whereas in views to the south and east plantations dominate the view, particularly to the north-east where the edge of a plantation is only c. 20m distant. The cairn has good aesthetic and experiential properties, although they are compromised by the adjacent plantation, and has potential value as a recreational / educational resource (although access is not presently promoted). (field visit; www.themodernantiquarian.com/site/8198/corriedoo_white_cairn.html)	High	Moderate – conifer plantation adjacent to the site detracts from understanding the topographic setting and formerly more open aspect of the cairn.	High

ID	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
1105	Scheduled, in ASA	Braidenoch Hill, cross slabs	NX59SE 3 / MDG3475	257084	590830	NMRS / SMR description – Two slabs bearing incised crosses are present c. 300m S of the summit of Braidenoch Hill, in a scatter of large stones within rough pasture and rock outcrop. One is complete, though broken in two, the other is a fragment.	These cross slabs are located adjacent to an old road (MDG 3416), which is reputed formerly to have been a pilgrimage route between Strathclyde and Whithorn and remained in use until the A713 road was built in the mid 19th century (information from interpretative display board at Polmaddy deserted village, 5391). This may therefore provide an explanation as waymarkers for these carved stones, at this otherwise remote location. This site was not visited, and hence its current condition, aesthetic and experiential properties, and recreational / educational value, have not been assessed. However, it is promoted as part of a heritage trail (www.carsphairnheritage.co.uk). (desk-based)	High	High	High
1106 (118)	Scheduled, in ASA	Holm of Daltallochan, cross slab	NX59SE 9 / MDG3481	255520	594166	NMRS / SMR description – An irregular sandstone slab bearing an incised Latin cross is set on end in a shrubbery in the garden at Holm of Daltallochan. It was allegedly brought to this location from elsewhere.	This site was not visited, as it is located in a mature, secluded private garden, and hence its current condition, aesthetic and experiential properties, and recreational / educational value, have not been assessed. The present surroundings do not assist in providing an appreciation and understanding of the monument, particularly since the stone appears to have been relocated to the garden. (viewed from local vantage points)	High	Negligible	Low
2476 (171)	Scheduled	Dundeugh Castle	NX68NW 1 / MDG3834	260108	588031	NMRS / SMR description – The overgrown remains of Dundeugh Castle are situated on level ground above the E bank of the Water of Deugh. Only the SE angle walls and the E wall of the N wing are partially extant, the overall 'L' shape being detectable only in amorphous buried outline.	The remains of the castle are located within a wide firebreak in an area of mature plantation. The overgrown nature of the remains does not allow their character to be fully appreciated, and the presence of woodland does not allow the topographic or landscape surroundings of the castle to be appreciated. In its present form the castle remains have little aesthetic, experiential or potential educational / recreational value. In summary, this monument does not have an appreciable setting. (field visit)	High	Negligible – mature forestry very considerably obscures the topographic context and landscape surroundings of this monument.	Low
3009	Scheduled, in Conservation Area	Dalmellington, motte	NS40NE 3 / 7131	248191	605814	NMRS / SMR description - A large mound c. 18m across and 9m high with an outer ditch is the remains of a medieval motte (earth and timber castle).	This prominent mound occupies a slightly elevated location on the south bank of the Muck Water. The motte has considerable aesthetic appeal and sense of place – even though the earthwork, of very significant scale, is rather closed in by housing and trees, and open views of it are surprisingly hard to obtain. The principal views from the summit of the mound are northwards, although partly obstructed by mature fir trees, across Dalmellington and to the hills beyond and west towards the hills on the west side of the Doon Valley. Views to the south and east are towards near hillsides. The motte has an important historic focus as the earliest known construction within Dalmellington, and the erection of the castle may have provided a focus for a settlement to develop around it. The motte is accessible to the public, and although it is not provided with onsite interpretative / educational boards it has considerable potential as an educational resource. The key aspects of the setting of this site are its historic and visual associations with Dalmellington, the impressive scale of the earthworks, and its recreational and potential educational values. (field visit)	High	High – through the impressive scale of the earthworks and the juxtaposition of the motte with Dalmellington.	High
4345 / 1092	Scheduled, part in Outstanding Conservation Area; engine house A listed	Waterside, Dalmellington Ironworks	NS40NW 15.00- .01 / 7145	244319	608399	NMRS / SMR description - Dalmellington Ironworks industrial complex was opened in 1848 by the Dalmellington Iron Company. It is now the much-reduced remains of a typical mid 19th century iron-smelting works, with the most notable surviving structure being the Italianate blowing- engine house, dating to 1847 and latterly incorporated within a brickworks (operational 1847-1976). A large part of the SM is also protected as a Conservation Area (109).	This site occupies the lower slopes of Green Hill, on the east side of the River Doon. The buildings, and particularly the chimneys, form a prominent landmark when viewed from the surrounding landscape, particularly from vantage points in and around Craigengillan Estate. From elevated vantage points within the complex there are extensive views across the valley and from south-east to south-west across Craigengillan and Dalmellington to the hills beyond. There are several important facets to the setting of this monument. It has intimate visual, historic and functional relationships with the surviving buildings of Waterside village (1093-4, 6595-6, 6623) and associated Outstanding Conservation Area (109). It has functional and historic relationships with a considerable range of industrial monuments in the surrounding landscape (not all intervisible with the ironworks), including the adjacent spoil heap (7544), mineral railways and miners' villages (7863) and more distant coal mines that provided fuel for the complex. The industrial complex forms a prominent local landmark, and the built heritage contrasts with the surrounding rural landscape, providing aesthetic appeal. It has good recreational and educational qualities, and was formerly a key part of the Dunaskin Heritage Centre (now closed). It retains a strong sense of place relating to the recent industrial past. (field visit)	High	High – the surroundings make a strong contribution to the understanding the siting and appearance of this monument.	High
4390	Scheduled / in GDL	Dalnean Hill, farmstead and field system	NS40NE 12 / 7114	246216	605440	NMRS / SMR description - Remains of a medieval or later settlement located at the foot of Dalnean Hill, consisting of two buildings, a small outbuilding, and a kiln-barn. Banked rectangular fields, some containing cultivation ridges, extend across the hillside to the W of the buildings. Abandoned prior to the mid 19th century. Located within Craigengillan GDL.	The site is located in rough pasture on an east-facing slope, from where there are views across Craigengillan and the valley of the River Doon to Dalmellington, Bellsbank, and the hills beyond, within which are visible areas of coniferous forestry and opencast mining. The key aspects of the setting of this deserted farmstead are its historic relationship with the local agricultural surroundings, and its visual link to Craigengillan Estate, within which the remains lie. The extensive low earthworks of this site do not form a prominent landmark, and they do not possess strong aesthetic qualities. The site may have some potential to be harnessed as an educational resource, but presently it is not promoted as such. (field visit)	High	High – the immediate surroundings of the site have probably changed little since the farmstead was last occupied.	High
5184	Scheduled, in ASA	Woodhead lead mines and smelter, Carsphairn	NX59SW 1 / MDG3482, 11581, 12011, 21690, 21691	253100	593600	Schedule List description – The remains of a complex of lead mines and smelter, of mid- 19th century date. Visible remains include the smelter with flues and chimney, blocks of workers' housing, and waste heaps.	The remains of Woodhead are situated in open hill land to the north-west of Carsphairn, with the presence of the raw resource being principally responsible for the siting of the mine at this location. The remains evoke a strong sense of place, and have good value as a potential interpretative / educational resource. Access is currently promoted as part of a heritage trail (www. carsphairnheritage.co.uk). There are panoramic views from the higher parts of the receptor. The proposed OHL route is perceptible from parts of the site area (wireframe; M Cressey, pers comm). (desk-based)	High	High – but does not extend to the proposed OHL route.	High

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ID	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
5200	Scheduled	Munteoch, settlement and field systems	NS40SW 15 / 7188	243760	603610	NMRS / SMR description - Remains of a medieval or later settlement consisting of at least two phases of buildings, agricultural enclosures and several phases of cultivation remains. Abandoned as an occupied farm prior to the mid 19th century.	The remains of this farmstead are situated in a remote location beside the Shalloch Burn, partly within moorland and partly within conifer plantation forming part of the Galloway Forest Park. Map evidence suggests that the key views from this site are likely to be to the west and north, with those to the east screened by conifer plantation. The key aspects of its setting would appear to be its presence within a deserted medieval or later farming landscape, and its associations with other broadly contemporary farmsteads present within the same range of hills (e.g. 7164, 7166, 7181). This site was not visited, and hence its current condition, aesthetic and experiential properties, and educational value, have not been assessed, although all are likely to have been reduced with the formation of the conifer plantation. (desk-based)	High	Low – the site is located within and adjacent to a modern conifer plantation, which have much reduced the formerly open aspect of the site.	Medium
5391	Scheduled	Polmaddy, medieval and post-medieval settlement	NX58NE 20 / MDG3413	259000	587800	NMRS / SMR description – The remains of a deserted village which can be traced back to the 16th century in documentary records. Access promoted and interpretive material provided.	The remains of this village are located on low-lying ground pasture beside the Polmaddy Burn. The remains have good aesthetic and experiential properties, and access is promoted through a Forestry Commission heritage trail. The landscape surrounding the farm is dominated by forestry plantation, including when looking eastwards towards the proposed OHL route, and the most open views are to the north-west. (field visit)	High	High – but does not extend to the proposed OHL route.	High
7544 (15)	Scheduled	Waterside Bing, iron slag bing, Dalmellington Ironworks	NS40NW 15.03 / 17739	243875	608258	NMRS / SMR description - A large bing, extending for 650m by 380m and standing 30m high, and estimated to contain 1.5 million tonnes of iron slag. It was formed as a by-product of the Dalmellington Ironworks (4345). Changes in the composition of the bing, at different levels, reflect changes in the technological development of haematite iron production. The bing has been partly landscaped on the east and north.	This large bing is located on the valley floor of the River Doon, adjacent to the Dalmellington Ironworks (4345) but separated from it by the A713 road. It is visible as a prominent landmark, effectively forming part of the industrial complex when viewed from the surrounding landscape. The material forming the bing is a by-product of the operations at the ironworks. Owing to its juxtaposition, and intimate historic and functional links with the ironworks, the two are considered to share a group setting as elements of the same monument. See 4345 for further information. (field visit)	High	High – through intimate association with Dalmellington Ironworks.	High
7863	Scheduled, partially in Outstanding Conservation Area	Waterside, miners' village & mineral railways N of	NS40NW 34.00- 06 / 21272 / 50891 / 50895 / 22136	244846	609768	NMRS / SMR description - The remains of the former mining villages of Benquhat, Corbie Craigs and Lethanhill, together with a network of tracks marking the sites of former mineral railways, bings marking the sites of former ironstone pits and adjacent shafts, all associated with Dalmellington Ironworks.	These features owe their creation to the Dalmellington Ironworks industrial complex (4345), with which they have intimate historical and functional links, and from certain parts of this extensive site visual links also. The remains form considerably less prominent features in the landscape than the ironworks complex. Map and wireframe evidence obtained during the South West Scotland Project assessment indicates that from the higher altitude parts of this site there are wide views from west to south-east, including the Doon Valley, Cummock Burn and hills beyond. However, the key aspect of the setting of this site is its close association with Dalmellington Ironworks. (assessed from local vantage points)	High	High – through intimate association with Dalmellington Ironworks.	High
8616	Scheduled	Donald's Island, Loch Doon	NX49NE 1 / 11679	249435	596555	HS / NMRS / SMR description – excavated remains and site of medieval settlement located on island within Loch Doon, but now normally submerged following raising of the loch's water level.	The setting of this site is defined principally by its location within Loch Doon, and therefore is likely to extend to the loch and surrounding slopes. However, the fact that this site is normally submerged detracts from the viewer's ability to appreciate the site within its setting.	High	Moderate – since the loch level has been raised artificially, altering the landscape to a degree and submerging the receptor.	High
8619	Scheduled	Loch Doon Castle	NX49SE 1 / 22620	248820	594750	HS / NMRS / SMR description - Original island site and partial remains of Loch Doon Castle, which stood on the island until 1935 before being partially removed to the loch shore. Normally submerged.	The setting of this site is defined principally by its location within Loch Doon, and therefore is likely to extend to the loch and surrounding slopes. It has a specific and intimate relationship with the reconstructed castle nearby on the loch shore. However, the fact that this site is normally submerged detracts from the viewer's ability to appreciate the site within its setting.	High	Moderate – since the loch level has been raised artificially, altering the landscape to a degree and submerging the receptor.	High

E.2.2 Listed Buildings

Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
122	C(s) listed	Buchan's Bridge	NS40NE 14 / 7116	247237	606236	Statutory List description - Low flat single- arch bridge with a railed parapet, carrying the A713 over the Cummock Burn.	This unobtrusive bridge is not a prominent feature, even when viewed from immediately adjacent, and invokes very little sense of place. Its setting is defined intimately in terms of its historic and functional relationship with the A713 road and the Cummock Burn. There are wide views from the bridge of the surrounding valley and hillsides, including Dalmellington and a range of existing industrial features, houses and overhead power lines, but these views are not considered to relevant to understanding the context or appreciating the architectural qualities of the bridge. There is a double wood pole overhead line running adjacent to the bridge. (field visit)	Low	Moderate – immediate surroundings allow siting and context of bridge to be appreciated.	Low

Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
1084	C(s) listed	Sillyhole Bridge	NS40NE 15 / 7117	247510	606432	Statutory List description - Low flat single- arch bridge with high stone parapet, carrying a B road over the Cummock Burn.	As with Buchan's Bridge (122) nearby this unobtrusive bridge is not a prominent feature, even when viewed from immediately adjacent, and invokes little sense of place. Its setting is defined intimately in terms of its historic and functional relationship with the B road and the Cummock Burn. There are wide views from the bridge of the surrounding valley and hillsides, including Dalmellington and a range of existing industrial features, houses and overhead power lines. These views are generally not considered to relevant to understanding the context or appreciating the architectural qualities of the bridge, although the view along the valley of the Cummock Burn provides a complementary backdrop when viewing the bridge from the south-west. There are street lights and other road signage on the road verges to either side of the bridge. (field visit)	Low	Moderate - immediate surroundings allow siting and context of bridge to be appreciated.	Low
1085	C(s) listed, in Conservation Area	Dalmellington, 8-11 (consecutive Nos), Cathcartson	NS40NE 64	247975	605786	Statutory List description - 1-storey cottage range with datestone of 1744 (possibly inserted). Located within Dalmellington Conservation Area.	This range of cottages is located on the south-east side of the Muck Water within Dalmellington, facing north-west. Views from the frontage are dominated by the rear of the properties on the south side of Main Street, on the opposite bank of the Muck Water. The surroundings of the buildings are entirely urban, and there are no clear views out into the surrounding landscape, although views beyond the village, broken by buildings and trees, can be obtained looking over the roof of the cottages from the opposite bank of the Muck Water. The setting of these cottages is defined by their contribution to Dalmellington Conservation Area (102), although the buildings are not a prominent component. (field visit)	Medium	High – defined by Conservation Area.	High
1086 (35)	B listed, in GDL	Lodge at entrance to Craigengillan	NS40NE 66 / 47150	247433	605936	Statutory List description -1-storey lodge building located along main approach to Craigengillan House. This gatehouse was built into the Craigengillan policies in the late 18th or early 19th century. Located within Craigengillan GDL.	This unobtrusive lodge is located on the south side of the avenue. Trees screen views of the building on all sides except for the north-west facing frontage, from where views are focussed along the valley of the River Doon and across the hills to either side. The hillsides visible to the north of Dalmellington contain a range of existing industrial features, houses and overhead power lines. The existing N-Route OHL proposed for removal crosses the GDL c. 250m south of the lodge, and a tower is in direct view beside the lodge when looking along the Craigengillan road from the A713 to the north-east. The key aspects of the setting of the lodge are its intimate visual links with the adjacent bridge (1087) and road leading to Craigengillan House, and the historic and landscape links with Craigengillan Estate. It can be considered to have a group setting with the adjacent bridge. The lodge building has some recreational value, in that the adjacent road now provides public access into Craigengillan Estate. (field visit)	High	High – as a built component of a GDL (see 110).	High
1087 (34)	B listed, in GDL	Craigengillan, bridge adjacent to lodge	NS40NE 67 / 47149	247415	605929	Statutory List description - Low flat single- arch bridge spanning with railed parapet, carrying the main drive to Craigengillan House over the Muck Water. Located within Craigengillan GDL.	This unobtrusive bridge is not a prominent feature, even when viewed from immediately adjacent. The key aspects of its setting are its intimate visual links with the adjacent lodge (1086) and road to Craigengillan House, and the historic links between the bridge and Craigengillan Estate, which is reflected in the bridge being located within the GDL. It can be considered to have a group setting with the adjacent lodge. It has recreational value, in that it forms part of a public access into Craigengillan Estate, and can be viewed from a footpath running along the Muck Water to the north-west, where there are also educational interpretation boards (although not relating to the bridge itself). There are wide views from the bridge of the surrounding valley and hillsides, including Dalmellington and a range of existing industrial features, houses and overhead power lines, but these views are not considered to relevant to understanding the context or appreciating the architectural qualities of the bridge. The existing N-Route OHL proposed for removal crosses the GDL c. 250m south of the bridge. (field visit)	High	High – as a built component of a GDL (see 110).	High
1093	C(s) listed, in Outstanding Conservation Area	Waterside, Chapel of Ease	NS40NW 28 / 21266	243607	608815	Statutory List description - 5-bay rectangular Gothic church dating to c. 1890. No longer in ecclesiastical use. Located within Waterside Outstanding Conservation Area.	This former church is now a private residence set within gardens that provide a secluded and intimate visual setting for the building. Views south, towards the proposed OHL route, are almost wholly screened by other buildings and trees, and the existing N-Route OHL proposed for dismantling is partly visible crossing the slopes on the opposite side of the valley of the River Doon. The essential setting of this building is defined by the contribution it makes to Waterside village, which is protected as an Outstanding Conservation Area (109), and by its historic associations with Dalmellington Ironworks (4345) and its attendant communities. (field visit)	High	High – defined by Conservation Area.	High
1094	B listed, in Outstanding Conservation Area	Waterside, Ardoon House	NS40NW 15.05	244032	608660	Statutory List description - Asymmetrical 2-storey villa-type house with simple 'Jacobean' detailing, possibly designed by William Burn and David Bryce. Basically an L-plan with a long, low service range. Seemingly built in conjunction with the Dalmellington Ironworks, and present by 1857. Located within Waterside Outstanding Conservation Area.	This building is currently derelict. It stands on the west-facing slopes of Green Hill, within a garden area almost entirely ringed by mature trees or woodland, which screen views into and out of the property, except to and from an area of the hillside on the opposite side of the valley to the west, where a short length of the existing N-Route OHL proposed for dismantling is visible. The screening provides a very secluded setting. The garden ground to the front of the house has recently been re-graded by earth-moving machinery. Ardoon House has close historical links with Waterside (109) and Dalmellington Ironworks (4345), but stands above and out of site of, and feels separate from, the village and industrial complex. The current condition of the property significantly reduces the intimate sense of place, aesthetic qualities and educational / recreational values of the site. (field visit)	High	Moderate – although in a designated area the current condition of the house and garden significantly reduce the sense of place and aesthetic qualities of the property.	High





Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
1105	B listed, in Conservation Area	Dalmellington, Kirk of the Covenant	NS40NE 68 / 47148	248050	606080	Statutory List description - A church built in 1846 in the Saxon style with a lofty tower. It is still in use as a church. Located with Dalmellington Conservation Area.	Dalmellington Parish Church is one of the largest individual buildings within Dalmellington, and remains in ecclesiastical use. It is located on one of the highest points within the old town, on the fringe of the historic core of the town at the head of High Main Street. This prominent location may have been deliberately selected to draw attention to the building, and also to allow the church to look down over the town. It replaced an earlier church (1107) located downhill to the south, closer to the centre of the town. The principal elevation of the church, incorporating the tower, faces west, where views are dominated by 20th century housing. There open views across the valley of the Cummock Burn to Pennyvenie, Benbraniachan and Benquhat Hill, where opencast mining, housing, masts and overhead lines are visible. Views in other directions are screened by topography or neighbouring buildings. The key aspects of the setting of this monument are its prominent topographic location within the town, its historic and visual associations with the town and its community, and a specific functional association with the nearby cemetery (1106). (field visit)	Medium	High – defined by Conservation Area.	High
1106	B listed	Dalmellington, Old Kirkyard	NS40NE 69 / 47147	248200	606153	Statutory List description - Kirkyard comprising a walled enclosure containing old monuments including a large Greek Revival mausoleum of the Macadam Cathcarts of Craigengillan.	This burial ground is located on a pronounced north-west facing slope c. 100m north-east of, and uphill from, the Parish Church (1105). There are close historic and spiritual links between the two buildings, although they are not intervisible and a house has recently been built on a plot of land between them. The burial ground is surrounded by a high boundary wall that restricts views into it. Access was not possible as the gates were locked, however it is estimated that from the higher, south- east interior of the cemetery there will be views south over the boundary wall, towards the proposed OHL route. The key aspects of the setting of this burial ground are assessed as being its historic links with the Parish Church and its parishioners (including historically the Macadam Cathcarts of Craigengillan), and the secluded nature of its interior as defined by its high boundary wall. (field visit)	Medium	High – defined by Conservation Area.	High
1107	B listed, in Conservation Area	Dalmellington, Cathcart Hall	NS40NE 71	248062	605963	Statutory List description - Original parish church 1766-1846; restored and made into a church hall in 1887. Located within Dalmellington Conservation Area.	This building is located at the junction of Church Hill and Knowehead, c. 125m south of the present Parish Church (1105). It faces west, and is entirely surrounded by other buildings, which provide the building with an entirely urban setting. The essential setting of this building is defined by the contribution it makes to Dalmellington Conservation Area (102), and by its historic associations with the Parish Church which replaced it as a place of worship. (field visit)	Medium	High – defined by Conservation Area.	High
1109	C(s) listed, in Conservation Area	Dalmellington, Nos 30, 32 High Street	NS40NE 73 & 103	248095	605838	Statutory List description - 2-storey residential properties showing good example of block and sneck masonry. Located within Dalmellington Conservation Area.	This building stands in a sheltered location close to the centre of Dalmellington. It faces south, and is entirely surrounded by other buildings (including some under construction to the south), that provide the building with an entirely urban setting. There are no significant views out to the rural landscape beyond the town, although one tower of the existing N-Route OHL proposed for dismantling is visible on Town Common. The setting of this building is defined by the contribution it makes to Dalmellington Conservation Area (102), although the building is not a prominent component. (field visit)	Medium	Moderate – new housing is under construction on the opposite side of the road.	Medium
1110	C(s) listed, in Conservation Area	Dalmellington, Church Hill No 17	NS40NE 75	248105	605956	Statutory List description - 2-storey and attic dwelling, dated 1858. Located within Dalmellington Conservation Area.	This building stands close to the centre of Dalmellington. It faces north, where views are of the frontage on the opposite side of the street. From the rear of the property there are views out to the hills to the south of Dalmellington, where it is anticipated that lengths of the existing N-Route OHL and proposed new OHL route are visible. The setting of this building is defined by the contribution it makes to Dalmellington Conservation Area (102), although the building is not a prominent component. (field visit)	Medium	High – defined by Conservation Area.	High
1111	B listed, in Conservation Area	Dalmellington, Doon Tavern	NS40NE 57	248024	605841	Statutory List description - 2-storey inn building with older projecting wing to rear. Located within Dalmellington Conservation Area.	This building is located on the south side of the road junction at the centre of Dalmellington. It faces north, from where there is a view uphill along High Main Street. It is entirely surrounded by other buildings that provide the building with a fundamentally urban setting. The setting of this building is defined by the contribution it makes to Dalmellington Conservation Area (102). (field visit)	Medium	High – defined by Conservation Area.	High
1112	C(s) listed, in Conservation Area	Dalmellington, Nos 4 and 5 Main Street	NS40NE 74	247984	605876	Statutory List description - 2-storey dwellings with hipped dormers. Located within Dalmellington Conservation Area.	This building is located on the south side of Main Street, one of the principal thoroughfares through the historic core of Dalmellington town. It faces north, from where the view is of the frontage on the opposite side of the street. It is entirely surrounded by other buildings that provide the building with a fundamentally urban setting. The setting of this building is defined by the contribution it makes to Dalmellington Conservation Area (102), although the building is not a prominent component. (field visit)	Medium	High – defined by Conservation Area.	High
1113 (29)	B listed	Doon Bridge on Straiton Road	NS40NE 70 / 47146	246192	605987	Statutory List description - Hump-backed, single round-arch bridge carrying the B741 over the River Doon. Located immediately outside Craigengillan GDL.	This bridge does not form a prominent feature of the local landscape. It is located within an area containing some scrubby woodland. Its key topographic relationships, which define the reason for its creation, are with the River Doon, which it spans and the B741 Straiton Road which it carries over the river. Its architectural qualities are best appreciated when viewed from the modern pedestrian bridge located c. 50m to the south of it, and its wider landscape setting can be appreciated from the Dalcairney Road c. 250m further south. From the latter viewpoint the bridge can be viewed within scrubby woodland against a backdrop of Green Hill, Dalmellington Ironworks and Waterside, and White Hill. The existing N-Route OHL passes c. 50m north of the bridge, with the nearest tower located c. 50m north-east of the bridge. (field visit)	Medium	Moderate – the surroundings are generally complementary but the N-Route and modern pedestrian footbridge intrude.	Medium

Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
3627	B listed	High Bridge of Ken	NX69SW 88	261954	590211	Statutory List description – Earlier 18th century double-arched bridge spanning Water of Ken at a narrow ravine.	This bridge does not form a prominent feature of the local landscape, and is tucked into a narrow valley fringed by trees on the north side of the Water of Ken and gently rising pasture on the south side. The views to the south-west and downstream are short and screened by trees c. 200m away, although longer views extend upstream to the north-east. Overhead wires supported by telegraph poles cross the Water of Ken above the bridge. In summary, the bridge has a picturesque, but localised, landscape setting possibly little changed since the bridge was built. (field visit)	Medium	High, but localised.	High
3676	B listed	Barlaes	NX68NW 66 / MDG5101	263129	585112	Statutory List description – Early 19th century, 2-storey, 3-bay, painted rubble farmhouse with lower 2-storey wing to rear forming L-plan.	This farm lies at some distance from publically accessible locations, and a full appreciation of its setting could not be obtained. However, the key aspect of this building is considered to be the immediate farmland surroundings of the farmhouse, which are intimately linked with its presence. (largely desk-based; few local vantage points)	Medium	High, but localised.	High
3677 (131)	C(S) listed in B Group, in ASA	Carsphairn Parish Church, Church of Scotland	NX59SE 63.00 / MDG 13025	256258	593168	Statutory List description - Rectangular hall church with apse added to the east, late 19th/early 20th century. Mid 20th century vestry and porch to the west. The church has pointed harled walling with polished red sandstone margins, and a slate roof.	The church is located at the eastern end of Carsphairn village, and stands within a burial ground bounded by a wall. It is not a visually prominent feature within the local landscape (by comparison, e.g., to LB 1105). Mature trees are present around the south and west sides of the graveyard, and allow for broken views of Bardennoch Hill from the south side of the church. From the north side of the building there are views north-east beyond the village over the southern slopes of Craig of Knockgray, and the existing N-Route OHL is visible in that area, as well as several lines of overhead wires in the foreground view along and beside the A713 road. The key aspects of the setting of this monument are believed to be its historic associations with the village and its community at Carsphairn, and a specific functional association with the burial ground (3678) and adjacent manse (see Appendix E1, site 133). (field visit)	Medium	High, but localised.	High
3678 (132)	B listed in B Group, in ASA	Carsphairn Parish Churchyard and McAdam Mausoleum	NX59SE 63.01 / MDG13025	256238	593154	Statutory List description – Rubble-walled churchyard containing many good late 17th/ early 18th century carved gravestones. The McAdam mausoleum dates from 1838.	Although they are separately listed, in practical terms the churchyard and church (3677) are effectively components of single place. The boundary wall of the burial ground very substantially screens views into the graveyard from the adjacent road, providing a secluded aspect. See 3677 for a statement of the views out of the burial ground. The key aspects of the setting of this burial ground are assessed as being its close associations with the Parish Church and its parishioners. (field visit)	Medium	High – but defined primarily by intimate association with the church.	High
3679 (165)	C(S) listed	Dalshangan stables	NX58NE 16 / MDG3408	259610	589045	Statutory List description – Earlier 19th century, 4 ranges of single storey and loft farm buildings around courtyard, with later tower and entrance pend, dated 1865 on tower.	This building forms an element of the policies of Dalshangan House, as shown for example on the first edition Ordnance Survey map. The building has a relatively secluded setting, with a wide tree belt to the north-east precluding any visibility in that direction, and the views to and from it being limited to the higher ground to the north-west. The building is located within a farmland setting of pasture (probably former parkland) and remnant clump plantations. An old carriage drive, the dovecot (3680) and an unoccupied lodge stood beside the present drive have historic links with the stable block. (viewed from local vantage points and using photographs taken by the LVIA specialists during a site visit in June 2009)	Low	Moderate – defined by remnant landscape remains (now farmland) and associated buildings.	Low
3680 (166)	C(S) listed	Dalshangan dovecot	NX58NE 17 / MDG3409	259504	588899	Statutory List description – Late 19th century cylindrical dovecot with rubble walling. No nest boxes survive.	This building is in a poor state of repair, and is located beside trees and scrubby woodland beside the A713, beside a disused carriage drive formerly approaching Dalshangan House. The vegetation provides the dovecot with an intimate, but picturesque, setting. Views towards the proposed OHL route are limited by both vegetation and rising ground to the north-west. A wood pole overhead line passes within a few metres of the dovecot. Views west to the existing N-Route OHL are screened by trees and bushes. The key aspects of the setting of this building are its intimate location, and its historic associations with the relict designed landscape and other surviving buildings at Dalshangan. (field visit)	Low	Moderate – associated with remnant designed landscape and other buildings at Dalshangan.	Low
3681 (119)	B listed, in ASA	Holm of Daltailochan	NX59SE 65	255504	594152	Statutory List description – Later 18th century. 2-storey, wide 3-bay painted coursed rubble farmhouse.	This building is located in a pasture farmland setting on level ground on the east bank of the Carsphairn Lane. It is a substantial building set within a garden ground, and partly obscured by mature trees. There are open views north-east from the building over the slopes of Holm Hill and Craig of Knockgray, where the existing N-Route OHL is visible. (assessed from local vantage points)	Medium	High – defined by the surrounding farmland and moorland landscape	High
4900	C(s) listed, in Conservation Area	Dalmellington, Dalmellington Inn, 2 High Street	NS40NE 56 / 47192	248037	605861	Statutory List description - Inn building. Located within Dalmellington Conservation Area.	This building is located on the east side of the road junction at the centre of Dalmellington. It faces west, from where there is a view along Main Street. It is entirely surrounded by other buildings that provide the building with a fundamentally urban setting. The setting of this building is defined by the contribution it makes to Dalmellington Conservation Area (102). (field visit)	Medium	High – defined by Conservation Area.	High
6595	B listed, in Outstanding Conservation Area	Waterside, Waterside Institute	NS40NW 29 / 21267	243823	608626	Statutory List description - 1-storey, irregular-plan, Free Style, brick workmen's institute, designed John B Wilson (Glasgow) in 1904 and erected by the Dalmellington Iron Company. Latterly used as a church hall. Located within Waterside Outstanding Conservation Area.	The northern half of this building has been converted to a private residence ('The Old Institute'). From the building the most open views are to the south-west, across to the opposite side of the valley, where the existing N-Route OHL proposed for dismantling is visible crossing the lower slopes of White HIII. Views to the south include workers' housing and the Dalmellington Ironworks (4345), above which the afforested hills to the south of Dalmellington are visible as a distant horizon. The key aspects of the setting of this building are the contribution it makes to Waterside village, which is protected as an Outstanding Conservation Area (109), and by its historic associations with Dalmellington Ironworks (4345) and its attendant communities. (field visit)	High	High – defined by Outstanding Conservation Area.	High





Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
6596	C(s) listed, in Outstanding Conservation Area	Waterside, War Memorial	NS40NW 30 / 21268	243796	608652	Statutory List description - c. 1920 Celtic cross war memorial. Ashlar cross on plinth and base standing on rubble footings contrived to appear as a rock outcrop. Stands opposite Waterside Institute. Located within Waterside Outstanding Conservation Area.	This war memorial now stands within the private garden of 'The Old Institute' (6595), which forms an attractive immediate setting for the monument, although access to the monument appears to be restricted. The memorial has a very similar visual setting to the neighbouring institute building, except that the building screens views southwards from the memorial. The key aspects of the setting of this memorial are its intimate relationship with the adjacent institute building, and more generally the contribution it makes to Waterside village and its historic associations with former inhabitants of the locality. The nature of the memorial provides with a sense of place, albeit one transformed from its original setting within the community. (field visit)	High	High – defined by Outstanding Conservation Area.	High
6623	B listed, in Outstanding Conservation Area	Palace Bar, Waterside Village (9-13 Dalmellington Road)	NS40NW 45 / 47191	243679	608609	Statutory List description - 2-storey store building, built 1850 and extended to NE and SW in later 19th century. c. 1900 single- storey flat-roofed extension along whole of frontage in Beaux Arts style. It was built as a company store for Dalmellington Ironworks (4345), and was subsequently converted into a bar. It is the only surviving ironworks store in Scotland.	This property is presently disused and bricked up. It faces south in a slightly elevated position above the valley floor, although views in that direction from the property are limited nearby by the large bing (7544), the Dalmellington Ironworks complex (4345) and woodland plantation beside the A713. Its architectural qualities are best appreciated when viewing from the south. The key aspects of the setting are its historic and commercial relationships with the former workers at the ironworks and the residents of Waterside village (109) and surrounding villages, to which it owed its presence. (field visit)	High	High – provided by its associations with Dalmellington Ironworks / Waterside and contribution to an OCA.	High
9750	B listed	Polharrow Bridge over Polharrow Burn	NX68SW 33 / MDG8874	260321	584357	Statutory List description – An early 18th century three-arched bridge widened in 1841. Now disused and bypassed.	This disused road bridge has a secluded setting, with woodland present to the to the west, beside Polharrow Burn (upstream), and to the east. The edges of the carriageway of the bridge are becoming overgrown with broom and young trees, and the former carriageway is blocked at the east end of the bridge by a bund of earth. Downstream the A713 is carried over the burn on a new bridge, c. 15-30m distant. The setting of this bridge is defined principally by its relationship to the Polharrow Burn, and the now secluded location of the bridge. (field visit)	Medium	Moderate – secluded setting is diminished by the scrubby vegetation growing on the bridge.	Medium
18793	A listed, in GDL	Craigengillan	NS40SE 14.0 / 47156	247350	602817	Statutory List description –18th century house named Berbeth which was expanded in the early 19th century and later romanticised with the addition of crowstepped gables. Forms the focus of Craigengillan Estate, which is designated as an GDL.	Setting defined by its relationship to Craigengillan Stables (18794) and surrounding designed landscape. Views from building considerably screened by trees, providing a relatively secluded setting. The longest views appear to be to the east. (assessed from vantage points)	High	High – provided by GDL.	High
18794	A listed, in GDL	Craigengillan, stables	NS40SE 14.1 / 47155	247365	602755	Statutory List description – Late 18th century 2-storey classical stable court with entrance tower, framing entrance to Craigengillan House (18793). Located in Craigengillan GDL.	Setting defined by its intimate visual and historic relationship to Craigengillan House. Views from building considerably screened by trees, providing a relatively secluded setting. The longest views appear to be to the east. (assessed from vantage points)	High	High – provided by GDL.	High
48145	C(s) listed	Dalmellington, 16 Ayr Road (former schoolhouse to Dalmellington Primary School)	NS40NE 102	247648	605956	Statutory List description - 1-storey and attic former schoolhouse, probably designed by Brown & Lawrence, c. 1874.	This building is presently disused and boarded up. It faces south-west towards a petrol station on the opposite side of the A713. Elsewhere it is surrounded by modern housing and an extensive open area where formerly associated school buildings (now demolished) were once present. There are views northwards over the north side of the town to Benbraniachan and Pennyvenie, where opencast mining and housing are visible. Overall, this building has a very degraded setting which retains very little of its original context. (field visit)	Low	Low – former school buildings now demolished and building surrounded by more modern housing and commercial buildings.	Low
49506	C(s) listed, in GDL	Dalcairnie Bridge, Craigengillan Estate	NO40SE 38.01	246580	604185	Statutory List / Inventory description – A single arch red sandstone bridge with low ashlar parapet and splayed ends, dated c. 1800, spans Dalcairnie Burn. The bridge has a spectacular setting when viewed from beneath the waterfall of the Dalcairnie Burn. Located within Craigengillan GDL.	This feature was not visited, and hence many aspects of its setting have not been assessed, although the Inventory suggests that the main aspects of its setting are in relation to the nearby waterfall and historic and landscape associations with the Craigengillan Estate. (desk-based)	High	High – defined by GDL.	High

E.2.3 **Conservation Areas**

Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
102 (40)	Conservation Area	Dalmellington	-	248030	605860	Description – Well-preserved historic townscape of predominantly 18th / 19th century residential, commercial, ecclesiastical and civic buildings that form the core of Dalmellington, located beside the Muck Water. The Conservation Area contains several Listed Buildings dispersed around the designated area.	The character of the village is best appreciated from viewing along the streets within the village. Views out of the Conservation Area to the rural landscape beyond are limited. General views of the topographic and landscape setting of the town can be obtained from elevated viewpoints in the surrounding landscape, although such views also contain modern housing that surrounds the Conservation Area. (field visit)	Medium	High – but defined by Conservation Area.	High
109	Outstanding Conservation Area; also partly scheduled	Waterside Village	-	243670	608600	Description - The designated area contains the remains of a 19th century industrial complex (4345), miners' village (part of 7863) and other residential, civic, ecclesiastical and commercial buildings (1093-4, 6595-6, 6623). The industrial complex was formerly the focus of the Dunaskin Heritage Centre, now closed. Many of the surviving buildings within Waterside have been converted into dwellings.	The setting of the Outstanding Conservation Area is largely indistinguishable from that of the Dalmellington Ironworks (4345) and associated remains (7863). The properties outside the scheduled areas either occupy relatively secluded locations with views screened by trees or other buildings, or are located at the foot of the slopes with views across the valley floor and the River Doon. (field visit)	High	High – the valley location makes a strong contribution to the understanding the siting and appearance of this receptor.	High

E.2.4 Gardens and Designed Landscapes

Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
110 (30)	GDL	Craigengillan	-	247400	602900	Inventory description - A rare example of a complete and unfragmented estate landscape, with 16th century origins and held by the McAdam family for almost 400 years. Much of the designed landscape visible today dates from the latter half of the 18th century. The grounds and gardens provide the setting for the A listed Craigengillan House, and incorporate formal gardens, a range of gardens and garden buildings, extensive policy woodland, a rocky gorge and industrial archaeological remains. There are panoramic views of the surrounding hills from Craigengillan House and from different parts of the GDL. The Inventory assesses the GDL as having outstanding value in all assessment categories (work of art, historical, horticultural, architectural, scenic, nature conservation, archaeological). The outstanding value of the GDL as a work of art results from the way in which its design blends the GDL into the wider landscape. Its outstanding historical value reflects the continuity of ownership and stewardship by the McAdam family, the presence of historic and archaeological features, and associations with various distinguished visitors. The 18th century A listed house, together with the Stable Block, Home Farm, and garden buildings including an Ice House provide an outstanding architectural value to the GDL. Its archaeological value is provided by the Dalnean Hill SM (4390) and 22 other archaeological sites within the GDL (including 7115, 7162).	The key part of the GDL in relation to the proposed works is the northern and western parts. This contains the open ground of the marshy valley bottom through which the River Doon flows (incorporating Bogton Loch, once of greater extent, as depicted on Roy's map of 1747-55), the slopes to the west, and Crighton's Knowe to the east. From these areas there are generally extensive and open views of the range of hills to the north, the Doon Valley, and across Dalmellington / Bellsbank and the largely forested hills beyond to the east. The existing N-Route OHL intersects the northern part of the GDL on a north-west to south-east alignment, and provides a significant modern industrial intrusion into the GDL. The GDL has good recreational value, containing various walks that are open to the public, and signboards provide interpretative / educational information. (field visit)	High	High - the Inventory assesses the GDL as having outstanding value in all assessment categories (work of art, historical, horticultural, architectural, scenic, nature conservation, archaeological).	High
n/a (134)	NIDL	Knockgray	n/a	25780	59336	An area of woodland stands and pasture associated with Knockgray.	Forms a locally distinctive landscape feature within a moorland environment on the north-side of the Water of Deugh. (viewed from local vantage points)	Medium	Moderate	Medium
n/a	NIDL	Knocknalling	n/a	25965	58482	An area of mature mixed (but primarily deciduous) woodland within the grounds of Knocknalling House, that provides a secluded setting for the House and other listed buildings present within the NIDL (but which have no theoretical perceptibility of the proposed development route and are therefore not considered in this assessment).	The NIDL forms a locally prominent block of mature woodland within the valley of the Water of Ken between Kendoon and St John's Town of Dalry. From the north and east the trees screen views into the NIDL, but views of Knocknalling House and other associated buildings are possible from elevated positions along the Forrest Estate road. A steel tower overhead line (a southward continuation of the N-Route proposed for dismantling) runs between the east edge of the woodland and the A713, and detracts from views of the NIDL from this direction. (viewed from local vantage points)	Medium	High	High





E.2.5 Non-Statutory Register Sites (Ayrshire)

Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
7112	NSR Code C	Auchenroy Hill, cairn	NS40NE 10 / 7112	245010	608855	NMRS / SMR description - A Bronze Age burial cairn, c. 15m in diameter and 0.6m high, stands on the summit of Auchenroy Hill.	Prominent hilltop locations such as this were often deliberately selected as locations for the erection of burial structures in prehistoric times, and this indicates that experiencing the views that can be obtained to and from such locations were important factors in their siting. Map and wireframe evidence suggests that from the site there will be long views to north, east and south. There will be intervisibility between this feature and the locations of other prehistoric burial constructions present in similar topographic positions in the surrounding landscape. The key aspects of the setting of this site would appear to be its topographic setting, and the wide views from the site that include the locations of similar features in similarly prominent locations. (assessed from local vantage points)	High	High – resulting from prominent topographic location.	High
7113	NSR Code V, in GDL	Doon Bridge, barrow (possible)	NS40NE 11 / 7113	246350	605750	NMRS / SMR description - Possible ploughed-down prehistoric barrow (earthen burial structure), 15m in diameter and 0.6m high, located on a low rise. Located within Craigengillan GDL.	This feature lies on a gentle east-facing slope in an improved pasture field on the west side of Dalcairney Road, but its attribution as a barrow seems far from certain based upon the visible remains. Such uncertainty precludes detailed assessment of many aspects of its setting. The site is not a prominent landmark, but is visible from the Dalcairney Road. From the site there are wide views to the north and east, although they are interrupted by mature trees lining the west side of Dalcairney Road. (field visit)	High	Moderate – defined by complementary agricultural surroundings.	High
7115	NSR Code V, in GDL	Elizabeth Isle, Bogton Loch, crannog (possible)	NS40NE 13 / 7115	246985	605530	NMRS / SMR description - A small and overgrown island close to the north-east shore of Bogton Loch may be the remains of a crannog (island dwelling of later prehistoric or potentially more recent date), but this attribution has yet to be confirmed. Located within Craigengillan GDL.	This key aspect of the setting of this feature is defined primarily by its presence within Bogton Loch. Although not a prominent feature, it is visible as a minor bush-covered feature breaking the surface of the loch, when viewed from rising ground to either side of the loch. There are open views from the loch, although Dalmellington and Bellsbank are visible to the east, and the existing N-Route OHL proposed for dismantling forms a prominent feature crossing the GDL to the north of Bogton Loch. However, assessment of the recreational, educational and experiential values of this feature is constrained by a lack of confirmation as to its date and function. If it is a crannog, then it forms a distinctive element of the historic environment of the locality. (assessed from local vantage points)	High	High – defined by Bogton Loch.	High
7118	NSR Code C	Benquhat Hill, farmstead	NS40NE 16 / 7118	246360	609850	NMRS / SMR description - The remains of a medieval or later rural settlement on the south-facing slopes of Benquhat Hill, including a longhouse, a kiln, enclosures, and areas of rig-and-furrow cultivation. Documentary records indicate the presence of a farm at this location in the 1680s.	The remains of this farmstead are situated in a remote moorland location on the south slopes of Benquhat Hill. Map and wireframe evidence indicates that from the farmstead there are long views from south-east to west, with views in other directions obstructed by the slopes of Benquhat Hill. This site was not visited, and hence its aesthetic and experiential properties, and recreational / educational values, have not been assessed, although it is anticipated that it will possess all to varying degrees. The key aspect of setting would appear to be the functional and topographic relationships between the farm and the land that was exploited. (desk-based)	High	Low – surrounding landscape has been subject to considerable industrial exploitation.	Medium
7132	NSR Code V	Dalmellington, Dame Helen's Castle	NS40NE 4 / 7132	248525	605610	NMRS / SMR description - The remains of a building, probably a tower house, have been recorded in an erosion face on the north side of a small natural mound located on the summit of a short ridge sloping down steeply to the Muck Water. The mound has been truncated by the road to the south- west. There are ditches beside the mound to the north-west and south-east.	The mound is as previously described, although there is no visible trace of any building, and a telegraph pole has been founded in the north side of the mound. This may be the site of a castle or tower house, suggesting a potential link with nearby Dalmellington Motte (3009), although the two sites are not intervisible. The site has a fairly secluded topographic setting within the steep-sided valley of the Muck Water. Modern houses are also present immediately to the south-east and southwest of the mound. The key aspects of the setting of this monument are its topographic relationship with the Muck Water and its scenic setting within a rural landscape, which has been degraded to a considerable degree by the visibility of modern house. (field visit)	High	Moderate – its topographic and landscape surroundings have been degraded.	High
7141 (17)	NSR Code V	Nether Grimmet, farmstead	NS40NW 12 / 7141	244334	607601	NMRS / SMR description – The remains of a medieval or later farmstead, as depicted on historic maps dating from the mid 17th century onwards, and recorded as having been abandoned by the middle of the 19th century. Features of the farmstead include the ruins of at least one rectangular building, two enclosures and a kiln-barn, set within an area of rig-and-furrow cultivation.	The site is located within a pasture field beside a minor burn on the north-east slopes of White Hill, from where the principal view is towards the opposite side of the valley, where Dallmellington Ironworks (4345) and Waterside (109) form a prominent landmark. There are also longer views along the Cummock Water to the afforested hills beyond. Certain drystone elements of the farmstead are visible when viewed from the opposite slopes of the valley. The key aspects of the setting of this site appear to topographic and visual, and defined by the presence of the remains within a complementary pasture landscape, set within the land which presumably was formerly exploited by the occupants of the farm. It is a remnant of the landscape of this section of the Doon Valley before it became dominated by industrial activities. The existing N-Route OHL proposed for dismantling crosses the slopes of White Hill c. 200m upslope from the farmstead. The site does not have strong experiential qualities, or recreational / educational potential. (field visit)	High	Moderate - defined by complementary agricultural surroundings.	High
7149	NSR Code V	Green Hill, barrow	NS40NW 2 / 7149	244250	609055	NMRS / SMR description - An earthen mound, c. 21m in diameter and 1.2m high, with a stone set in the top, located in a prominent position on the summit of Green Hill. The feature is believed to be a prehistoric barrow (burial mound).	Locally prominent rises such as this were often deliberately selected as locations for the erection of burial structures in prehistoric times, and this indicates that experiencing the views that can be obtained from such locations were important factors in their siting. When viewing towards the site it is the hill rather than the low earthwork remains of the barrow that defines the location of the site. Map and wireframe evidence suggests that from the site there will be long views from south-east to south-west across the Doon Valley, Craigengillan and Dalmellington to the hills beyond. There will be intervisibility between this feature and the locations of other prehistoric burial constructions present in similar topographic positions in the surrounding landscape (e.g. 7112). The key aspects of the setting of this site would appear to be its topographic setting, and the wide views from the site that include the locations of similar features in similarly prominent locations. (assessed from local vantage points)	High	High – resulting from prominent topographic location.	High

Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
7162	NSR Code C, in GDL	Wee Cairn Hill, Dalcairnie, cairn	NS40SE 1 / 7162	246265	604325	NMRS / SMR description - The disturbed remains of a Bronze Age burial cairn on the summit of a hill, measuring c. 23m in diameter and standing less than 1m high. Located within Craigengillan GDL.	No sense of the setting of this monument could be obtained from publicly accessible locations. However, locally prominent hilltop locations such as this were often deliberately selected as locations for the erection of cairns in prehistoric times (e.g. also 7112), and indicates that experiencing the views that can be obtained to and from such locations were important factors in their siting. When viewing towards the site it is the hill rather than the cairn that forms the landmark. Map and wireframe evidence suggests that from the site there will be extensive visibility northwards across the northern part of Craigengillan GDL (110) and Dalmellington to the range of hills beyond. There may be intervisibility between this cairn and the locations of other broadly contemporary cairns present in the surrounding landscape (e.g. 7112), but this could not be confirmed. (assessed from local vantage points)	High	High – resulting from prominent topographic location.	High
7164	NSR Code C	Little Shalloch, farmstead	NS40SE 11 / 7164	245095	602775	NMRS / SMR description - The remains of a medieval or later rural settlement set in an open moorland location, consisting of buildings, a garden enclosure and extensive cultivation remains, some set within enclosures, and partly defined by a head-dyke. The farmstead is depicted on Pont's map of the late 16th century, and was occupied for several hundred years, but is now deserted.	The remains of this farmstead are situated in a remote moorland location on the gentle north-east slopes of Wee Hill of Glenmount. Map and wireframe evidence suggests that the key views from this site are likely to be to the north and east. The key aspects of its setting would appear to be its presence within a deserted medieval or later farming landscape, and its associations with other broadly contemporary farmsteads present within the same range of hills (e.g. 5200, 7166, 7181). This site was not visited, and hence its current condition, aesthetic and experiential properties, and recreational / educational value, have not been assessed. (desk-based)	High	High - the immediate surroundings of the site have probably changed little since the farmstead was occupied.	High
7165	NSR Code V	Macnabstone, farmstead	NS40SE 12 / 7165	247500	600850	NMRS / SMR description – the footings of two rectangular buildings adjacent to an enclosure (containing a possible third building) and a possible kiln. Depicted on maps from 16th to 19th centuries.	The remains of this farmstead are located on a low knoll at c. 240m above OD, c. 20m above the western shore of Loch Doon. From the site there are extensive picturesque views south and east across Loch Doon, with the wooded Muckle Eriff Plantation forming a prominent landmark. The remains do not form a prominent landmark, and the knoll upon which they are set is not a prominent feature. They have little aesthetic and experiential properties, but have some potential recreational / educational value The key aspects of the setting of this post-medieval farmstead are considered to be the immediate farmland surroundings of the site.	High	High – the immediate surroundings of the site have probably changed little since the farmstead was occupied (apart from the raising of the water level in Loch Doon in the 1930s).	High
7166	NSR Code V	Wee Hill of Glenmount, farmstead	NS40SE 13/ 7166	245925	601795	NMRS / SMR description -The well- preserved remains of a medieval or later rural settlement set in an open moorland location, including two rectangular buildings set within a rectangular enclosure, a second rectangular enclosure, and fields of rig-and- furrow cultivation.	The remains of this farmstead are situated in a remote moorland location on the gentle north-east slopes of Wee Hill of Glenmount. Map and wireframe evidence suggests that the key views from this site are likely to be to the north-east. The key aspects of its setting would appear to be its presence within a deserted medieval or later farming landscape, and its associations with other broadly contemporary farmsteads present within the same range of hills (e.g. 5200, 7164, 7181). This site was not visited, and hence its current condition, aesthetic and experiential properties, and recreational / educational value, have not been assessed. (desk-based)	High	High - the immediate surroundings of the site have probably changed little since the farmstead was occupied.	High
7173	NSR Code C	Bellsbank Plantation, Bubbly Cairn	NS40SE 2 / 7173	249085	603505	NMRS / SMR description - Remains of a large prehistoric, probably Bronze Age, burial cairn located within Bellsbank Plantation. When last previously visited, in 1980, the cairn was found to be badly mutilated and overgrown, but in 1976 had been described as a grass-covered mound 18m in diameter and 0.7m high.	The condition of the site remains as in 1980. This cairn is located within dense coniferous forestry (Bellsbank Planation). There is no clearing around the cairn, and mature trees immediately surround it. Forestry ploughing has scored furrows across the cairn on a north-west to south-east orientation (across the contours), disturbing and exposing small angular to sub-rounded stones and deforming the cairn. There are no views out from the cairn, which is visible only from within c. 50m of its location. The cairn presently has no experiential, recreational or educational value, and no aesthetic qualities. Overall, the cairn has no meaningful setting, and it is doubtful whether it can be still considered as being of national importance given the damage that it has suffered. (field visit)	High	Negligible – forestry screens views to and from the site, and removes any ability to appreciate its topographic context.	Low
7175	NSR Code V	Pennyarthur Rig, cairn	NS40SE 3 / 7175	248555	603845	NMRS / SMR description - The disturbed remains of a Bronze Age burial cairn, c. 13m in diameter and 1.2m high, on the summit of Pennyarthur Rig.	Locally prominent hilltop locations such as this were often deliberately selected as locations for the erection of cairns in prehistoric times (e,g, 7112, 7149, 7159, 7162), and this indicates that experiencing the views that can be obtained from such locations were important factors in their siting. However, this cairn is now located within dense coniferous forestry (Bellsbank Planation). There is no clearing around the cairn, and mature trees immediately surround it. There are no views out from the cairn, which is visible only from within c. 100m of its location. The cairn presently has no experiential, recreational or educational value, and no aesthetic qualities. Overall, the cairn has no meaningful setting. (field visit)	High	Negligible – forestry screens views to and from the site, and removes any ability to appreciate its topographic context.	Low
7181	NSR Code V	Glenmount, farmstead	NS40SE 9 / 7181	245220	602300	NMRS / SMR description - The remains of a medieval or later rural settlement set in an open moorland location, consisting of buildings of more than one period, and extensive cultivation remains, set within turf-banked fields. The farmstead is depicted on Pont's map of the late 16th century, but had become deserted by the middle of the 19th century.	The remains of this farmstead are situated in a remote moorland location on the east slopes of Wee Hill of Glenmount. Map and wireframe evidence suggests that the key views from this site are likely to be to the north-east. The key aspects of its setting would appear to be its presence within a deserted medieval or later farming landscape, and its associations with other broadly contemporary farmsteads present within the same range of hills (e.g. 5200, 7164, 7166). This site was not visited, and hence its current condition, aesthetic and experiential properties, and recreational / educational value, have not been assessed. (desk-based)	High	High - the immediate surroundings of the site have probably changed little since the farmstead was occupied.	High





Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
7989 (46)	NSR Code V	Beoch, cairn	NS50NW 1 / 7989	252220	608440 (SMR) 608494	NMRS / SMR description - The remains of a Bronze Age kerbed cairn (burial cairn) partly excavated in 1937 and subsequently partly disturbed by forestry planting.	The visible remains of this cairn lie at the edge of a conifer plantation on the south side of the B741 road, and appear to extend into the afforested area. Apart from along the road in each direction the views from the cairn are dominated by conifer plantations, the presence of which has entirely removed any sense of the topographic setting of the cairn. There are no related monuments visible from the cairn. The cairn itself does not form a landmark, and even from the adjacent road its location is indicated by a single upright stone. In its current condition the cairn has very little aesthetic appeal and no educational potential, and the setting provides very little sense of place to the monument. Overall, the cairn has no meaningful setting. (field visit)	High	Negligible – forestry screens views from the site, and removes any ability to appreciate its topographic context.	Low
7994	NSR Code C	Cairnennock, cairn	NS50SW 1 / 7994	250800	600780	NMRS / SMR description – A prehistoric burial cairn c. 20m across and 0.5m high, with a modern marker cairn built on it, and surrounded by a ditch.	This feature is located on the summit of a gently rounded but locally prominent rise, although the feature has little surface relief and is hard to detect from any distance. Locally prominent hilltop locations such as this were often deliberately selected as locations for the erection of cairns in prehistoric times (e.g. also 7112), and indicates that experiencing the views that can be obtained to and from such locations were important factors in their siting. There will be intervisibility between this feature and the locations of other prehistoric burial constructions present in similar topographic positions in the surrounding landscape (e.g. 7162), although other visual links (with e.g. 7173, 7175) have been obscured by forestry. (assessed from local vantage points)	High	High – resulting from locally prominent topographic location.	High
8018	NSR Code C	Fardenreoch, cairn	NS51SE 5 / 8018	256075	614640	NMRS / SMR description - A heavily robbed and turf-covered burial cairn, c. 17m in diameter and up to 0.8m high, situated on an unnamed low rise in a moorland location on the south-east facing slope of Carnivan Hill.	No sense of the location or setting of this monument could be obtained from publicly accessible locations. Locally prominent rises such as this were often deliberately selected as locations for the erection of cairns in prehistoric times, and this indicates that experiencing the views that can be obtained from such locations were important factors in their siting. However, map evidence and general views of the site location suggests that it occupies a location that has changed considerably since the time the cairn was first built. Extensive conifer plantations are present to the west, and active opencast coal mines are being worked immediately to the south. Together these recent land-uses have substantially removed what was probably originally an open landscape setting for the monument. The principal views from the cairn are likely to be southwards and eastwards, with those to the west screened by forestry. This site was not visited, and hence its aesthetic and experiential properties, and recreational / educational value, have not been assessed, but they are presently unlikely to form significant aspects of its setting as a result of neighbouring land-uses. (assessed from local vantage points)	High	Low – the surrounding land- uses only partly complement the siting and appearance of the receptor.	Medium

E.2.6 Unscheduled Archaeological Sites Deemed by Dumfries and Galloway Council to be of National Importance

Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
MDG3406	SMR National, in ASA	Green Dass Hill, cairn	NX58NE 14 / MDG3406	257492	587182	NMRS / SMR description –A prehistoric cairn situated on the crest of a gentle rise in open moorland, measuring c. 14m across and 1.2m high.	No sense of the setting of this monument could be obtained from publicly accessible locations. However, locally prominent hilltop locations such as this were often deliberately selected as locations for the erection of cairns in prehistoric times (e.g. also 7112), and indicates that experiencing the views that can be obtained to and from such locations were important factors in their siting. (desk- based)	High	High – defined principally by prominent topographic location and other prehistoric monuments present within the Polharrow Burn ASA.	High
MDG3416 (136)	SMR National, in ASA	Barlae Hill – Stroengassel Hill, road	NX58NE 23 / MDG3416	257580	589990	NMRS / SMR description – Old road, now unused, visible as a hollow way 2.5-3m wide. Reputed formerly to have been a pilgrimage route between Strathclyde and Whithorn and remained in use until the A713 road was built in the mid 19th century (information from interpretative display board at Polmaddy deserted village, 5391).	Extensive linear monument running from within the Polharrow Burn ASA, northwards through plantations to Bardennoch to Garryhorn ASA via Polmaddy deserted village (5391). Defined by the ridge along which it runs in the Bardennoch to Garryhorn ASA. Formed part of a major north-south transport route until the 19th century, when superseded by the A713. By its nature the old road is not a prominent feature of the landscape, although it is likely to have some aesthetic qualities at certain locations, and it is promoted as part of the heritage trail at Polmaddy. (desk-based; vantage points; field visit at Polmaddy)	High	High (although low in areas of plantation)	High
MDG3460	SMR National, in ASA	Bardennoch Hill, cairn	NX59SE 14 / MDG3460	256846	591214	NMRS / SMR description – Heavily robbed remains of a burial cairn situated on a low eminence at the foot of gentle south-facing slopes, with surrounding enclosure.	This cairn has associations with other prehistoric monuments preserved within the ASA. Elevated locations were often deliberately selected as locations for the erection of cairns in prehistoric times, and this indicates that experiencing the views that can be obtained to and from such locations were important factors in their siting. There will likely be intervisibility between this feature and the locations of other prehistoric burial constructions present in similar topographic positions in the surrounding landscape. Based upon the most recent description of this site (made in 1998), the site is likely to have some aesthetic and experiential properties, and some interpretive and educational potential. (desk-based)	High	High – resulting from associations with other prehistoric monuments within the ASA.	High
MDG3478 (124)	SMR National	Lagwine Cairn	NX59SE 6 / MDDG3478	256066	593987	NMRS / SMR description - A poorly preserved and heavily robbed prehistoric burial cairn located on a level shelf at the foot of a SW-facing hillslope.	This cairn is poorly preserved and evokes little sense of place. It is also located adjacent to one of the towers of the existing N-Route OHL proposed for dismantling, which detracts from the appearance of the monument. However, the otherwise open aspect and pastoral surroundings of the site complement the receptor. (field visit)	High	Low – resulting from dominance of adjacent tower.	Medium

Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
MDG3845	SMR National	Culmark Hill, cairn	NX68NW 2 / MDG3845	263422	589557	NMRS / SMR description – Remains of a prehistoric round cairn situated on top of a prominent ridge, measuring c. 18m across and 1m high.	This feature is located on the summit of a gently rounded but locally prominent hill, although the feature has little surface relief and is hard to detect from any distance. Locally prominent hilltop locations such as this were often deliberately selected as locations for the erection of cairns in prehistoric times, and this indicates that experiencing the views that can be obtained to and from such locations were important factors in their siting. There will likely be intervisibility between this feature and the locations of other prehistoric burial constructions present in similar topographic positions in the surrounding landscape. (viewed from local vantage points).	High	High – resulting from prominent topographic location.	High
MDG3866	SMR National	Carseglass, cairn, field boundary, settlement, boundary bank	NX68NW 9 / MDG3866	263834	586020	NMRS / SMR description – A probable prehistoric settlement comprised of a stone- walled enclosure, a hut circle, two possible hut platforms and an area of clearance cairns.	These low earthworks do not form a prominent landmark, but they are situated on a low but locally prominent hillock, with an open aspect from where there are extensive views to the east and north, towards the proposed OHL route. There are relatively few manmade constructions in the surrounding moorland landscape, apart from the adjacent single track road and adjacent telegraph pole line. Forestry plantation is visible on the horizon to the east, around Kilnair Hill and Hog Hill. The site does not have strong aesthetic or experiential properties, and the remains are sufficiently subtle that they have little on-site interpretative or educational potential. (field visit)	High	High – resulting from moorland context with little modern intrusion.	High
MDG3944	SMR National, in ASA	Round Craigs, cairn	NX69SW 26 / MDG3944	264486	593525	NMRS / SMR description – A probable prehistoric burial cairn located on a prominent outcrop, measuring c. 8.5m across and 1m high. Located close to clearance cairns.	Locally prominent hilltop locations such as this were often deliberately selected as locations for the erection of cairns in prehistoric times, and indicate that experiencing the views that can be obtained to and from such locations were important factors in their siting. There will likely be intervisibility between this feature and the locations of other prehistoric burial constructions present in similar topographic positions in the surrounding landscape. (desk-based).	High	High – resulting from prominent topographic location.	High
MDG3945	SMR National, in ASA	Round Craigs, burnt mound	NX69SW 27 / MDG3945	264673	593432	NMRS / SMR description – A probable prehistoric burnt mound (cooking place) situated on rising ground beside the marshy headwaters of Little Auchrae Burn at 280m above OD.	The key element of the setting of this monument is its juxtaposition with the burn that provided a water source. The proposed OHL route does not form part of the setting of this monument. (desk-based)	High	High – but localised.	High
MDG13622	SMR National, in ASA	Irongallows, Faulds, farmstead, field system	NX59SE 51 / MDG13622	257350	590130	NMRS / SMR description – Low earthwork remains of medieval or later farmstead, including buildings, enclosures, rig and furrow cultivation and a head dyke.	The key aspects of its setting would appear to be its presence within an ASA containing a range of prehistoric and late archaeological sites and monuments. Based upon the most recent description of the site (made in 1998), the site is likely to have some aesthetic and experiential properties, and some interpretive and educational potential. (desk-based)	High	High – defined principally by ASA.	High
MDG17237	SMR, National	Loch Doon Gunnery School, Polmeadow Burn / Black Craig, firing range	NX49SE 36 / MDG17237	249560	594520	NMRS / SMR description – Part of target dragging system associated with the World War One gunnery school focussed around Craigengillan to the north.	This features forms part of an extensive suite of features known to be associated with the Loch Doon Gunnery School. It is not known what presently survives of this feature, since the remains were identified from 1946 aerial photographs.	High	Negligible - the site is now forested.	Low

E.2.7 Archaeologically Sensitive Areas

Ref	Status	Name	NMRS / SMR	Easting	Northing	Character	Setting	Sensitivity of receptor	Contribution of setting to understanding and appreciation of receptor	Sensitivity of setting
n/a (72)	ASA	Water of Deugh	n/a	25200	60000	An area of moorland and pasture containing a range of archaeological monuments from prehistoric funerary to post-medieval agrarian origin.	The ASA provides the setting for a suite of archaeological monuments, including Lamford cairn (SM 1034). There are wide views westwards across Loch Doon and surrounding hills from within the ASA. Forested hills are present to the north and east. (field visit)	Medium	High – as the ASA provides an appropriate setting for archaeological monuments preserved within it.	High
n/a (152)	ASA	Bardennoch to Garryhorn	n/a	25800	59100	An area of moorland, pasture and arable containing a range of archaeological monuments from prehistoric funerary to post-medieval agrarian origin.	The ASA provides the setting for a suite of archaeological monuments, including Braidenoch Hill cross slabs (SM 1105), Cairn Avel long cairn (SM 1006), and an old road (MDG3416). From the higher ground on Braidenoch Hill there are extensive views of the surrounding landscape. (field visit)	Medium	High – as the ASA provides an appropriate setting for archaeological monuments preserved within it.	High
n/a	ASA	Polharrow Burn	n/a	25900	58600	An area of moorland containing a range of archaeological monuments from prehistoric funerary to post-medieval agrarian origin.	The ASA provides the setting for a suite of archaeological monuments, including Green Dass Hill cairn (MDG3406). From the higher ground within the ASA there are likely to be wide views eastwards across the valley of the Water of Ken. (viewed from local vantage points).	Medium	High – as the ASA provides an appropriate setting for archaeological monuments preserved within it.	High
n/a	ASA	Stroan Freggan	n/a	26400	59300	An area of elevated moorland containing a range of archaeological monuments from prehistoric funerary to post-medieval agrarian origin.	The ASA provides the setting for a suite of archaeological monuments, including Round Craigs cairn (MDG3944). From the higher ground within the ASA there are likely to be wide views southwards towards the proposed OHL route, where theoretically perceptible from within the ASA. (viewed from local vantage points).	Medium	High – as the ASA provides an appropriate setting for archaeological monuments preserved within it.	High



E.3 Assessment of the Effect of the Project on the Settings of Cultural Heritage Features from where one or more Parts of the Proposed OHL are Predicted to be Theoretically Visually Perceptible

- Using the methodology described in Chapter 10, the following tables present the findings of the assessment of the operational effects of the Project upon the settings of those receptors identified in Appendix E.2, from which one or more Parts of the proposed OHL are predicted to be theoretically visually perceptible. All effects are predicted to be direct, long-term but ultimately reversible, and are predicted to be neutral unless otherwise stated in the 'Likely Effect' column.
- 2 The assessments take into account the likely effect of the presence of the proposed OHL and, where presently theoretically visible, the removal of the existing N-Route OHL. For receptors north of Glenmuck, where the routes of the proposed line and existing N-Route OHL proposed for dismantling diverge, separate assessments are made of the effects of the dismantling and new construction on their setting. For receptors south of Glenmuck, where the existing N-Route OHL and proposed new OHL run very close together and for the most part parallel, a single assessment of combined effect has been presented. For those receptors from where the existing N-Route to be dismantled is theoretically visible but the proposed OHL is not theoretically visually perceptible, Appendix E.4 refers.

ID	Status	Name	Key aspects of setting identified	Sensitivity of setting	Magnitude of effect		Likely Effect
Scheduled N	Monuments						
1006	Scheduled, in ASA	Cairn Avel, cairn 800m S of Carsphairn	Open aspect with long views; relationship with other monuments within ASA.	High	Low – the replacement of the existing N-Route the same alignment will be detectable from the Brockloch, in particular on the slopes of Craig in an appreciable change to the character of the cairn.	e OHL with the proposed OHL on much e receptor between Bardennoch and of Knockgray. However, this will not result ne wider landscape surroundings of the	Minor and not significant - the c cairn appreciably.
1029 (117)	Scheduled, in ASA	Holm of Daltallochan, stone circle & standing stone	Visual relationships between stone circle and surrounding topography, although partly obscured by trees.	High	Low - the replacement of the existing N-Route the same alignment, but c. 50-100m further ar screened by trees), but will not result in an ap wider landscape surroundings of the receptor.	OHL with the proposed OHL on much way, will be partly detectable (and partly preciable change to the character of the	Minor and not significant - the omonument appreciably.
1034	Scheduled, in ASA	Lamford Burn, cairn 800m NE of Lamford Bridge	Views westwards towards Loch Doon; immediate setting much degraded by quarrying and disturbance to cairn itself; association with other archaeological features within ASA.	Medium	Low - the replacement of the existing N-Route same alignment, although up to 150m closer, cairn towards Loch Doon, but will not result in the wider landscape surroundings of the cairn	OHL with the proposed OHL on much the will be detectable looking west from the an appreciable change to the character of	Minor, adverse and not significa of the cairn appreciably.
1047	Scheduled	White Cairn, cairn, Corriedow Bridge	Topographic setting on promontory between burns; views westwards from the monument; potential interpretative / educational resource as a result of its good preservation evoking a sense of place (although somewhat compromised by proximity to mature plantation).	High	Low – plantation to the north-east of the cairn the proposed OHL. The proposed OHL may be east, where crossing the A702 in more open g change to the surroundings of the cairn, and v its setting. The existing N-Route OHL to be dist	will very substantially screen from view visible for only a short distance to the round. However, this will represent a minor vill not materially affect the key aspects of nantled is not visible from this receptor.	Minor, adverse and not significa of the cairn appreciably.
1105	Scheduled, in ASA	Braidenoch Hill, cross slabs	Likely association with adjacent old road (MDG3416); topographic location.	High	Low – a wireframe predicts that the proposed and Craigencorr Hill. A small length of the exis theoretically visible at Polquhanity. The chang proposed OHL to the wider landscape surroun represent a minor change to the surroundings the key aspects of its setting.	OHL may be visible between Polquhanity ting N-Route OHL to be dismantled is e evident will be the addition of the dings of the receptor. However, this will of the site, and will not materially affect	Minor, adverse and not significa of the monument appreciably.

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ID	Status	Name	Key aspects of setting identified	Sensitivity of setting	Magnitude of effect		Likely Effect	
1106 (118)	Scheduled, in ASA	Holm of Daltallochan, cross slab	Ex-situ location with garden.	Low	Low - the replacement of the existing N-Route same alignment may be detectable.	OHL with the proposed OHL on much the	None and not significant – there will be no cl	nange to the setting of the stone.
2476 (171)	Scheduled	Dundeugh Castle	Does not have an appreciable physical setting as site located in firebreak in plantation.	Low	Low – the proposed OHL line may be detectab Elsewhere plantation will screen from view the	le in woodland to the north-east. e proposed OHL.	None and not significant – there will be little overgrown castle remains.	or no change to the present surroundings of the
3009	Scheduled, in Conservation Area	Dalmellington, motte	Prominent landmark with considerable aesthetic qualities, although the mound is rather closed in by trees and housing; historic relationship with growth of early settlement at Dalmellington, and views across town from summit of mound; recreational and potential educational values.	High	Proposed OHL Low – At most three towers will be visible to the south-east crossing forested land along the valley of the Parrie Burn, but will be partly screened from view by trees. The proposed OHL route does not form a key aspect of the setting of this site.	Existing N-Route OHL to be removed Low - Towers skylining to the south on Town Common will be dismantled, but a telecommunications mast and other overhead lines will remain visible in that view, which in any case does not form a key aspect of the setting of the motte.	Proposed OHL Minor and not significant – the new towers will be detectable, but the change will not have a material effect on the setting of the motte.	Existing N-Route OHL to be removed Minor and not significant – the removal of towers will not have a material effect on the setting of the motte.
4345 / 1092	Scheduled, part in Outstanding Conservation Area; engine house A listed	Waterside, Dalmellington Ironworks	Visual, functional and historic relationships with Waterside village (109); functional and historic associations with industrial monuments in the surrounding landscape (not all intervisible with Ironworks); the site is a prominent local landmark and contrasts with the surrounding agricultural landscape; recreational and educational value; strong sense of place.	High	Proposed OHL Imperceptible – towers may be visible on the slopes or horizon around the Parrie Burn and Mossdale from certain locations within the designated area, and will be partly screened by forestry within which they will stand. These locations do not form part of the setting of the monument.	Existing N-Route OHL to be removed Low – towers visible to the west on the slopes of White Hill and Kiers Hill will be removed, but this will not materially affect the setting of the designated area.	Proposed OHL None and not significant – the towers will be detectable from certain locations within the designated area, forming a very minor addition to the landscape surroundings of the receptor, but will not affect its setting.	Existing N-Route OHL to be removed Minor and not significant - a minor change to the surroundings of this monument will be detectable, but this will not have a material effect on the setting of the monument.
4390	Scheduled / in GDL	Dalnean Hill, farmstead and field system	Agricultural surroundings; visual link to Craigengillan Estate.	High	Proposed OHL Low – towers will be theoretically visible to the east around Clawfin Hill and along the Parrie Burn and around Mossdale, but will be partly screened by forestry within which they will mostly stand. This view does not form a key aspect of the setting of this site.	Existing N-Route OHL to be removed Low – the dismantling of the existing N-Route OHL through the GDL will remove prominent industrial structures from one of the main views from the monument.	Proposed OHL Minor and not significant – the proposed OHL will be detectable from the receptor as a minor addition to its surroundings, but the towers will not have a material effect on its setting.	Existing N-Route OHL to be removed Minor, beneficial and not significant – the dismantling of towers will remove a modern industrial feature from the associated Craigengillan GDL.
5184	Scheduled, in ASA	Woodhead lead mines and smelter, Carsphairn	Association with raw materials source; local landmark; recreational and educational value; strong sense of place.	High	Low – the replacement of the existing N-Route the same alignment will be detectable to the s result in an appreciable change to the characte the monument.	e OHL with the proposed OHL on much south-east around Carsphairn, but will not er of the wider landscape surroundings of	Not Minor and not significant - the change will be detectable, but will not affect the setting of monument appreciably.	
5200	Scheduled	Munteoch, settlement and field systems	Remote location; local landscape surroundings, and association with other broadly contemporary deserted farmsteads in same range of hills (7164, 7166, 7181).	Medium	Proposed OHL Imperceptible – the proposed OHL is anticipated to be screened from view by trees, and the proposed OHL route does not form part of the setting of this site.	Existing N-Route OHL to be removed Imperceptible – the existing N-Route OHL is anticipated to be screened from view by trees, and the existing N-Route OHL is not located within the setting of this site.	Proposed OHL None and not significant – the development will not be perceptible from the receptor, and the setting of the receptor will be unaffected.	Existing N-Route OHL to be removed None and not significant – the setting of the receptor will be unaffected.
5391	Scheduled	Polmaddy, medieval and post-medieval settlement	Topographic location beside Polmaddy Burn; surrounding agricultural land; interpretative / educational value; association with old road (MDG3416).	High	Imperceptible – neither the proposed OHL nor this site. Plantation provides screening.	r the existing N-Route OHL are visible from	None and not significant – the setting of the proposed changes.	village will remain unchanged as a result of the
7544 (15)	Scheduled	Waterside Bing, iron slag bing, Dalmellington Ironworks	Same as 4345, as part of same industrial complex; prominent landmark.	High	Proposed OHL Imperceptible – towers may be visible on the slopes or horizon around the Parrie Burn and Mossdale from the receptor, and will be partly screened by forestry within which they will stand. These locations do not form part of the setting of the monument.	Existing N-Route OHL to be removed Low – towers visible to the west on the slopes of White Hill and Kiers Hill will be removed, but this will not materially affect the setting of the designated area.	Proposed OHL None and not significant – the towers will be detectable, forming a very minor addition to the landscape surroundings of the receptor, but will not affect its setting.	Existing N-Route OHL to be removed Minor and not significant - a minor change to the surroundings of this monument will be detectable, but this will not have a material effect on its setting.
7863	Scheduled, partially in Outstanding Conservation Area	Waterside, miners' village & mineral railways N of	Historic, functional and in some cases visual links with Dalmellington Ironworks (4345).	High	Proposed OHL Imperceptible – the towers will be perceptible on slopes to the south of Dalmellington, and will be partly screened by forestry within which they will stand. These locations do not form part of the setting of this site.	Existing N-Route OHL to be removed Low – towers visible to the west on the slopes of White Hill and Kiers Hill will be removed, but this will not materially affect the setting of the designated area.	Proposed OHL None and not significant - the towers will be detectable, forming a very minor addition to the landscape surroundings of the receptor, but the change will not affect its setting.	Existing N-Route OHL to be removed Minor and not significant - a minor change to the surroundings of this monument will be detectable, but this will not have a material effect on its setting.





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8616	Scheduled	Donald's Island, Loch Doon	Loch Doon and surrounding slopes.	High	Imperceptible – the replacement of the existin approximately the same alignment, at least 3k change to the wider landscape surroundings o	g N-Route OHL with the proposed OHL on m distant, will not represent an appreciable f this site.	None and not significant – the setting of this	site will remain virtually unchanged.
8619	Scheduled	Loch Doon Castle	Loch Doon and surrounding slopes; relationship to reconstructed castle on west shore of loch.	High	Imperceptible – the replacement of the existin approximately the same alignment, at least 5k change to the wider landscape surroundings o	g N-Route OHL with the proposed OHL on m distant, will not represent an appreciable f this site.	None and not significant – the setting of this	site will remain virtually unchanged.
Listed Build	ings							
122	C(s) listed	Buchan's Bridge	Historic, visual and functional associations with Cummock Burn and the road.	Low	Proposed OHL Low – towers are predicted to be perceptible to the east and south-east of Dalmellington, but will be partly screened by forestry within which they will stand. The proposed OHL route does not form part of the setting of this bridge.	Existing N-Route OHL to be removed Low – Towers visible crossing from Town Common to White Hill will be removed, but these locations do not form part of the setting of this bridge.	Proposed OHL None and not significant – the towers will be detectable, and will represent a very minor change to the surroundings of the building, but their presence will not affect the setting of the bridge.	Existing N-Route OHL to be removed None and not significant – visible towers will be removed, and will represent a minor change to the surroundings of the bridge, but this change will not affect its setting.
1084	C(s) listed	Sillyhole Bridge	Historic, visual and functional associations with Cummock Burn and the road (a former coach road); scenic quality of backdrop when viewed from south-west.	Low	Proposed OHL Low – up to 10 towers are predicted to be perceptible to the south-east and east of Dalmellington, crossing the slopes south-east of the Cummock Burn and around Parrie burn, but will be partly screened by forestry within which they will stand.	Existing N-Route OHL to be removed Imperceptible – the existing line is barely visible from this location.	Proposed OHL None and not significant – the towers will be detectable, and will represent a minor change to the surroundings of the bridge.	Existing N-Route OHL to be removed None and not significant – the existing N-Route OHL is barely visible from this location.
1085	C(s) listed, in Conservation Area	Dalmellington, 8-11 (consecutive Nos), Cathcartson	Urban, waterside location; contribution to historic townscape (Conservation Area).	High	Proposed OHL Imperceptible - towers may be glimpsed within the forested land around the Parrie Burn, over the roofs of the cottages when viewing them from the opposite bank of the Muck Water, but the development location does not form part of the urban, historic townscape setting of this building.	Existing N-Route OHL to be removed Imperceptible – the existing line was not observed from this building at street level.	Proposed OHL None and not significant – the proposed OHL will be barely, if at all, perceptible from the receptor, and the setting of the receptor will be unaffected.	Existing N-Route OHL to be removed None and not significant – there will be no change to the setting of the building.
1086 (35)	B listed, in GDL	Lodge at entrance to Craigengillan	Intimate historic, functional and visual links with adjacent bridge (1087) and avenue; more generally Craigengillan GDL (110); recreational value.	High	Proposed OHL Imperceptible - the proposed OHL will be very largely screened from view by trees, and is not located within the setting of this building.	Existing N-Route OHL to be removed Medium – towers will be removed from within Craigengillan GDL (110); including a tower prominently in view when viewing the lodge from the NE.	Proposed OHL None and not significant – the proposed OHL will be barely, if at all, perceptible from the lodge, and the setting of the building will be unaffected.	Existing N-Route OHL to be removed Major, beneficial and significant – modern intrusive structures will be removed from the GDL setting of the lodge, and will materially enhance the setting of the lodge.
1087 (34)	B listed, in GDL	Craigengillan, bridge adjacent to lodge	Intimate historic, functional and visual links with adjacent lodge (1086) and avenue; more generally Craigengillan GDL (110); recreational value.	High	Proposed OHL Imperceptible - the proposed OHL will be very largely screened from view by trees, and is not located within the setting of this building.	Existing N-Route OHL to be removed Low – towers will be removed from within Craigengillan GDL (110).	Proposed OHL None and not significant – the proposed OHL will be barely, if at all, perceptible from the bridge, and the setting of the bridge will be unaffected.	Existing N-Route OHL to be removed Minor, beneficial and not significant – modern intrusive structures will be removed from the GDL setting of the bridge.
1093	C(s) listed, in Outstanding Conservation Area	Waterside, Chapel of Ease	Secluded location with Waterside village, partly screened by gardens; historic associations with Dalmellington Ironworks (4345) and attendant communities (109, 7863); contribution to OCA.	High	Proposed OHL Imperceptible - the proposed OHL route will be very largely screened from view by trees, and is not located within the setting of this building.	Existing N-Route OHL to be removed Low – towers visible on the slopes of White Hill and Kiers Hill will be removed, but this change will not materially affect the setting of this building.	Proposed OHL None and not significant – the development will be barely, if at all, perceptible from the building, and the setting of the building will be unaffected.	Existing N-Route OHL to be removed Minor and not significant - a minor change to the surroundings of this building will be detectable, but this will not have a material effect on the setting of the receptor.
1094	B listed, in Outstanding Conservation Area	Waterside, Ardoon House	Very private setting with views to and from largely screened by trees; historical links with Dalmellington Ironworks (4345), but secluded to appear separate from the village and industrial works below; OCA.	High	Proposed OHL Low – a short length of the overhead visible on the opposite side of the valley will be removed, but this change will not materially affect the setting of the building.	Existing N-Route OHL to be removed Imperceptible - the proposed OHL will be screened from view by trees, and is not located within the setting of this building.	Proposed OHL None and not significant – the proposed OHL will not be perceptible from the building, and the setting of the building will be unaffected.	Existing N-Route OHL to be removed Minor and not significant - a minor change to the surroundings of this building will be detectable, but this change will not have a material effect on its setting.
1105	B listed, in Conservation Area	Dalmellington, Kirk of the Covenant	Located in prominent topographic location overlooking historic centre of town; historic and visual associations with town and community; spiritual and functional relationships with nearby burial ground (1106) and predecessor church (1107); contribution to historic townscape (Conservation Area).	High	Proposed OHL Imperceptible - the proposed OHL will be screened from view by trees and buildings, and is not located within the setting of this building.	Existing N-Route OHL to be removed Imperceptible – the existing line is not visible from the building at street level, and does not form part of the setting of this building.	Proposed OHL None and not significant - there will be no change to the setting of the building.	Existing N-Route OHL to be removed None and not significant - there will be no change to the setting of the building.

ID	Status	Name	Key aspects of setting identified	Sensitivity of setting	Magnitude of effect		Likely Effect	
1106	B listed	Dalmellington, Old Kirkyard	Spiritual and functional relationships with nearby church (1105) and its predecessor (1107); and links with Craigengillan (110); secluded setting provided by high boundary wall.	High	Proposed OHL Low – a wireframe predicts that five towers will be visible crossing the forested slopes on the west side of the Muck Water, but that location does not form part of the setting of this graveyard.	Existing N-Route OHL to be removed Low – the existing line may be visible from the graveyard (but this was not confirmed as access was not possible), but does not form part of the setting of this building.	Proposed OHL Minor and not significant - a change to the wider surroundings of this building will be detectable, but this will not have a material effect on the setting of the receptor.	Existing N-Route OHL to be removed Minor and not significant - a change to the wider surroundings of this building will be detectable, but this will not have a material effect on the setting of the receptor.
1107	B listed, in Conservation Area	Dalmellington, Cathcart Hall	Urban location; spiritual and functional relationships with successor church (1105) and kirkyard (1106); contribution to Conservation Area.	High	Proposed OHL Imperceptible - the proposed OHL will be screened from view by nearby buildings, and is not located within the urban, historic townscape setting of this building.	Existing N-Route OHL to be removed Imperceptible – the existing line is not visible from the building at street level, and does not form part of the setting of this building.	Proposed OHL None and not significant - there will be no change to the setting of the building.	Existing N-Route OHL to be removed None and not significant - there will be no change to the setting of the building.
1109	C(s) listed, in Conservation Area	Dalmellington, Nos 30, 32 High Street	Urban location; contribution to historic townscape (Conservation Area).	Medium	Proposed OHL Imperceptible - the proposed OHL route is screened from view by nearby buildings, and the location does not form part of the urban, historic townscape setting of this building.	Existing N-Route OHL to be removed Imperceptible – one tower on Tower Common is visible from the building at street level, but does not form part of the urban, historic townscape setting of this building.	Proposed OHL None and not significant - there will be no change to the setting of the building.	Existing N-Route OHL to be removed None and not significant- a very minor change to the surroundings of this building will be detectable, but this will not have a material effect on the setting of the receptor.
1110	C(s) listed, in Conservation Area	Dalmellington, Church Hill No 17	Urban location; contribution to historic townscape (Conservation Area).	High	Proposed OHL Low – a wireframe predicts that five towers will be visible from the rear of this property (not seen) crossing the forested slopes on the west side of the Muck Water. That location does not form part of the urban, historic townscape setting of this building.	Existing N-Route OHL to be removed Low – the existing line may be visible from the rear of this building (not seen), but it does not form part of the setting of this building.	Proposed OHL Minor and not significant- a change to the wider surroundings of this building may be detectable, but this will not have a material effect on the setting of the receptor.	Existing N-Route OHL to be removed Minor and not significant - a change to the wider surroundings of this building may be detectable, but this will not have a material effect on the setting of the receptor.
1111	B listed, in Conservation Area	Dalmellington, Doon Tavern	Urban location; contribution to historic townscape (Conservation Area).	High	Proposed OHL Imperceptible - the proposed OHL route is screened from view by nearby buildings, and does not form part of the urban, historic townscape setting of this building.	Existing N-Route OHL to be removed Imperceptible – the existing line is not visible from the building at street level, and does not form part of the setting of this building.	Proposed OHL None and not significant - there will be no change to the setting of the building.	Existing N-Route OHL to be removed None and not significant - there will be no change to the setting of the building.
1112	C(s) listed, in Conservation Area	Dalmellington, Nos 4 and 5 Main Street	Urban location; contribution to historic townscape (Conservation Area).	High	Proposed OHL Imperceptible - the proposed OHL route is screened from view by nearby buildings, and does not form part of the urban, historic townscape setting of this building.	Existing N-Route OHL to be removed Imperceptible – the existing line is not visible from the building at street level, and does not form part of the setting of this building.	Proposed OHL None and not significant - there will be no change to the setting of the building.	Existing N-Route OHL to be removed None and not significant - there will be no change to the setting of the building.
1113 (29)	B listed	Doon Bridge on Straiton Road	Historic, visual and functional associations with River Doon and the road; views of bridge from south.	Medium	Proposed OHL Low – towers will be detectable in the forested hills east of Dalmellington, between Clawfin Hill and Mossdale, and will be partly screened by forestry within which they will stand. This distant location does not form part of the setting of this bridge.	Existing N-Route OHL to be removed Low – several towers visible in views of the bridge from the south will be removed.	Proposed OHL Minor and not significant – the towers will be detectable, and will represent a very minor change to the surroundings of the receptor, but will not affect materially the setting of the bridge.	Existing N-Route OHL to be removed Minor, beneficial and not significant - the removal of the towers closest to the bridge will allow for more open and uncluttered views of the bridge from the south.
3627	B listed	High Bridge of Ken	Picturesque localised setting within narrow and partly wooded valley; historic, visual and functional relationships with the Water of Ken and the road carried by the bridge.	High	Imperceptible – the perceptibility map indicat OHL, but trees growing on the west bank of th of the proposed OHL route, and the existing N detectable from the bridge.	es theoretical perceptibility of the proposed he Water of Ken screen any actual visibility -Route OHL proposed for dismantling is not	None and not significant - there will be no ch	nange to the setting of the bridge.
3676	B listed	Barlaes	Farmland surroundings of the building.	High	Imperceptible – although theoretical perceptil wireframe predicts no visibility of the propose OHL to be removed is predicted to be not visib	bility of the proposed OHL is predicted, a ed OHL from Barlaes. The existing N-Route ole from this listed building.	None and not significant - there will be no ch	hange to the setting of the building.
3677 (131)	C(S) listed in B Group, in ASA	Carsphairn Parish Church, Church of Scotland	Historic association with Carsphairn village and parishioners, and functional associations with with churchyard (3678) and neighbouring manse.	High	Low – existing towers visible from the north side of the church on the slopes of Craig of Knockgray will be removed and replaced with new towers c. 5m higher but located c. 100m further away upslope from the church. The change to baseline will be detectable, but is predicted to be not material.		Minor and not significant - a change to the w but this will not have a material effect on its	rider surroundings of this building will be detectable, setting.
3678 (132)	B listed in B Group, in ASA	Carsphairn Parish Churchyard and McAdam Mausoleum	Historic association with Carsphairn village and parishioners, and functional associations with the church (3677).	High	Low – existing towers visible from the north si of Knockgray will be removed and replaced wi 100m further away upslope. The change to ba be not material.	de of the churchyard on the slopes of Craig th new towers c. 5m higher but located c. seline will be detectable, but is predicted to	Minor and not significant - a change to the w detectable, but this will not have a material of	vider surroundings of this churchyard will be effect on its setting.
3679 (165)	C(S) listed	Dalshangan stables	Relict designed landscape, including former clump plantations and parkland, and other policy buildings including a lodge and dovecot (3680).	Low	Medium – the proposed OHL will be detectabl (former parkland) to the north of the stables. existing N Route to be removed are visible from make a material change to the baseline surrou	le skirting around the edge of the farmland Very little of the proposed OHL and the m the stables, and the replacement will not undings of the stables.	Minor, adverse and not significant – the proposed OHL will represent a new modern encroachment into the relict parkland surroundings of the stables building.	

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ID	Status	Name	Key aspects of setting identified	Sensitivity of setting	Magnitude of effect		Likely Effect	
3680 (166)	C(S) listed	Dalshangan dovecot	Secluded location; historic association with the relict designed landscape and other surviving buildings at Dalshangan.	Low	Imperceptible - the proposed OHL will be bare The existing N-Route OHL is not detectable fro not affect the visual or historic relationships be and relict landscape features at Dalshangan.	ly, if at all, detectable from the dovecot. m the dovecot. The proposed changes will etween the dovecot and the other buildings	None and not significant - there will be little dovecot.	or no detectable change to the setting of the
3681 (119)	B listed, in ASA	Holm of Daltailochan	Mature garden and farmland surroundings; views to moorland hills to NE.	High	Low - existing towers visible crossing the slope be removed and replaced with new towers c. 5 away. The change to baseline will be detectabl	s of Craig of Knockgray and Holm Hill will 5m higher but located c. 60-100m further e, but is predicted to be not material.	Minor and not significant - a change to the wider surroundings of this building will be detec but this will not have a material effect on its setting.	
4900	C(s) listed, in Conservation Area	Dalmellington, Dalmellington Inn, 2 High Street	Urban location; contribution to historic townscape (Conservation Area).	High	Proposed OHL Imperceptible - the proposed OHL route is screened from view by nearby buildings, and does not form part of the urban, historic townscape setting of this building.	Existing N-Route OHL to be removed Imperceptible – the existing N-Route OHL is not visible from the building at street level, and does not form part of the setting of this building.	Proposed OHL None and not significant - there will be no change to the setting of the building.	Existing N-Route OHL to be removed None and not significant - there will be no change to the setting of the building.
6595	B listed, in Outstanding Conservation Area	Waterside, Waterside Institute	Historic associations with Dalmellington Ironworks (4345) and associated communities (109, 7863); contribution to Waterside village.	High	Proposed OHL Imperceptible - the proposed OHL route is very largely screened from view, and does not form part of the setting of this building.	Existing N-Route OHL to be removed Low – towers visible on the slopes of White Hill will be removed, but this will not materially affect the setting of this building.	Proposed OHL None and not significant – the proposed OHL will be barely, if at all, perceptible from the building, and the setting of the building will be unaffected.	Existing N-Route OHL to be removed Minor and not significant - visible towers will be removed, and will represent a minor change to the surroundings of the building, but this change will not affect the setting of the building.
6596	C(s) listed, in Outstanding Conservation Area	Waterside, War Memorial	Intimate visual relationship with Waterside Institute (1105); historic associations with Dalmellington Ironworks (4345) and associated communities (109, 7863); contribution to Waterside village.	High	Proposed OHL Imperceptible - the proposed OHL route is screened from view, and does not form part of the setting of this monument.	Existing N-Route OHL to be removed Low – towers visible on the slopes of White Hill will be removed, but this will not materially affect the setting of this monument.	Proposed OHL None and not significant– the proposed OHL will not be perceptible from the building, and there will be no change to the setting of the monument.	Existing N-Route OHL to be removed Minor and not significant - visible towers will be removed, and will represent a minor change to the surroundings of the building, but this change will not affect the setting of the monument.
6623	B listed, in Outstanding Conservation Area	Palace Bar, Waterside Village (9-13 Dalmellington Road)	Historic and commercial associations with Dalmellington Ironworks (4345), Waterside Village (109) and other former mining villages nearby; OCA.	High	Proposed OHL Imperceptible - the proposed OHL route is screened from view by the Dalmellington Ironworks complex (4345) and woodland plantation beside the A713, and does not form part of the setting of this building.	Existing N-Route OHL to be removed Low – towers visible on the slopes of Kiers Hill will be removed, but will not materially affect the setting of this building.	Proposed OHL None and not significant – the proposed OHL will not be perceptible from the building, and there will be no change to the setting of the building.	Existing N-Route OHL to be removed Minor and not significant- visible towers will be removed, and will represent a minor change to the surroundings of the building, but this change will not affect the setting of the building.
9750	B listed	Polharrow Bridge over Polharrow Burn	Secluded location; historic, visual and functional associations with Polharrow Burn.	Medium	Imperceptible – the proposed OHL route (theo screened from view by trees, and the develop setting of this monument. The length of the ex detectable from the bridge.	pretically perceptible from the bridge) is ment location does not form part of the kisting N-Route OHL to be removed is not	None and not significant - there will be no ch	ange to the setting of the bridge.
18793	A listed, in GDL	Craigengillan	Intimate historic and visual links with GDL, and views out into surrounding hills.	High	Proposed OHL Imperceptible – a wireframe predicts that up to three towers may be visible in the forested hills to the east, but in practice the towers will probably be screened from view by trees.	Existing N-Route OHL to be removed Low – the existing line appears not to be visible from the building, although where crossing the GDL it lies within the setting of this building.	Proposed OHL None and not significant – the proposed OHL will at most represent a very minor change to the wider surroundings of the building.	Existing N-Route OHL to be removed Minor, beneficial and not significant – the removal of the existing N-Route OHL from the GDL will enhance the character of the GDL, and hence the setting of Craigengillan, but these changes will not be detectable from the building.
18794	A listed, in GDL	Craigengillan, stables	Intimate historic and visual links with Craigengillan House.	High	Proposed OHL Imperceptible – towers will probably be screened from view by trees, and is therefore outside the setting of the building.	Existing N-Route OHL to be removed Imperceptible - the existing line appears not to be visible from the building.	Proposed OHL None and not significant– the proposed OHL will at most represent a very minor change to the wider surroundings of the building.	Existing N-Route OHL to be removed None and not significant - there will be no change to the setting of the building.
48145	C(s) listed	Dalmellington, 16 Ayr Road (former schoolhouse to Dalmellington Primary School)	Urban setting, with views to countryside beyond to north; formerly associated school buildings now demolished. Overall, a very degraded setting.	Low	Proposed OHL Imperceptible - the proposed OHL route is screened from view by nearby buildings and trees, and does not form part of the urban setting of the building.	Existing N-Route OHL to be removed Low – the existing N-Route OHL may be visible from this building (although not seen), but it does not form part of the setting of this building.	Proposed OHL None and not significant - there will be no change to the setting of the building.	Existing N-Route OHL to be removed None and not significant - a change to the wider surroundings of this building may be detectable, but this will not have a material effect on its setting.

ID	Status	Name	Key aspects of setting identified	Sensitivity of setting	Magnitude of effect		Likely Effect	
49506	C(s) listed, in GDL	Dalcairnie Bridge, Craigengillan Estate	View of bridge from beneath the waterfall of the Dalcairnie Burn; contribution to Craigengillan GDL (110).	High	Proposed OHL Imperceptible – a wireframe predicts that towers may be perceptible in the forested hills along the north side of the Parrie Burn, and if so will appear partly screened by forestry within which they will stand. The proposed OHL route does not form part of the setting of this bridge.	Existing N-Route OHL to be removed Low – the existing line will be removed where it crosses the GDL, which forms a key element of the setting of the bridge.	Proposed OHL None and not significant – the towers may be detectable but will not affect the setting of this bridge, and will represent at most a very minor change to the surroundings of the bridge.	Existing N-Route OHL to be removed Minor, beneficial and not significant – the removal of the existing N-Route OHL from the GDL will enhance the character of the GDL, and hence the setting of the bridge, even if these changes will not be detectable from the building.
Conservatio	on Areas	Γ	1	1	1		1	
102 (40)	Conservation Area	Dalmellington	Historic townscape with intimate feel, best appreciated by viewing along its streets.	High	Proposed OHL Imperceptible - towers will be perceptible from certain locations within the Conservation Area where they will cross the forested hills to the east and south-east of Dalmellington, but will appear partly screened by the forestry within which they will stand. The proposed OHL location does not form a key part of the setting of this urban area.	Existing N-Route OHL to be removed Imperceptible - towers are visible from certain locations within the Conservation Area, but do not form a key part of the setting of this urban area.	Proposed OHL None and not significant – the towers may be detectable but will not affect the setting of this Conservation Area, and will represent at most a very minor change to its surroundings.	Existing N-Route OHL to be removed None and not significant – the towers are detectable but do not contribute to the setting of this Conservation Area, and their removal will represent at most a very minor change to its surroundings.
109	Outstanding Conservation Area; also partly scheduled	Waterside Village	Indistinguishable from that of Dalmellington Ironworks and associated remains.	High	Proposed OHL Imperceptible – towers will be perceptible on distant hills from certain locations within the designated area, and will be partly screened by forestry within which they will stand, but the proposed OHL route does not form part of the setting of the Outstanding Conservation Area.	Existing N-Route OHL to be removed Low – towers visible on the slopes of White Hill and Kiers Hill will be removed, but this will not materially affect the setting of the designated area.	Proposed OHL None and not significant –the proposed OHL route will be detectable from certain locations within the designated area, forming a very minor addition to the landscape surroundings of the receptor, but will not affect its setting.	Existing N-Route OHL to be removed Minor and not significant - a minor change to the surroundings of this Outstanding Conservation Area will be detectable, but this will not have a material effect on its setting.
Gardens an	d Designed Lands	capes	- -					
110 (30)	GDL	Craigengillan	Inter-relationships of landscape and features within the designed landscape; views into and out from the designed landscape; historic associations with the McAdam family; recreational value of the site.	High	Proposed OHL Low – towers will be visible in the hills to the east, partly screened by forestry within which they will stand. The changes to the setting of the GDL will be tempered by its position within the Doon Valley, which contains opencast workings, overhead lines and associated tall masts.	Existing N-Route OHL to be removed Medium - five towers will be removed from within the open, low-lying part of the GDL, where they form a significant modern intrusion into the rural landscape. Other towers visible from within, and in views of, the GDL will also removed on the higher ground around Town Common to the east and White Hill to the north.	Proposed OHL Minor, adverse and not significant – the towers will be detectable from certain parts of the designed landscape, but will form a minor addition to the landscape surrounding the GDL. They will not materially detract from the present landscape, visual and recreational aspects of the setting of the GDL.	Existing N-Route OHL to be removed Major, beneficial and significant–a highly visible modern intrusion within the GDL will have been removed.
n/a (134)	NIDL	Knockgray	Patchwork of woodland and pasture forming a distinct landscape element on the north side of the Water of Deugh	Medium	Low – the effects of the replacement of the ex will be visible from Bardennoch Hill to Craig of 200m closer to the NIDL and the towers will b the new line generally will be located a little d whereas crossing Craig of Knockgray the proper N-Route line and may appear slightly more pro-	isting N-Route OHL with the proposed OHL f Knockgray. The new line will run up to c. e c. 5m taller. To the south of Carpshairn ownslope from the existing N-Route OHL, osed OHL will be upslope from the existing ominent when viewed from the NIDL.	Minor, adverse and not significant – the prop existing N-Route OHL in some locations and lo course across the landscape to the west of Kr when viewing from the periphery of the land trees is present. It is assessed that these char surroundings of the NIDL.	osed OHL will appear more prominent than the ess prominent in others, but will follow a similar nockgray. The changes will be more noticeable scape, where no screening from surrounding nges will not affect materially the wider landscape
n/a	NIDL	Knocknalling	Mixed (primarily deciduous) woodland surroundings of Knocknalling House, providing secluded setting for property; locally prominent woodland block	High	Imperceptible – from publically accessible loca proposed OHL is screened by topography and proposed for removal is not visible from here. will not be altered.	ations adjacent to the NIDL the route of the trees. The length of existing N-Route OHL The key aspects of the setting of the NIDL	None and not significant - there will be no ch	ange to the setting of the NIDL.
Non-Statuto	ory Register Sites	(Ayrshire)						
7112	NSR Code C	Auchenroy Hill, cairn	Prominent topographic location; extensive landscape views from the site, including locations of similar sites in similar topographic situations.	High	Proposed OHL Low – Towers will be perceptible on a distant horizon to the east, and will be partly screened by forestry within which they will stand. The presence of the towers will not affect the key aspects of the setting of this cairn.		Proposed OHL Minor and not significant– the proposed OHL will be detectable, and will represent a very minor change to the wider surroundings of the receptor, but will not affect its setting.	Existing N-Route OHL to be removed Minor and not significant – the removal of the towers will represent a very minor change to the wider surroundings of the cairn, but will not affect its setting.
7113	NSR Code V, in GDL	Doon Bridge, barrow (possible)	Complementary agricultural surroundings; siting on a low rise.	High	Proposed OHL Low – Towers will be detectable on the tree-co Dalmellington, and will be partly screened by this view does not form a key aspect of the se	overed hills to the east and south-east of forestry within which they will stand, but tting of this site.	Proposed OHL Minor and not significant - the towers will form a minor detectable addition to the surroundings of this monument, but will not have a material effect on its setting.	Existing N-Route OHL to be removed Minor and not significant – the removal of the towers will represent a detectable change to the surroundings of the alleged barrow, but will not affect its setting.

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ID	Status	Name	Key aspects of setting identified	Sensitivity of setting	Magnitude of effect		Likely Effect	
7115	NSR Code V, in GDL	Elizabeth Isle, Bogton Loch, crannog (possible)	Topographic and visual setting within Bogton Loch.	High	Proposed OHL Low – a wireframe predicts that seven towers hills in the distance to the east, although in pra forestry within which they will stand. This view of this site.	will be partly visible on the tree-covered actice they will be partly screened by v does not form a key aspect of the setting	Proposed OHL Minor and not significant – visible towers would form a minor detectable addition to the surroundings of this monument, but will not have a material effect on its setting.	Existing N-Route OHL to be removed Minor and not significant – the removal of visible towers will form a detectable change to the surroundings of this monument, but will not have a material effect on its setting.
7118	NSR Code C	Benquhat Hill, farmstead	Remote moorland location; functional and topographic relationships between farm and land exploited.	Medium	Proposed OHL Low – the proposed will be extensively percept Clawfin Hill and Mossdale, and will be partly so stand. The proposed OHL route does not form	tible within a forested landscape between creened by forestry within which they will part of the setting of this site.	Proposed OHL Minor and not significant - the proposed OHL will be detectable from the monument, but will not have a material effect on its setting.	Existing N-Route OHL to be removed Minor and not significant – the removal of the towers will represent a detectable change to the surroundings of the farmstead, but will not affect its setting.
7132	NSR Code V	Dalmellington, Dame Helen's Castle	Topographic location in narrow, steep- sided valley of Muck Water; scenic setting within valley, but degraded by housing, road and telegraph pole founded in mound.	High	Proposed OHL Low - Towers will be visible crossing forested la partly screened by forestry within which they v form a prominent part of the setting of this site	and on the slopes of Snabb, and will be will stand. The proposed OHL does not e.	Proposed OHL Minor, adverse and not significant - the proposed OHL will be detectable from the monument as a minor addition to the surroundings of this receptor, but will not have a material effect on its setting.	Existing N-Route OHL to be removed None and not significant- there will be no change to the setting of the monument.
7141 (17)	NSR Code V	Nether Grimmet, farmstead	Topographic, functional and visual associations with immediate agricultural surroundings; wider landscape setting much changed by industrial developments.	High	Proposed OHL Imperceptible – towers will be perceptible in the partly screened by forestry within which they does not form part of the more localised setting	he distance to the south-east, and will be will stand, but the proposed OHL route ng of this farmstead.	Proposed OHL None and not significant – the towers will be detectable, and will represent a very minor change to the surroundings of the receptor, but will not affect its setting.	Existing N-Route OHL to be removed Minor, beneficial and not significant – modern industrial structures will be removed from the complementary agricultural surroundings of the farmstead.
7149	NSR Code V	Green Hill, barrow	Prominent topographic location; extensive landscape views from the site, including locations of similar sites in similar topographic situations.	High	Proposed OHL Low – towers will be perceptible in the distanc screened by forestry within which they will sta the wide views obtainable from this site and w this cairn and any other related monument in t	Proposed OHL F Low – towers will be perceptible in the distance to the south-east, and will be partly N screened by forestry within which they will stand. They will form only minor change to N the wide views obtainable from this site and will not interfere with intervisibility between n this cairn and any other related monument in the landscape. n		Existing N-Route OHL to be removed Minor and not significant – the removal of visible towers will form a minor detectable change to the surroundings of this monument, but will not have a material effect on its setting
7162	NSR Code C, in GDL	Wee Cairn Hill, Dalcairnie, cairn	Prominent topographic location; extensive landscape views from the site, including locations of similar sites in similar topographic situations.	High	Proposed OHL Low - towers will be perceptible as a distant fe Doon, and will be partly screened by forestry v only minor change to the wide views obtainab intervisibility between this cairn and any other	ature within the hills east of the River vithin which they will stand. They will form le from this site and will not interfere with related monument in the landscape.	Proposed OHL Minor and not significant – the development will be detectable from the receptor as a minor addition to its wider surroundings, but will not have a material effect on its setting.	Existing N-Route OHL to be removed Minor and not significant – the removal of the towers will represent a minor change to the wider surroundings of the cairn, but will not affect its setting.
7164	NSR Code C	Little Shalloch, farmstead	Remote location; local landscape surroundings, and association with other broadly contemporary deserted farmsteads in same range of hills (5200, 7166, 7181).	High	Proposed OHL Imperceptible - towers will be perceptible on a Doon, and will be partly screened by forestry v view does not form a key aspect of the localise	distant horizon to the east of the River vithin which they will stand. This distant ed setting of this farmstead.	Proposed OHL None and not significant - the proposed OHL will be detectable from the receptor as a very minor addition to the wider surroundings of the site, but the key aspects of the localised setting of the receptor will be unaffected.	Existing N-Route OHL to be removed None and not significant – the removal of any visible towers will represent a very minor change to the wider surroundings of the farmstead, but will not affect its localised setting.
7165	NSR Code V	Macnabstone, farmstead	Immediate farmland surroundings; picturesque views across Loch Doon.	High	Imperceptible – neither the proposed OHL rou perceptible from this site. Trees on Muckle Erif	te nor the existing N-Route OHL are ff Hill provide screening.	None and not significant – the setting of the	farmstead will remain unchanged.
7166	NSR Code V	Wee Hill of Glenmount, farmstead	Remote location; local landscape surroundings, and association with other broadly contemporary deserted farmsteads in same range of hills (5200, 7164, 7181).	High	Proposed OHL Imperceptible - towers will be perceptible on a distant horizon to the east of the River Doon, and will be partly screened by forestry within which they will stand. This distant view does not form a key aspect of the localised setting of this farmstead.		Proposed OHL None and not significant - the proposed OHL will be detectable from the receptor as a very minor addition to the wider surroundings of the site, but the key aspects of the localised setting of the receptor will be unaffected.	Existing N-Route OHL to be removed None and not significant – the removal of any visible towers will represent a very minor change to the wider surroundings of the farmstead, but will not affect its localised setting.
7173	NSR Code C	Bellsbank Plantation, Bubbly Cairn	No meaningful setting due to presence of forestry.	Low	Proposed OHL Imperceptible – this cairn is cloaked in dense c meaningful setting. The proposed OHL route is	onifer plantation and does not have a not perceptible from this location.	Proposed OHL None and not significant – there will be no change to the setting of the monument.	Existing N-Route OHL to be removed None and not significant - there will be no change to the setting of the monument.
7175	NSR Code V	Pennyarthur Rig, cairn	Hilltop location, but no meaningful setting due to presence of forestry.	Low	Proposed OHL Imperceptible – this cairn is cloaked in dense c meaningful setting. The proposed OHL route is	onifer plantation and does not have a not perceptible from this location.	Proposed OHL None and not significant – there will be no change to the setting of the monument.	Existing N-Route OHL to be removed None and not significant - there will be no change to the setting of the monument.

ID	Status	Name	Key aspects of setting identified	Sensitivity of setting	Magnitude of effect		Likely Effect	
7181	NSR Code V	Glenmount, farmstead	Remote location; local landscape surroundings, and association with other broadly contemporary deserted farmsteads in same range of hills (5200, 7164, 7166).	High	Proposed OHL Imperceptible - towers will be perceptible on a Doon, and will be partly screened by forestry v view does not form a key aspect of the localise	a distant horizon to the east of the River within which they will stand. This distant ed setting of this farmstead.	Proposed OHL None and not significant - the proposed OHL will be detectable from the receptor as a very minor addition to the wider surroundings of the site, but the key aspects of the localised setting of the receptor will be unaffected.	Existing N-Route OHL to be removed None and not significant – the removal of any visible towers will represent a very minor change to the wider surroundings of the farmstead, but will not affect its localised setting.
7989 (46)	NSR Code V	Beoch, cairn	No meaningful setting due to presence of forestry.	Low	Proposed OHL Imperceptible – mature plantation immediate the towers from view. The cairn has no meanin within a heavily forested landscape.	ly adjacent to the cairn will entirely screen ngful setting as a result of its presence	Proposed OHL None and not significant – there will be no change to the setting of the monument.	Existing N-Route OHL to be removed None and not significant - the setting of the cairn will be unaffected.
7994	NSR Code C	Cairnennock, cairn	Prominent topographic location; extensive landscape views from the site, including locations of similar sites in similar topographic situations.	High	Low – The replacement of the existing N-Route from this location. The proposed OHL will run the existing N-Route OHL and the towers will b conifer plantation. This does not represent a n surroundings of the cairn, and the new line wi this cairn and any other related monument in	e OHL with the proposed OHL will be visible c. 100m further away from the cairn than be c. 5m taller; both are substantially within naterial change to the wider landscape II not interfere with intervisibility between the landscape.	Minor and not significant – there will not be surroundings of this cairn, and the key aspec	an appreciable change to the landscape ts of the setting of this cairn will be unchanged.
8018	NSR Code C	Fardenreoch, cairn	Views from the cairn; open moorland location, but immediate surroundings much changed by forestry and opencast mining.	Medium	Proposed OHL Imperceptible – It is likely that the trees will pu from the cairn. Whilst views from this site wer looking towards the development is dominate and opencast coal workings.	reclude any actual perception of the towers re of importance to its siting, the landscape d by modern land-uses, including forestry	Proposed OHL None and not significant – there will be no change to the setting of the monument.	Existing N-Route OHL to be removed None and not significant - the setting of the cairn will be unaffected.
Unschedule	d Archaeological	Sites Deemed by Dumfrie	es and Galloway Council to be of National Imp	ortance				
MDG 3406	SMR National, in ASA	Green Dass Hill, cairn	Prominent topographic location; extensive landscape views from the site, including locations of similar sites in similar topographic situations; association with related features in ASA.	High	Low – A wireframe predicts that the proposed Dundeugh Hill and Mackilston Hill. The distant interfere with intervisibility between this cairn landscape.	OHL will be visible principally between presence of the proposed OHL will not and any other related monument in the	Minor and not significant - a change to the w this will not have a material effect on the set	ider surroundings of this cairn will be detectable, but ting of the cairn.
MDG 3416 (136)	SMR National, in ASA	Barlae Hill – Stroengassel Hill, road	Association with directly related monuments (eg SMs 1105, 5391) and other associated monuments present within ASAs; route in relation to local topography, and ability to appreciate the route taken by the road; historic associations as a major transport corridor replaced by the A713.	High (low in plantation areas)	Low – The main visibility of the proposed repla proposed OHL will be from where the old road will be detectable but there will remain a towe alignment to the east and downslope from the	acement of the existing N-Route OHL by the d crosses Bardennoch Hill. Here the changes er line running on approximately the same e old road.	Minor and not significant - a change to the su this will not have a material effect on its setti	urroundings of this old road will be detectable, but ng.
MDG 3460	SMR National, in ASA	Bardennoch Hill, cairn	Association with related monuments within the ASA; open aspect providing views of the surrounding landscape.	High	Low – the perceptibility is expected to approxic cross slab on Braidenoch Hill (1105, above).	imate to that from the nearby scheduled	Minor, adverse and not significant - the chan the setting of the monument appreciably.	ge is predicted to be detectable, but will not affect
MDG 3478 (124)	SMR National	Lagwine Cairn	Open aspect; pastoral surroundings.	Medium	Low- a tower dominantly sited adjacent to the tower will stand c. 80m away.	e cairn will be removed, although a new	Minor, beneficial and not significant – the ne immediate surroundings of the cairn.	w tower will still be a dominant feature in the
MDG 3845	SMR National	Culmark Hill, cairn	Prominent topographic location; extensive landscape views from the site, including locations of similar sites in similar topographic situations.	High	Low - The visibility of the proposed OHL, princ Mackilston Hill, will not interfere with intervisi related monument in the landscape. To the we OHL with the proposed OHL will be detectable the wider surroundings of the cairn.	ipally where crossing the north slopes of ibility between this cairn and any other est the replacement of the existing N-Route e, but will represent a very minor change to	Minor and not significant - a change to the w this will not have a material effect on its setti	ider surroundings of this cairn will be detectable, but ng.
MDG 3866	SMR National	Carseglass, cairn, field boundary, settlement, boundary bank	Locally prominent topographic location with open aspect affording extensive views; dearth of modern intrusions into the surrounding landscape.	High	Low – the proposed OHL is predicted to be vis slopes of Glenshimmeroch Hill and Hog Hill, be to the open aspect of this monument.	ible to the east on the largely forested ut this will not represent a material change	Minor and not significant - a change to the w this will not have a material effect on its setti	ider surroundings of this site will be detectable, but ng.
MDG 3944	SMR National, in ASA	Round Craigs, cairn	Prominent topographic location; extensive landscape views from the site, including locations of similar sites in similar topographic situations; association with related features in ASA.	High	Imperceptible - The distant presence of the pr Mackilston Hill will not interfere with intervisil related monument in the landscape. The exist visible from this receptor.	oposed OHL to the south around bility between this cairn and any other ing N-Route OHL to be removed is not	None and not significant – a very minor chan detectable, but this will not have a material e	ge to the wider surroundings of this cairn will be effect on its setting.
MDG 3945	SMR National, in ASA	Round Craigs, burnt mound	Functional association with adjacent watercourse; association with related monuments within the ASA.	High	Imperceptible – the proposed OHL will be pere but will not be located within the setting of th be removed is not visible from this receptor.	ceptible as a distant feature to the south, is monument. The existing N-Route OHL to	None and not significant – there will be no cl	nange to the localised setting of this monument.

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	Existing N-Route OHL to be removed
there will be no e monument.	None and not significant - the setting of the cairn will be unaffected.



ID	Status	Name	Key aspects of setting identified	Sensitivity of setting	Magnitude of effect		Likely Effect
MDG 13622	SMR National, in ASA	Irongallows, farmstead	Local landscape (former farmland) surroundings, and association with other related features within the ASA (e.g. old road MDG3416).	High	Imperceptible – views of the proposed OHL are screened by a combination of rising ground to	e predicted to be very substantially the north and forestry to the east.	None and not significant – them
MDG 17237	SMR National	Loch Doon Gunnery School, Black Craig, firing range	Associations with other features of the former Gunnery School.	Low	Imperceptible – it is not known what presently location is presently within forest, which will so the proposed OHL and existing N-Route OHL.	survives of this feature, but the site ubstantially if not wholly screen views of	None and not significant – them
Archaeolog	ically Sensitive Are	eas					
n/a (72)	ASA	Water of Deugh	Suite of related archaeological monuments contained within the ASA; views west towards Loch Doon.	High	Low – the replacement of the existing N-Route on much the same alignment through the ASA of the ASA in a material way.	OHL with the slightly taller proposed OHL will not affect the character or appearance	Minor, adverse and not significate than the existing N-Route OHL.
n/a (152)	ASA	Bardennoch to Garryhorn	Suite of related archaeological monuments contained within the ASA; extensive views from higher ground.	High	Low – the proposed OHL will run at a slightly lo OHL to be removed, and the new line will run distance (c. 1.3km) than does the existing N-Ro	ower altitude than the existing N-Route hrough the ASA for a considerably shorter oute OHL (c. 3.5km).	Minor, beneficial and not signifi the ASA, although an overhead
n/a	ASA	Polharrow Burn	Suite of related archaeological monuments contained within the ASA; extensive views from higher ground.	High	Low – The distant presence of the proposed O surroundings of the ASA, and will not affect th within the ASA. See MDG 3406 above for an as ASA.	HL will not cause a material change to the e character and archaeological interest sessment of a receptor present within the	Minor and not significant - a ch this will not have a material effe
n/a	ASA	Stroan Freggan	Suite of related archaeological monuments contained within the ASA; extensive views from higher ground.	High	Low – The distant presence of the proposed O surroundings of the ASA, and will not affect th within the ASA. See MDG 3944 above for an as ASA.	HL will not cause a material change to the e character and archaeological interest sessment of a receptor present within the	Minor and not significant –a ve detectable, but this will not hav

E.4 Features Theoretically Visible Within 5km of Existing N-Route OHL But Not Theoretically Perceptible from the Proposed OHL

ID	Status	Name	NMRS/SMR	Easting	Northing	Character
7690 / 1091	Scheduled / C(S) listed	Laight Castle	NS40NE1 / 7111	245010	608855	Castle; earthworks
1088	B listed, in GDL	Linn River Bridge, Craigengillan	NS40SE14.3 / 47153	247630	603910	Road bridge
1089	C(S) listed, in GDL	Stone Bridge, Craigengillan	NS40SE14.4 / 46655	247870	603370	Road bridge
1090	B Listed	Patna Bridge	NS41SW44	241691	610633	Road bridge
1103	B listed, in GDL	Skeldon Castle	NS31SE5 / 6215	237854	613909	Castle; cottage; tower
1104	B listed	Hollybush House Hotel	NS31SE15.00 / 6202	239350	614420	Country house
7138	NSR Code V	Kiers Castle	NS40NW1 / 7138	243035	608045	Tower House
7140	NSR Code V	Gass	NS40NW11 / 7140	242150	605550	Building; Enclosure; Huts
7233	NSR Code V	Carline Knowe, Ashentree	NS41SW1 / 7233	243350	613440	Cairn
7234	NSR Code V	Jellieston Pits	NS41SW10 / 7234	242250	610250	Coal mines
7235	NSR Code V	Carnochan Pits	NS41SW11 / 7235	241250	612350	Coal mines
7239	NSR Code V	Lethanhill Mines / Polnessan Burn / Burnfoot / Drumgrange /	NS41SW5 / 7239	243350	611150	Coal mines
7240	NSR Code V	Houldsworth Colliery / Burnfoot Pits	NS41SW6 / 7240	242425	611955	Coal mine
7241	NSR Code V	Bowhill Pits / Kerse Pits	NS41SW7 / 7241	243330	612710	Coal mines
7242	NSR Code V	Burnfoothill Mines / Drumgrange Pits	NS41SW8 / 7242	242040	611740	Coal mines
7243	NSR Code V	Dalmellington, Dalharco Mines / Burnfoot Pits	NS41SW9 / 7243	242075	611485	Coal mines
1	GDL	Skeldon House	_	237800	613500	Designed landscape

re will be no change to the localised setting of this monument.

re will be no change to the setting of this monument.

cant - the new overhead line will be a slightly taller construction

ficant – the proposed replacement will improve the appearance of d line will still run through it.

hange to the wider surroundings of this ASA will be detectable, but fect on its setting.

ery minor change to the wider surroundings of this ASA will be we a material effect on its setting.



Hydrology & Hydrogeology

Blackcraig and Margree Windfarms Grid Connection **Technical Appendices**

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of authorisation from CAR	
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Guidance and Policy Context F.1

- 1 While assessing the effects and developing mitigation measures the following legislation, policies and guidance have been taken into consideration:
 - Water Framework Directive 2000;
 - Water Environment and Water Services (Scotland) Act 2003;
 - Water Environment (Controlled Activities) (Scotland) Regulations 2005;
 - Private Water Supplies (Scotland) Regulations 2006;
 - Scottish Planning Policy (paras 196-212);
 - Planning Guidelines:
 - > Scottish Planning Policy, 2010
 - > PAN 50 Controlling the Environmental Effects of Surface Mineral Workings;
 - > PAN 56 Planning and Noise.
 - Scottish Environment Protection Agency (SEPA) Publications:
 - > Water Environment (Controlled Activities) (Scotland) Regulations 2005: A Practical Guide v5 (2008)
 - SEPA Policies:
 - > No. 19: Groundwater Protection Policy for Scotland;
 - > No. 26: Policy on the Culverting of Watercourses.
 - SEPA (jointly with the Environment Agency and the Northern Ireland Environment Agency) Pollution Prevention Guidelines:
 - > PPG01: General guide to the prevention of water pollution;
 - > PPG02: Above ground oil storage tanks;
 - > PPG03: Use and design of oil separators in surface water drainage systems;
 - > PPG04: Treatment and disposal of sewage where no foul sewer is available;
 - > PPG05: Works and maintenance in or near water;
 - > PPG06: Working at construction and demolition sites;
 - > PPG07: Refuelling facilities;
 - > PPG08: Safe storage and disposal of used oils;
 - > PPG13: Vehicle washing and cleaning;
 - > PPG18: Managing fire water and major spillages;

- > PPG21: Pollution incident response planning;
- > PPG26: Storage and handling of drums and intermediate bulk containers.
- Forestry Commission, Forest and Water Guidelines v4, 2004:
- Scottish Natural Heritage, A Handbook on Environmental Impact Assessment: guidance for competent authorities, consultees and others involved in the Environmental Impact Assessment process in Scotland, 2005;
- Scottish Executive, Guidelines on River Crossings & Migratory Fish
- CIRIA Report C532, Control of water pollution from construction sites: guidance for consultants and contractors;
- CIRIA Report C648, Control of water pollution from linear construction projects: technical guidance;
- CIRIA Handbook C650, Environmental good practice on site (2nd Edition);
- SEPA/CIRIA, the Small Environmental Guide for Construction Workers;
- Scotland and Northern Ireland Forum for Environmental Research (SNIFFER), Report WFD28 Development of a Groundwater Vulnerability Screening Methodology for the Water Framework Directive.

F.2 Assumed Design, Management and **Mitigation Measures**

F.2.1 **Route design**

- 1 There are no designated areas crossed by the proposed grid connection. However, in the wider area there are a number of Sites of Special Scientific Interest (SSSI) and the line does pass through upstream sections of some river catchments containing designated areas.
- 2 Benbeoch SSSI is designated for geological features. It is located 1.9km from the proposed OHL so will be unaffected by the development.
- 3 Loch Doon, Ness Glen, Dalmellington Moss and Bogton Loch SSSIs are all located within the River Doon catchment and all have sections of the route upstream of the designated site. Loch Doon, Ness Glen and Bogton Loch lie between 1.2 and 2.4km from the alignment, but only a very short section on the alignment passes up-catchment of these sites. This is the Muck Burn sub-catchment, which drains into Loch Doon. Serious effects, however, are very unlikely due to dilution of potential contaminants as Loch Doon is a large waterbody. It remains sensitive to acidification, although proposed felling upstream of Loch Doon is very limited in extent.
- 4 Dalmellington Moss lies at the confluence of Cummock Burn and Muck Water, just downstream of Dalmellington, approximately 2.1km from the alignment. Nearly 9.5km of proposed OHL runs through the catchment upstream of this site, although most of the line is distant from the watercourses. Pylons have been sited at least 35m from watercourses as far as possible; combined with downstream distances this will minimise potential effects on the moss.

- system.
- will be minimised.

Hydrology & Hydrogeology



5 Cleugh, Water of Ken Woods, Kenmure Holms, Airds of Kells, River Dee (Parton to Crossmichael) and Threave & Carlingwark Loch SSSIs, and Loch Ken & River Dee Marshes SPA, all lie within the River Dee catchment. Most of the proposed OHL runs through this catchment. Cleugh lies approximately 850m from the alignment and is immediately adjacent to the Water of Ken just downstream from Kendoon. The site is located on the lower slopes of Mackilston Hill and, with the exception of the margin along the river bank, is not in direct hydrological contact with the river

Water of Ken Woods is a composite of five areas, three of which lie upstream of the Water of Ken and are consequently hydrologically separated from possible effects. One section lies near the Water of Ken but set back from the river bank on the slope of a hill and is also hydrologically separated from the river. The remaining section is situated on the banks of the Garple Burn just upstream of the confluence with the Water of Ken. The Garple sub-catchment contains 4.8km of wood pole line plus the substations for Blackcraig and Margree Windfarms. As discussed above, much of the line is distant from watercourses and wood pole positions have been sited at least 20m from watercourses as far as possible. Combined with the downstream distance, the potential for dilution and the woodland situation on distinct slopes, any effects

7 Airds of Kells Wood is located on the side of a hill at the mouth of Loch Ken. Its situation on a distinct slope above the loch shore indicates that it is hydrologically separated from the river system and consequently will be unaffected by the development.

8 Loch Ken & River Dee Marshes SPA encompasses Kenmure Holms, River Dee (Parton to Crossmichael) and part of Threave & Carlingwark Loch SSSIs. These sites all have a hydrological connection with the Water of Ken or River Dee and could be influenced by substances carried down by the river. Serious effects, however, are unlikely due to attenuation as a result of the large distance from the route and dilution factors from the volume of freshwater carried by the river.

9 In summary, owing to the intervening distances and specific features designated it is considered that there will be no likely adverse influence from site activity on any of the SSSIs in this area in relation to geology, soil and hydrology.

10 Special consideration has been given to investigating and protecting public and private water supplies during layout design, with infrastructure planned well away from sources and associated infrastructure as far as this has been possible. Most of the private water supplies located within 2km of the proposed route will be unaffected by the development. Where the proposed route crosses public water supply catchments, temporary watercourse crossings have been minimised and the route sited as far from the intake as practicable.

11 A small number of private water supply sources have been identified as at risk or possibly at risk from construction effects and additional control and mitigation measures will be required for these locations. The preferred option will be to relocate the water supply intake to a location where it will not be affected by site work. This may be to a point further upstream on a watercourse or to an alternative watercourse or spring. Relocation of the intake will be dependent on finding an alternative intake location with appropriate water quantity and quality to provide a reliable supply. A collector system with multiple intakes could be installed if there is no accessible single watercourse with appropriate flow levels.

- 12 If it is not possible to relocate the source intake, an alternative supply will be provided for the duration of construction activity that could possibly affect the water quality or quantity. This is likely to take the form of a water bowser provided to the affected property or properties. Any changes to private water supplies will be determined in full consultation with supply users, and landowners if appropriate, and will be agreed in advance of any works being undertaken.
- 13 The route of the grid connection has been designed such that all infrastructure is located as far from hydrological features as practical. The layout has also been carefully considered to restrict stream crossings to a minimal number of locations. The Forestry Commission has produced guidelines which suggest that a 20m buffer strip on each bank is applicable to protect watercourses of over 2m channel width¹ with respect to road building and similar activities. Using this guidance as best practice, the wood pole and L7 Tower locations follow this suggestion except in a small number of cases where other constraints have meant this has not been possible. All steel lattice towers are at least 20m from watercourses.

F.2.2 Site preparation

- 1 Specialist low ground pressure vehicles will be used for construction, so there will be no requirement for the creation of permanent access tracks. However, in some places temporary access tracks may be required. Where such temporary access tracks are needed, care will be taken to minimise their length to restrict effects as far as possible.
- 2 Cable trenching will take the form of open-cut trenches. Topsoil will be stripped on a field-by-field basis where appropriate and stored in a mound running alongside the working width on unstripped land. Poor storage of topsoil can result in loss of structure and fertility, mostly as a result of poor handling and compaction in wet conditions. Where possible, topsoil will be stripped in reasonably dry conditions and stored in a heap no more than 3m high. Stored topsoil will be kept free from the passage of vehicles and intermixing with other materials, especially subsoil.

Excavation of cable trench F.2.3

- Subsoil removed from the trench will be stored on the opposite side of the working width from the stored topsoil and will be laid on top of undisturbed subsoil. Where distinct layers are identified within the subsoil, different subsoils will be stored separately to enable successful restoration of the soil profile after installation of the cable.
- 2 In areas where superficial deposits are thin or absent, hard digging conditions may necessitate controlled blasting of bedrock to allow the excavation of the cable trench. Advance warning of such work will be given to the public by house visits, a local letter drop and/or notification in the local papers as appropriate. Contractors will also ensure that the size of the charge and blasting procedures are agreed in advance
- 1 Forestry Commission (2004). Forest & Water Guidelines, 4th Edition

with the Dumfries & Galloway Council Environmental Health Officer. Blasting will be kept to a minimum to restrict effects on groundwater and slope stability.

- 3 In areas where trench stability is likely to be a problem, such as where the water table is shallow, trenches will require battering or shoring to prevent trench collapse. Shuttering or piling may be required for deep excavations.
- 4 Ground conditions for the excavation of the cable trench will be determined by appropriate ground investigation works prior to construction. The ground investigation will identify whether blasting will be required and will also help to identify areas of possible instability. A marshy area has been identified on the underground section near Dalshangan; this area will require thorough investigation to assess stability.
- 5 Cables crossing marshy areas can experience problems of buoyancy. In areas where cable laying through marshy ground is unavoidable, it may be necessary to weight the cable to counteract its natural buoyancy and ensure it remains at an appropriate depth below ground.

F.2.4 Felling

- 1 To allow the construction of the grid connection it will be necessary to remove some forestry along the route corridor, to provide an appropriately sized wayleave and to give access to construction plant. The total area of felling required is approximately 73ha. Details of proposed areas to be felled are provided in Chapter 5 (Project Description).
- 2 Felling causes ground disturbance, which will result in higher levels of loose sediment on the ground surface which could be mobilised in surface runoff. Surface vegetation has an appreciable effect on attenuating rainfall strength, which will be lost when the trees are felled. This will result in potentially higher runoff volumes from felled areas. The use of check dams, silt traps and buffer strips in the existing forestry drainage system will serve both to attenuate peak flows, by slowing the flow of runoff through the drainage system, and to allow sediment to settle before water is discharged from the drainage system.
- 3 Best practice techniques and methods, as detailed in the Forestry Commission's Forest & Water Guidelines, will be used for all forestry related operations.

F.2.5 Water ingress into Wood Pole and tower foundations and cable trench

- 1 Owing to the impermeability of the Ordovician and Silurian bedrock and the limited permeability of the overlying superficial deposits there is unlikely to be significant groundwater ingress in the wood pole and tower foundations and cable trenches.
- 2 Surface water ingress will be controlled by the installation of up-slope surface cutoff trenches or land drains prior to excavation. Any water resulting from ingress or direct rainfall into the excavations will be pumped out and treated appropriately, as discussed in the following section.

F.2.6 Suspended solids

- and tower foundations.
- an adverse visual effect.
- spread and attenuate flow.
- of new land drains.

3 Following reinstatement the cable trenches may form a preferential pathway for groundwater flow as a consequence of their greater permeability than the surrounding area. To minimise this, the trenches will be backfilled with the excavated material and compacted to an appropriate degree. As the cables will be bedded on sand for most of the undergrounded sections, clay bunds will be installed at intervals to minimise down-slope groundwater flow along the trenches.

1 Sediment can be released into watercourses directly or indirectly. In general, direct releases of sediment arise during the construction of watercourse crossings whereas indirect releases occur from run-off from the working width adjacent to watercourses, from water pumped from excavations or from stored stockpiles of excavated material. Stockpiled material will be produced principally from the excavations for wood pole

2 Increased levels of sediment release to watercourses can result in high turbidity levels, thereby reducing oxygen and light levels within the water. This, in turn, has an effect on the water quality and ecology of the watercourse and upon existing fish populations. Increased deposition of sediment within the watercourse can blanket fish spawning grounds, smother aquatic plant and invertebrate life and reduce the flood storage capacity of the watercourse, increasing the flood risk, as well as having

3 In order to minimise sediment release to watercourses, all earth-moving operations will be undertaken in compliance with BSI Code of Practice for Earthworks, BS 60331, 1981. All sediment-loaded discharges will be routed through balancing tanks and one or more suitable filters or silt-busters in series as necessary, to reduce the sediment load. The resulting supernatant water will be discharged onto vegetated surfaces and directed away from burns and ditches to avoid direct entry into watercourses. Any sediment carried within the supernatant will mainly be very fine material that will be deposited amongst the rough surface vegetation. For discharge onto rough grassland to be effective, the discharge must be spread efficiently. This is normally achieved by using a number of discharge points, straw bales and/or silt fences to

4 Where there is significant slope along the cable route there is an increased risk of sediment-loaded surface runoff from the area of disturbed soil. Bunds, straw bales, silt fences or other suitable alternative barriers will be installed adjacent to the watercourse bank to prevent sediment from entering the water. On longer slopes, french drains will be installed at intervals down the slope to intercept the sedimentladen runoff and control erosion within the trench area.

5 Measures to control surface water runoff will be instigated prior to topsoil stripping and may include the installation of french drains to intercept runoff or the installation

F.2.7 Watercourse crossings

- 1 A total of 50 watercourse crossings on vehicle access routes were identified from the OS 1:25,000 mapping of the Study Area. Some of these crossings are existing culverts or bridges which may require upgrading; others will require new temporary crossings for the construction period.
- 2 Regulations relating to the construction of temporary bridges or fords and the levels of authorisation required are summarised in Table F.01 below, extracted from SEPA's CAR Practical Guide v5.

Table F.01 - Engineering levels of authorisation from CAR²

General binding rule	Registration	Simple licence	Complex licence
Bridges and other types of crossing structures			
Minor bridges with no construction on bed or banks [GBR6]	Bridges with no construction on bed and ≤20m of total bank affected	All other bridges, fords and causeways	
Temporary bridges in rivers <5m wide [GBR6]	Pipe or box culverts used for footpaths, cycle route or single track road in rivers ≤2m wide	All other pipe or box culverts used for crossings	

- 3 General advice regarding river crossing techniques includes:
 - · Where crossings are sited in or adjacent to spawning areas, river works must not be carried out between 1 October and the following 15 May;
 - Ground levels around any watercourse crossing must not be raised, to maintain floodplain storage and conveyance capacity;
 - Any excess spoil arising from the works should be disposed of outwith the flood risk area to avoid loss of floodplain volume.
- 4 All the works will be designed to take into account the latest SEPA guidance and mitigation measures and will be developed in consultation with SEPA to minimise any potentially adverse effects of the grid connection construction. A method statement will be prepared by the contractor for review by SEPA regarding the construction of permanent and/or temporary works at a watercourse crossing as part of the consents process. The method statement will address the following issues:
- 5 Installation of temporary bridges across watercourses;
- 6 Prevention of damage to, and weakening of, watercourse banks;
- 7 Methods to control water flow during the installation of temporary bridges for access purposes; and
- 8 Methods of reinstatement after construction work is completed. These will be discussed with SEPA.

2 - SEPA (2008). Water Environment (Controlled Activities) (Scotland) Regulations 2005: A Practical Guide v5

9 Groundwater is at high risk of pollution in areas where it is directly encountered, such as when working at or below the water table in deep excavations. In these situations a direct pathway to the aquifer exists with little or no natural protection.

F.2.8 **Flood** risk

- 1 Flood risk has been identified on a number of rivers which are either crossed by or lie in close proximity to the grid connection route. The 1:200 year flood risk areas are shown in Figure 11.4a-h within Chapter 11.
- 2 The main rivers of concern are the River Doon and its tributaries Cummock Burn. Muck Water and Mossdale Burn; and the Water of Ken and its tributaries Water of Deugh, Black Water and Carsphairn Lane. The proposed route crosses the floodplain of the Water of Deugh and Mossdale Burn, and runs parallel to the Black Water, Carsphairn Lane, Muck Water and Cummock Burn. Very few wood poles or towers are situated within the identified flood risk areas, indicating that the route itself is unlikely to be subject to flooding except in very extreme circumstances. However, construction activity relating to the grid connection could have an adverse effect on the flood storage capacity of the watercourses if appropriate sediment control measures are not implemented.
- 3 A small number of towers on the section of N-Route to be decommissioned also lie within floodplain areas adjacent to the River Doon. Again, although the route itself is unlikely to be affected by flooding the site activity occurring during the decommissioning phase could have an adverse effect on the flood storage capacity of the river if appropriate sediment control measures are not implemented.
- 4 It is important to ensure that watercourse crossings, whether permanent or temporary, do not obstruct the flow within the watercourse, either directly or indirectly through the build-up of debris within the channel. It is also important that the crossings do not prohibit the future improvement or maintenance of the watercourse.

F.2.9 **Pollution control**

- 1 During construction, all watercourses within the site or downstream from the grid connection will be at risk of pollution from numerous sources. An Environmental Management and Pollution Prevention Plan will ensure that mitigation measures are put in place and activities carried out in such a manner as to minimise or prevent effects on the ground and surface waters. This plan will be drafted in accordance with SEPA Pollution Prevention Guidelines. The Environmental Management and Pollution Prevention Plan will apply to all phases of the grid connection, from construction through operation to decommissioning. Further details of the EMP & PPP are included in Appendix A (Mitigation); elements that will be included are:
 - Storage all equipment, materials and chemicals will be stored well away from any watercourses. Chemical, fuel and oil stores will be sited on impermeable bases and within a secured bund.
 - Vehicles and refuelling standing machinery will have drip trays places underneath to prevent oil and fuel leaks causing pollution. Where practicable,

refuelling of vehicles and machinery will be carried out in one designated area, on an impermeable surface and well away from any watercourse.

- carefully controlled.

F.2.10 **Backfill and restoration**

- 3



• Maintenance - only emergency maintenance will be carried out within the development area, on an impermeable surface and well away from any watercourse or drainage, unless vehicles have broken down necessitating maintenance at the point of breakdown, where special precautions will be taken.

• Welfare facilities - on-site welfare facilities will be adequately designed and maintained to ensure all sewage is disposed of appropriately. Given site conditions and private water supplies in the local area, this is likely to take the form of tankering and off-site disposal, depending on agreement with SEPA.

 Concrete – concrete is strongly alkaline and corrosive and can be lethal to aquatic life through changes to water pH and the production of very fine, highly alkaline silt. The use of wet concrete in and around watercourses will be minimised and

• Washout areas - areas used for the washing-out of vehicles used in the transport of concrete or similar products will be located away from watercourses and drains. They will have an impermeable base to prevent pollution of groundwater and washout water will be contained in a pit, skip or series of settlement pits as required. Washout water may not be suitable for discharge to surface water drains due to its high alkalinity.

• **Contingency plans** – plans will ensure that emergency equipment is available on-site, i.e. spill kits and absorbent materials, advice is available on action to be taken and who should be informed in the event of a pollution incident.

 Operating and emergency procedures – all relevant staff and site personnel will be trained in both normal operating and emergency procedures, and will be made aware of highly sensitive areas on-site. The staff training and implementation of site procedures will be overseen by an Environmental Manager, or alternative appropriately qualified individual, to ensure that these measures are carried out effectively to minimise the risk of a pollution incident.

1 Excess water will be removed from wood pole and tower foundations and from open sections of the cable trench prior to backfilling and treated as described above to remove suspended solids. The cable may be bedded in sand or similar material to protect it and its coating from damage. This sand will be sourced from locally excavated material as far as possible, and screened by appropriate equipment to obtain suitable fine-grained fill for the cable surround and bedding.

2 Subsoils and other excavated material will be replaced in the trench in the order in which they were removed to ensure that the layers are compatible with those in the surrounding soil profile. Care will be taken to avoid mixing of these horizons during backfilling. Each layer will be consolidated with rollers or similar to match adjacent horizons and remaining subsoil will be spread across the site to allow for settlement.

Topsoil reinstatement should be carried out under suitably dry conditions in order to limit compaction. Care will be taken to ensure that the topsoil is spread evenly across the working width to match adjacent land surfaces. Soil loosening may be required in areas where compaction is a problem, such as under the running track or under temporary track routes. The working width will be reinstated to its original condition.

F.2.11 **Construction management**

- 1 Construction traffic access will be restricted wherever possible and the number of vehicle movements limited as much as practicable. Land surrounding the immediate construction area will be fenced off or otherwise demarcated to prevent inadvertent intrusion by construction plant, particularly in open areas. This will help to minimise soil disturbance and subsequently reduce the potential for erosion.
- Wheel track and washing units will be employed to ensure that mud, and the resultant 2 dust, is not transmitted from the site vehicles onto nearby highways. The resulting wash water will be treated to remove suspended sediment prior to discharge to ground.
- Watercourses, culverts and drainage ditches will be inspected and cleared regularly 3 to prevent blockages and reduce the risk of flooding.
- Silt traps and sediment attenuation ponds will be inspected and cleared regularly to 4 ensure they remain fully operational and effective.
- 5 Silt fences and mats will be used to ensure minimum sediment runoff from stockpiles.
- 6 Monitoring of surface water will be carried out in the River Doon and Water of Ken catchments, at locations to be agreed in advance with SEPA. The extent and frequency of the monitoring will be proportionate to the risk of contamination and the sensitivity of the rivers.

Designated Areas F.3

1 Scottish Natural Heritage (SNH) identifies a number of protected areas in the region near the proposed Blackcraig and Margree grid connection. Sites within the surrounding area have been identified, and information on these sites, their proximity to the route and the basis for their designations is included below. These sites include a number of Sites of Special Scientific Interest (SSSI) and one Special Protection Area (SPA). This information is summarised from the details available through SiteLink³ via the SNH website.

F.3.1 Benbeoch SSSI

1 Benbeoch SSSI lies 2km north-east of Dalmellington, near the edge of Benbraniachan opencast mine workings. The site has been designated on the basis of geological exposures, specifically of alkali-enriched basaltic sills of Permo-Carboniferous age. The sill is the type locality for the rock type kylite, which gives the site national and international importance.

Dalmellington Moss SSSI F.3.2

1 Dalmellington Moss SSSI is located approximately 500m west of Dalmellington. The site consists of an area of raised bog with a lagg fen developed in the valley of the River Doon. The raised bog section is one of the best examples of its type in East Ayrshire and supports a number of locally rare or uncommon bog plant species.

Bogton Loch SSSI F.3.3

1 Lying approximately 750m south-east of Dalmellington, Bogton Loch SSSI includes a freshwater loch with an extensive range of associated wetland communities and is one of only two open water transition fens in Ayrshire. The site also supports a diverse breeding bird community. This site is hydrologically connected to Dalmellington Moss SSSI.

F.3.4 Ness Glen SSSI

1 Ness Glen SSSI is located just over 3km south of Dalmellington and covers an area of upland mixed ash woodland within a narrow steep-sided ravine. The site is dominated by ash woodland along beside the river, with more mixed woodland on the gentler upper slopes and supports a rich ground flora. Ness Glen lies on the River Doon immediately downstream of the dam.

Loch Doon SSSI F.3.5

1 Loch Doon SSSI is situated just over 4km south of Dalmellington and is the last known site in south-west Scotland for Arctic charr. The Loch Doon population is now thought to be genetically distinct from other surviving Arctic charr populations. The loch is also the largest and best example of an oligotrophic waterbody in the south Strathclyde region.

F.3.6 **Cleugh SSSI**

1 Cleugh SSSI, located approximately 600m south-east of Kendoon and 5km north of St John's Town of Dalry, is designated for its unimproved grassland habitats which are the best remaining example in Dumfries & Galloway. In addition to the wide range of grassland plant communities, the site hosts a diverse butterfly fauna.

Water of Ken Woods SSSI F.3.7

1 Water of Ken Woods SSSI is a composite site consisting of five parts. This site lies between 1.2 and 2.5km from St John's Town of Dalry. The site has been designated for its ancient woodland habitat, including a number of lichen species rare outside north-west Scotland or with an otherwise markedly southern distribution. The site is also noted for invertebrate species, including some beetles rare in Scotland.

Kenmure Holms SSSI F.3.8

1 Situated at the northern end of Loch Ken, Kenmure Holms SSSI is locally the best example of a herb-rich fen meadow developed from flooded pasture land. It has been designated for fen peatlands and its assemblage of invertebrates, including dragonflies, beetles and spiders. The site is included entirely within Loch Ken & River Dee Marshes SPA & Ramsar site.

F.3.9 Airds of Kells Wood SSSI

soils.

F.3.10 **River Dee (Parton to Crossmichael) SSSI**

Threave & Carlingwark Loch SSSI F.3.11

F.3.12 site

1 Airds of Kells Wood SSSI is located on the western banks of Loch Ken, approximately 11km north-west of Castle Douglas, and is the largest remaining block of oak woodland in the Ken-Dee valley. The woodland is dominated by oak with patches of ash and a more varied understorey. The ground flora is typical of woodland on acid

1 River Dee (Parton to Crossmichael) SSSI lies 4km north-west of Castle Douglas. The site has been designated for its swamp and fen peatland with areas of marshy acidic and dry acidic grassland. It is also nationally and internationally important for wintering bird populations and supports a wide variety of dragonfly species. This site is included entirely within Loch Ken & River Dee Marshes SPA & Ramsar site.

1 Threave & Carlingwark Loch SSSI is situated near the western and southern margins of Castle Douglas and is an excellent example of a wetland system with botanical and ornithological interest. The site contains a rich complex of distinctive vegetation types, including both base-poor and base-rich fen conditions, with a diverse array of rare and local plant species. The system is important ornithologically for its overwintering waterfowl and as a breeding area for wetland species. There are, in addition, a number of rare invertebrates within the site. Part of this SSSI is included within Loch Ken & River Dee SPA & Ramsar site.

Loch Ken & River Dee Marshes SPA & Ramsar

1 The site includes a long linear loch and river system which is the southernmost of its type in Scotland. It contains areas of swamp, fen, grassland and carr woodland and is a good example of a semi-natural freshwater system in north-west Europe. The site qualifies as an SPA by regularly supporting internationally important numbers of overwintering Greenland white-fronted geese Anser albifrons flavirostris and greylag geese Anser anser. The site also supports important assemblages of breeding birds, including common tern Sterna hirundo and kingfisher Alcedo atthis, and wintering birds typical of open water and associated wetlands.

^{3 -} SiteLink, SNH website; http://www.snh.org.uk/snhi/, accessed August 2009
Environmental Management Plan & F.4 Pollution Prevention Plan

F.4.1 Introduction

- 1 Following detailed design and prior to the commencement of the grid connection construction a formal Site Environmental Management Plan & Pollution Prevention Plan will be produced (SEMP & PPP). The SEMP & PPP will set out the general mitigation measures that will be used to limit the potential hydrological and hydrogeological impacts of the proposed development. These commitments will include both specific mitigation measures and proposals for monitoring and emergency procedures. The SEMP & PPP will include sections detailing:
 - Pollution prevention planning;
 - Surface water management;
 - Surface water monitoring.
- 1 Additional sections may be included as identified through the planning process or discussions with consultees, including the Scottish Environmental Protection Agency (SEPA) and Scottish Natural Heritage (SNH). Furthermore, the SEMP & PPP proposals should be read in conjunction with ecological management plans outlined separately in the Ecology chapter.
- 2 The SEMP & PPP will be submitted to the planning authorities, SEPA and other appropriate bodies for comment prior to implementation. In addition, the EMP & PPP will be made available to those tendering for the construction works. All appointed sub-contractors will be made aware of site specific concerns and environmental mitigation measures required.
- 3 To ensure that the SEMP & PPP is being adhered to during construction, an Environmental Manager or similar appropriately qualified person(s) will be appointed to provide staff training and specialist advice and to manage the environmental monitoring and auditing programme.
- 4 A general outline of the contents and matters to be addressed by the above elements of the plan is described in the following sections.

F.4.2 Pollution prevention plan

- 1 The Pollution Prevention Plan (PPP) will detail the general pollution prevention measures to be implemented to limit the potential for contamination of both the surface and groundwaters, at any stages of the development. These measures will be devised and implemented in line with current technical guidance and codes of practice, including the following:
 - SEPA (jointly with the Environment Agency and the Northern Ireland Environment Agency) Pollution Prevention Guidelines (PPG):
 - > PPG01 General guide to the prevention of water pollution;

- > PPG02 Above ground oil storage tanks;
- > PPG03 Use and design of oil separators in surface water drainage systems;
- > PPG04 Treatment and disposal of sewage where no foul sewer is available;
- > PPG05 Works and maintenance in or near water;
- > PPG06 Working at construction and demolition sites;
- > PPG07 Refuelling facilities;
- > PPG08 Safe storage and disposal of used oils;
- > PPG13 Vehicle washing and cleaning;
- > PPG18 Managing fire water and major spillages;
- > PPG21 Pollution incident response planning;
- > PPG26 Storage and handling of drums and intermediate bulk containers;
- The Forests and Water Guidelines, 4th Edition (Forestry Commission);
- BS5930: 1999 Code of Practice for Site Investigations;
- BS6031 Code of Practice for Earthworks;
- CIRIA Report C532 Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors;
- CIRIA Report C648 Control of Water Pollution from Linear Construction Projects: Technical Guidance;
- CIRIA Handbook C650 Environmental Good Practice on Site (version 2):
- IEMA Practitioner Series No. 12: Environmental Management Plans;
- SEPA/CIRIA the Small Environmental Guide for Construction Workers.
- The general mitigation measures will include, but are not limited to, the following:
- Storage:
 - > Wherever possible, materials will be stored within secure construction compounds;
 - > All equipment, materials and chemicals will be stored at least 50m away from any watercourse;
 - > Chemical, fuel and oil stores will be sited on impermeable bases within an appropriately sized bund, suitable to contain 110% of the contents (single tank) or 110% of the contents of the largest contained (multiple container storage);
 - > Oil and chemical storage to meet the minimum requirements or SEPA PPG2 and PPG26, i.e. best practice secondary containment (bund) volumes;

- Vehicles and refuelling:
- Maintenance:
- Welfare facilities:
- Concrete:
 - carefully controlled;
- groundwater.
- Silt management:
 - soil stockpiles;



> Storage of adequate chemical/fuel for immediate need only, to minimise volumes of chemicals stored on site.

> Where practicable, refuelling of vehicles and machinery will be carried out in designated areas (construction compounds or other suitable sites), on an impermeable surface and at least 50m away from any watercourse;

> Standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution.

> Only emergency maintenance to construction plant will be carried out on site, in one designated area and on an impermeable surface at least 50m from any watercourse or drainage;

> Exceptionally, vehicles or other equipment which have broken down will require maintenance at the point of breakdown, where special precautions will be taken, including the use of drip trays and spill kits.

> On-site welfare facilities will be designed and maintained to ensure all sewage is disposed of appropriately;

> Disposal of sewage from the site will be carried out by methods recommended in PPG04, and may take the form of an on-site septic tank with soakaway, or tankering and off-site disposal, depending on the suitability of the site for a soakaway and agreement with SEPA.

> Use of wet concrete in the vicinity of watercourses will be minimised and

> A settlement and recirculation system for water reuse will be considered and the washing-out of mixing plant will be carried out in a contained area;

> Wash water will be adequately treated to deal with suspended solids and high alkalinity before discharge;

> Drainage will be to tanks or lined settlement ponds to prevent infiltration to

> Silt fences and mats will be used to minimise sediment levels in runoff from

> Straw bales will be used to collect silt and reduce runoff velocity to encourage deposition of entrained sediment.

2 The PPP will detail emergency procedures to be used in the event of an incident. These procedures will be agreed with SEPA and are likely to include:

- · Details of trained staff to be contacted in the event of an incident, including location, responsibilities, key-holder information and 24 hour cover;
- · A contact list and notification procedure for alerting the emergency services, relevant environmental regulators, the Health and Safety Executive (HSE) and specialist clean-up contractors:
- A drainage plan showing site layout and a schematic representation of the site drainage arrangements. This will include:
 - > All the watercourses, discharge points, suitable points for installing pollution control booms and schematic representation of all silt mitigation measures;
 - > Facilities used for the storage of fuel, oils and wastes (together with information relating to the areas that are bunded and the products stored);
 - > Any potentially sensitive areas, including public and private water supplies;
 - > Facilities, such as inspection points, for the detection of contamination and oil interceptors.
- A chemical and waste inventory recording procedure for the recording and tracking of all substances stored on-site as well as how and where they are stored;
- · Emergency procedures setting out the activities covered, staff responsibilities and procedures for dealing with events such as spillages. Specifically, these could include the following actions where appropriate:
 - > Appropriate procedures for alerting relevant property and landowners;
 - > The potential consequences of an incident;
 - > Procedures for prevention, containment and recovery of leaks, spills or general contamination. These will include the location and use of sand and sand bags, spill kits containing proprietary absorbents, booms and other pollution control equipment.

F.4.3 Surface water management

- 1 The local watercourses on the site of the grid connection route have been identified as having a fairly flashy response to rainfall events, as evidenced by rapid response times and high estimated peak flows for flood return periods. In addition, very low flows may be recorded during the summer. All watercourses lie within river catchments designated as important for salmonids under the Freshwater for Fish Directive⁴. The watercourses may also support other sensitive species such as otters or water voles. It is recognised that changes in river siltation, land drainage, water quality, the presence of river obstructions and river flow reductions can have a detrimental effect on populations of fish and other species.
- 2 As a consequence, the surface water management section of the SEMP & PPP will detail the principles and techniques that will be employed to ensure the development

will not have a detrimental impact upon the flood risk or aquatic habitat of the area. The principles on which the surface water management strategy will be devised are:

- Runoff from the developed area should not be significantly different from runoff prior to development;
- · Runoff from the developed area should not result in any downgrading of downstream watercourses or habitat;
- Any potential contamination in the runoff generated by the development should be treated within the development area prior to discharge.
- 3 To achieve this, the following measures will be considered:
 - Artificial drainage will only be installed where necessary. The individual lengths, depths and gradients of these drains will be minimised to avoid intercepting large volumes of diffuse overland flow and generating high velocity flows during storm events. Drainage ditches around wood pole and tower foundations will be reinstated upon completion of the construction work;
 - Sustainable Drainage Systems (SuDS) such as check dams, silt traps, settlement ponds and buffer strips will be incorporated into the drainage system as required. These features will have the dual purpose of attenuating peak flows and allowing sediment to settle before water is discharged from the drainage system;
 - Drainage will not discharge directly to any natural watercourse, but will discharge to buffer strips or trenches, preferably on flat ground. The buffer strips will act as filters, minimising sediment transport, attenuating flows and maximising infiltration. Erosion protection will be installed at discharge points. Location and distance of buffer strips from watercourses will be determined taking into account geology, topography and vegetation characteristics;
 - Drainage from site compounds and lay-down areas will be collected and treated separately. The runoff from these areas is more likely to be contaminated and require treatment, such as oil interception and neutralisation of high alkalinity. Tanks or lined settlement ponds will be used to prevent infiltration to groundwater;
 - All structures, including settlement ponds and culverts or diversions, will be designed and constructed using best practice techniques and will be of sufficient capacity to receive storm flows, with an allowance for increased flows due to climate change;
 - · Watercourse crossings will not change the natural bed level or obstruct the flow within the watercourse, either directly or indirectly through the build-up of debris within the channel, to maintain natural flood defences and prevent adverse impacts on aquatic ecology and fish migration;
 - · All forestry operations, excavation and earthworks will be suspended during periods of heavy rainfall in order to minimise sediment generation.
- 4 SEPA will be fully consulted regarding the requirements for registration or licensing of elements of the drainage system, e.g. discharges, under the Water Environment (Controlled Activities) Regulations 2005 (known as CAR).

F.4.4 Water requirements

- water is used are as follows:
- Dust suppression in periods of dry weather; and
- Domestic uses, including welfare facilities and toilets.
- from SEPA as required by CAR.
- construction phasing.

Surface water monitoring F.4.5

- required in order to:

- catchments is likely to comprise:

1 Construction activities at any development require the use of water for a range of activities, and grid connection construction is no different. The main areas in which

• Washing down of vehicles, including those used for transport of concrete;

2 It is generally advantageous to extract water from local sources for use on site. There will, therefore, be a requirement to apply for the appropriate abstraction licensing

3 In terms of the impact on the environment, it is likely to be preferable to extract continuously at a low rate, rather than periodically extracting at a higher rate, although there may be storage issues which limit the practicality of this approach. In any case, the optimal solution for extraction strategy will be site dependent and will be achieved through consideration of water availability, storage capability and

1 A programme of surface water monitoring is recommended for watercourses within the River Doon and Water of Ken catchments, on account of their high sensitivity and the potential contamination risk from sediment release and concrete pouring. The monitoring should be started prior to construction to establish existing baseline conditions, against which any future changes can be measured, and should continue until all construction and reinstatement work is completed. This monitoring will be

 Provide reassurance that the in-place mitigation measures are effective and that the development is not having a significant impact upon the environment;

• Indicate whether further investigation is required and, where pollution is identified, the need for additional mitigation measures to prevent, reduce or remove any impacts on the water environment.

2 The surface water monitoring programme will be site-specific and tailored so as to provide a meaningful and pragmatic indication of the state of the water environment. The surface water monitoring programme for the River Doon and Water of Ken

 Regular visual inspection of surface water management features adjacent to the river, such as drainage ditches, in order to establish whether there is increased erosion or deposition of sediment. Drainage ditches are likely to require regular maintenance to ensure they continue to function as designed;

Regular visual inspection of the watercourses during the construction stage, particularly during periods of high rainfall, in order to establish that levels of suspended solids have not been increased by site activities;

^{4 -} Freshwater for Fish Directive (78/659/EEC), Monitoring & Designations map, SEPA website; http://www.sepa.org.uk/pdf/data/salmonid/map of salmonid waters.pdf, accessed August 2009

- Periodic and ad-hoc sampling and analysis of the watercourses in order to complement the programme of visual inspection. Periodic analysis enables monitoring of trends in levels of critical parameters (e.g.turbidity, pH) so that deviations from the norm can be identified and actioned.
- 3 The suite of parameters to be sampled should be discussed with SEPA prior to the establishment of the monitoring programme. Additional monitoring may be required as a condition of discharge consents, abstraction licences or other environmental regulation. It is recognised that the impacts of the development will be deemed acceptable if there is no significant net deviation from the baseline monitoring results.
- 4 Additional surface water monitoring is likely to be required to provide information relating to private water supplies. A programme of monitoring will be established prior to construction to provide baseline data, and will be continued throughout the construction period.

F.5 Supplementary Information

F.5.5.1 **Baseline assessment**

F.5.5.1.1 Climate

- 1 Average monthly rainfall data are available from the SEPA rain gauges at Drumjohn (NX 524 975), which lies immediately adjacent to the grid connection route approximately 9.5km south-east of Dalmellington, and from Penwhapple Reservoir (NX 254 969), 27km west of the route. The data for Drumjohn are available for the period from March 2002 until June 2009, and for Penwhapple from December 2005 until April 2008.
- 2 Note that as the Penwhapple station has limited data available this may lead to skewing of monthly rainfall averages. For example, a very high monthly rainfall was recorded for November 2006; as the average monthly rainfall only includes November 2006 and 2007 this leads to a higher average than would be expected for longer-term data. Some other monthly averages are also derived from only two months' records.

Average Monthly Rainfall Data



- 3 The short term data available from these two stations were compared with the long term average data (1971-2000) from Eskdalemuir monitoring station (NS 256 977), approximately 65km east of the site. The station at Eskdalemuir lies at 242m AOD and is in a similar topographical setting to Drumjohn.
- 4 The general trends for the average monthly rainfall are similar for all three stations and provide a broad indication of the rainfall patterns likely across the application area, as shown in Figure F.01.

Figure F.01 - Comparison between short term and long term average monthly rainfall data: Drumjohn 2002–2008; Penwhapple 2005–2008; Eskdalemuir 1971–2000.

F.5.5.1.2 Hydrology

1 Flow statistics for the catchments discussed above are provided in Table F.02. The Q95 is the flow exceeded 95% of the year and is a measure of annual low flow, generated from LowFlows 2000. These flows are theoretical as there are very little historical data available for the area. The Q95 flow does not take account of storage provided by lochs and links between catchments from lochs with more than one outflow that are sited on watersheds. The low flows have an uncertainty of 1.32 l/s/km which, in a small catchment of 2km² or less, may represent almost 50% of the flow.

Table F.02 - Catchment flow data

Catchment	Area (km²)	Mean Daily Flow	Q∍₅ (10) (m³⁄s)	Estimated Peak Runoff (m³/s) for each return period (years)				n period	
		(m³⁄s)		2	5	10	25	50	100
Water of Ken	445.25	19.71	1.29	222.93	317.66	376.93	461.53	534.84	605.26
River Doon	190.49	10.40	0.84	111.98	159.13	189.50	232.84	270.42	306.53
Black Water	23.53	0.84	0.06	12.56	17.51	21.17	26.43	31.00	35.41
Carsphairn Lane	22.01	0.94	0.07	15.94	22.32	27.08	33.70	39.45	45.0
Garple/ Margree Burn	17.15	0.61	0.06	9.54	13.46	16.02	20.30	23.97	27.52
Earlstoun Burn	9.66	0.34	0.02	6.01	8.48	9.97	12.74	15.01	17.19
Lochinvar Burn	9.02	0.31	0.03	5.29	7.51	8.91	11.30	13.38	15.40
Muck Water	17.87	0.69	0.05	11.13	15.53	18.49	23.14	27.13	30.96
Cummock Burn	15.19	0.52	0.04	9.24	12.96	15.28	19.16	22.55	25.79
Muck Burn	3.71	0.16	0.02	3.09	4.36	5.19	6.52	7.66	8.75

2 Peak flows in Table F.02 have been estimated using the FEH rainfall-runoff method in conjunction with the ISIS hydrological software package⁵ for a range of return F.5.5.2

- flooding issues.

2009

5 - Halcrow/HR Wallingford (2004). ISIS Hydrological Software Package



periods. Low flows and mean daily flows were calculated using the LowFlows 2000⁶. The result of the low flow calculations is the Q95(10), which is the flow exceeded 95% of the time as observed over a 10-day period.

Modifying influences

1 Anticipated climate change suggests slightly increased temperatures, an increased capacity for the atmosphere to hold water vapour and resultant increases in fluxes of precipitation and evaporation. It is thought this may result in a reduction of summer precipitation and an increase during winter. Figures interpreted from DEFRA's UK Climate Projections⁷ suggest that over the next 80 years south-west Scotland may see a potential maximum reduction in summer rainfall of 33%, with a potential maximum increase in winter precipitation of 42%. Mean summer temperatures are predicted to rise by between 1.8 and 5.4°C and mean winter temperatures by between 1.4 and 4.0°C over the same period.

2 In winter months, therefore, there could be an increase in rainfall and a reduction in snowfall. If climate change leads to drier summers and there is increased demand on public and private water supplies, water shortages may occur during prolonged periods of dry weather. There has also been suggestion that summer storms are likely to be more intense and frequent in Scotland, potentially leading to more extreme flow values during and immediately following such events, with consequent





Tourism & Recreation

Blackcraig and Margree Windfarms Grid Connection **Technical Appendices**

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Tourism & recreation G.0

G.1 Statutory Consultees

- 1 Statutory Consultee bodies were contacted in relation to the tourism and business impact assessment of the Blackcraig and Margree Overhead Transmission Line proposal. Visit Scotland, the Ramblers Association and ScotWays responded.
- 2 The respondents provided useful links to information and information about tourism and recreation in the area, which has been incorporated into the tourism and recreation audit section.

G.2 Socio-economic and Tourism and **Recreation Baseline Information**

1 This appendix outlines the socio-economic trends, the tourism market and the main tourist attractions in the UK and Scotland in general, then more specifically in East Ayrshire, South Ayrshire and Dumfries and Galloway for the socio-economic section and for Ayrshire and Arran (A&A), and Dumfries and Galloway (D&G) in the tourism section.

G.2.1 Socio-Economic

1 The headline demographic and socio-economic factors experienced in the wider area are set out in Table G2.1 below.

Table G2.1 - Summary of Socio-Economic Data

		East Ayrshire (%)	South Ayrshire (%)	Dumfries and Galloway (%)	Scotland (%)	Data Source
Total Population		119,300	111,700	148,000	5,116,900	Mid-year Population Estimates (2006)
Working Age People ¹ as a % of Total Population		62%	60%	58%	63%	Census 2001
Economic Activity	Economic Activity - % of Working Age Population who are Economically Active	78%	80%	80%	80%	Annual Population Survey (Oct 2006-Sept 2007)
	Economic Inactivity - % of Working Age Population who are Economically Inactive	23%	19%	20%	20%	
Qualifications Levels - % of Population	Higher level qualifications	23%	34%	27%	32%	Annual Population Survey (Oct
	Lower level qualifications	51%	46%	52%	47%	2006-Sept 2007)
	Other qualifications	7%	6%	7%	7%	
	No qualifications	19%	14%	14%	14%	
Employment by Occupational Skill Level -	Higher Skilled	32%	39%	32%	40%	Annual Population Survey (Oct
% of Working Age Population	Skilled	35%	34%	35%	32%	2006-Sept 2007)
	Unskilled	33%	26%	33%	28%	
Average Gross Weekly Earnings for Full- time Workers (£)		£456	£476	£416	£441	Annual Survey of Hours and Earnings (2007)
Total JSA Claimants - % of Working Age Population		3.3%	2.4%	2.3%	2.3%	ONS Claimant Count on NOMIS (April 2008)

1 - Working age includes males aged 16-64 and females aged 16-59

G.2.2 **Tourism and Recreation**

G.2.2.1 **UK and Scotland**

1 The wider UK and Scottish tourism and recreation market is affected by a number of key drivers and factors. At an overall level, tourism and visitor markets and habits, particularly of overseas visitors and tourists, are predominantly influenced by extraneous or 'macro economic' factors. These factors include weather patterns, levels of real disposable income, factors such as 'terrorist' attacks, as well as changes in exchange rates. These macro-factors are considered to be as influential in affecting tourism patterns as local environmental circumstances such as those under consideration in this assessment. These factors are no less important at a Scottish and sub-Scottish regional market level.

G.2.2.2 **Tourism Volume and Value**

Table G2.2 - UK and Overseas Tourism - Volume and Value

	UK Tourists			Overseas Tourists		
	A&A	D&G	Scotland	A&A	D&G	Scotland
Trips (m)	0.8	0.92	14.08	0.17	0.06	2.73
Expenditure (£m)	149	147	2,863	55	20	1,439
Bednights (m)	2.66	3.0	47.16	1.05	0.4	26.38
Average Length of Stay (nights)	3.3	3.27	3.59	6.13	6.93	9.91

Source: Visit Scotland 2006

visitors (Table G2.2).

and Galloway.

G.2.2.3 Nature of Visits

Table G2.3 - Purpose of Trip

	UK Tourists (%)			Overseas Tourists (%)		
	A&A	D&G	Scotland	A&A	D&G	Scotland
Holiday	68	72	64	51	44	45
Visiting Friends and Relatives (non-holiday)	16	14	14	36	37	32
Business/ Conference	12	11	19	9	16	15
Other	4	3	3	4	3	8

Source: Visit Scotland 2006

- the Scottish average.

G.2.2.4 Accommodation

	UK Nights (%)			Overseas Nights (%)		
	A&A	D&G	Scotland	A&A	D&G	Scotland
Friends/Relatives	30	22	36	53	54	30
Hotel/Guesthouse	12	19	37	22	24	39
Self Catering	42	37	11	17	6	6
Camping/Caravanning	9	18	6	2	3	3
B&B	3	2	6	6	11	14
Hostel/University/ School	-	1	3	-	-	6
Other	4	1	1	-	2	2

Source: Visit Scotland 2006



1 Dumfries and Galloway attracted slightly more UK tourists in 2006 than Ayrshire and Arran, even though Ayrshire and Arran attracted a superior number of overseas

2 Ayrshire and Arran attracted almost three times as many overseas tourists in 2006 and over twice the amount of Dumfries and Galloway's overseas tourist expenditure. There were substantially more overseas tourist bednights to Ayrshire and Arran than Dumfries and Galloway; however the average length of stay was longer in Dumfries

1 The nature of UK tourist trips is broadly similar in each tourist board region (Table G2.3). The proportion of UK tourists visiting the two regions on holiday and to visit friends and relatives is higher than the national average, with Dumfries and Galloway receiving slightly more tourists on holiday and less visiting friends and on business. Both areas have a lower proportion of business/ conference tourism compared to

2 Compared to Scotland both regions have a slightly higher proportion of overseas tourists who visit friends and relatives and Ayrshire and Arran has a higher than average proportion of overseas tourist that visit the region on holiday, while a considerably lower proportion of tourists come on business. For overseas tourism Dumfries and Galloway has a higher than average business and conference tourism market which is somewhat surprising considering its predominately rural location and distance from international airports.

Table G2.4 - Accommodation Used during Trip

- 1 When visiting Ayrshire and Arran, a third of domestic tourists stay with friends/ relatives, and 12% stay in hotels or guesthouses. However in Dumfries and Galloway, roughly only a fifth (22%) of visitors stay with friends and a fifth (19%) in hotels and guest houses. This is much lower than the national average in both cases. It is notable that a much higher proportion of overseas visitors to both regions stay with family/ relatives compared to the national average and overseas visitors to Ayrshire and Arran use self-catering accommodation much more than in Dumfries and Galloway or in Scotland as a whole. (Table G2.4).
- 2 All of Ayrshire and Arran's and Dumfries and Galloway's accommodation types have their highest occupancy rates during the months of June to September, as this time of year has the largest number of visitors to the area and the best weather.

G.2.2.5 Visitor Attractions

Table G2.5 - Top Visitor Attractions in Ayrshire and Arran

Name and Location of Attraction	2006 Visits	Free/Paid
Burns National Heritage Park, Ayr	*302,894	Р
Dean Castle and Country Park, Kilmarnock	*261,867	F
Culzean Castle and Country Park, Ayrshire	187,398	Р
Heads of Ayr Farm Park, Ayr	*82,315	Р
Kelburn Castle and Country Centre, Fairlie	72,783	Р
Brodick Country Park, Isle of Arran	51,501	Р
Eglinton Country Park, Irvine	46,192	F
Brodick Castle, Isle of Arran	32,244	Р
Dick Institute Museum, Kilmarnock	27,411	F
Scottish Maritime Museum, Irvine	20,085	Р

Source: VisitScotland 2006 *Estimate

Table G2.6 - Top Visitor Attractions in Dumfries and Galloway

Name and Location of Attraction	2006 Visits	Free/Paid
World Famous Old Blacksmith Shop, Gretna Green	717,442	Р
Mabie Farm Park, Dumfries	84,256	Р
Cream o'Galloway, Castle Douglas	*69,500	Р
Threave Garden, Castle Douglas	64,685	Р
Gracefield Arts Centre, Dumfries	44,001	F
Caerlaverock Gem Rock Museum, Newton Stewart	35,425	Р
Dumfries Museum/Camera Obscura, Dumfries	34,787	F
Creetown Gem Rock Museum, Newton Stewart	33,689	Р
Robert Burns Centre, Dumfries	33,547	F
Samye Ling Monastery, Langholm	*32,034	F

Source: VisitScotland 2006 *Estimate

1 Tourist trips to the Burns Natural Heritage Park and the Dean Castle and Country Park are the top paid and unpaid tourists attractions in Ayrshire and Arran and account for more than half of the total visits to the top ten paid and unpaid tourist attractions in the region. The closest of the Top Ten attractions to the Study Area is Culzean Castle and Country Park; however this is still well outside the Study Area boundary (Table G2.5). 2 More than 60% of the total visits to the top ten paid and unpaid tourist attractions in Dumfries and Galloway are to the World Famous Old Blacksmiths Shop at Gretna Green which is one of Scotland's earliest visitor attractions and the largest privately owned and managed visitor attraction in Scotland. The closest of the top ten attractions to the study are the two located in Castle Douglas, however these are well outside the Study Area boundary (Table G2.6).

G.2.2.6 Tourism Related Employment

Proportionally, both regions have a higher proportion of their work force working in tourism related employment compared to the national average. Nationally, in 2006, around 9.2% of people in Scotland were employed in tourism related employment whereas for Ayrshire and Arran and Dumfries and Galloway the figures are 11% and 11.5% respectively.

G.3 Tourism & Recreation Audit Impact Assessment

G.3.1 Negative Tourism and Recreation Audit Impact Assessment

1 Table G3.1 contains all the facilities and activities related to tourism and recreation within the Study Area and the potential negative effect that the proposed overhead transmission line would have on them. There are subtotals for the effect on each individual section and then a total effect figure at the end of the table.

Table G3.1 - Findings from the Tourism and Recreation Audit Negative Impact Assessment

	Total	Major Negative Effect	Moderate Negative Effect	Minor Negative Effect	No Effect
Principal Settlements					
Bellsbank					v
Burnfoot					v
Carsphairn			V		
Dalmellington				V	
Kendoon			V		
Patna					v
St. John's Town of Dalry					v
Straiton					v
Waterside					٧
Sub Total	9	0	0	3	6
% of Sub Total	100	0	0	33	67
Principal Tourist Routes					
A702			V		
A713 Galloway Tourist Route			V		
B7000			V		
B729				V	
B741				V	
Sub Total	5	0	3	2	0
% of Sub Total	100	0	60	40	0

	Total	Major Negative Effect	Moderate Negative Effect	Minor Negative Effect	No Effect
Principal Walking Routes					
Cairnsmore of Carsphairn					v
Carsphairn Trail			V		
Corriedoo and Goathouse Glen				V	
Dalmellington Town Trail					V
Dodd and Moorbrock Hills					V
Halfmark to Blackcraig Hill					v
Lady Hunter Blair's Walk					v
Meikle Millyea from the Clenries					v
Milldown via Hawse Burn					v
Patna Walk					v
Straiton Village Ramble					v
Stroanpatrick Trail					v
The Church Walk					v
The Hill Wood					v
The Monument and Bennan Circuit					v
Troquhain Hills				V	
Windy Standard and Blue Peter Memorial					v
Windy Standard and Lorg					v
НТ 79					V
HT 80				v	
HT 81					v
HT 82					v
HT 83				V	
HT 84					v
HT 85					v
Sub Total	25	0	1	4	20
% of Sub Total	100	0	4	16	80
Rights of Way	100	0	•	10	
DS3			v		
DSA				N	
D\$5			N	v	
DSS			v v		
D\$7			v	N	
D237			N	v	
			v N		
D33			v	2/	
DS10				v	
			v		
DS15			v		2/
D\$21					v v
					V
0522			-1		V
U523			V		-1
US24					V .
US25					V
0527				V	

	Total	Major Negative Effect	Moderate Negative Effect	Minor Negative Effect	No Effect
DS28			V		
DS30					٧
DS32					٧
D\$33				V	
DS34				V	
D\$35				v	
D\$36				v	
DS38					v
DS39					V
DS40					v
DS41					v
DS43					v
DS44					v
DS45					V
DS49					V
DS52					v
D\$53					v
D\$54			v		
D\$55			, v		<u>ار</u>
D\$55				N	
D550				v	
				2	V
				V	
D223				V	
D300				v	
D302				2	V
03221				v	
05222			v		
D3223					V
05247				V	
SCD1					V
SCD2					V ,
SCD3					V ,
SCD4					V ,
SCD5					V
SCD6					V
SCD7					V
SCD8					V
SCD9					<u>۷</u>
SCD10					
SCD11					V
SCD13					ļ
SCD14					V
SCD15					V
SCD16				V	ļ
SCD108			V		
SCD109				V	ļ
SCD110					√

	Total	Major Negative Effect	Moderate Negative Effect	Minor Negative Effect	No Effect
SCD111					V
SKC7					V
SKC11					V
Sub Total	67	0	12	16	39
% of Sub Total	100	0	18	24	58
Core Paths					
EA					
D4					V
D5					V
D6					V
D10					V
D11					V
D12				v	
D13				v	
D15				v	
D16				v	
D17			v		
D18				v	
D&G					
51					v
52					v
53					v
54					V
55					v
56					v
58					v
60				v	
61				v	
62				•	v
65					v
72					v v
7/					v v
75					v v
75					v
70 82					V
03					V
04					V N
0/					V N
54 OE					V
33 100					V
100					V
102				-1	V
103				ν	-1
104					V
105				V	
110					V
441					V
446				V	

	Total	Major Negative Effect	Moderate Negative Effect	Minor Negative Effect	No Effect
451			V		
452					V
453					V
458					V
462			v		
466			v		
467			v		
468			v		
470			V		
471					V
478					V
479			V		
485					V
487				٧	
490				٧	
496				٧	
497					V
498					V
499			v		
501				٧	
502				٧	
505					v
506			v		
507			v		
508					V
516					V
517					V
518					٧
519					V
521				٧	
524			V		
532					V
534			V		
544					V
560			V		
970					V
971					V
976					٧
979			V		
985					٧
986					٧
987			V		
990			V		
991			V		
994					٧
997					V
1000				v	



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	Total	Major Negative Effect	Moderate Negative Effect	Minor Negative Effect	No Effect
1001				v	
3136					٧
3286				v	
3289				V	
3310				V	
3311					V
3316					V
3340					٧
3357					V
4073					v
4074					v
4086					٧
4121					٧
4122					√
6000			v	<u> </u>	
Sub Total	101	0	19	19	63
% of Sub Total	100	0	19	19	62
Climbing Routes	100				
Cairnsmore of Carsphairn					
Beninner					<u>۷</u>
Moorbrock					۰ ۷
					v v
Rhinns of Kells					•
Better Gully					
Bigger Gully					v v
Central Gully					v v
Craignelder Gairy					v v
Milldown					v v
Millfire					v v
North Gairy Ton					v v
Sub Total	10	0	0	0	10
% of Sub Total	100	0	0	0	100
Principal Cycling Poutos	100	0	0	0	100
					2/
Carcobairo Loop to Magiaiya					v
and Dalry			V		
Lochinvar Circular Route				٧	
St John's Town of Dalry to Drumlanrig Castle			V		
The National Byway			V		
The Scottish Coal Cycle Route				v	
Sub Total	6	0	3	2	1
% of Sub Total	100	0	50	33	15
Golf					
Doon Valley Golf Course					V
Sub Total	1	0	0	0	1
% of Sub Total	100	0	0	0	100
Fishing					

	Total	Major Negative Effect	Moderate Negative Effect	Minor Negative Effect	No Effect		
Castle Douglas Angling					V		
Dalry Angling Association					N		
Glencairn Angling Club			v		•		
Mid Nithsdale Angling Club					v		
New Cumnock Angling Association			√				
New Galloway Angling Association					V		
Barscobe Loch					V		
Carsfad Loch				٧			
Carsphairn lane				٧			
Earlstoun Loch					V		
Loch Doon				V			
Loch Finlas					v		
Loch Howie				٧			
Loch Skae				V			
Lochinvar Reservoir	<u> </u>			V			
Moss Roddock Loch					V		
Polmaddy Burn				V			
River Doon (including Carrick Lane)				v			
Water of Deugh			٧				
Water of Ken			v				
Sub Total	20	0	2	10	8		
% of Sub Total	100	0	10	50	40		
Forest Parks							
Bellsbank Plantation				v			
Benbeoch/Pennyvenie Glen				V			
Bogton Loch SSSI					V		
Castlemaddy Wood					v v		
Dalmellington Moss					v v		
Dunaskin Glen SSSI					v V		
Dundeugh Hill Woodland and Dundeugh Castle Remains			v				
Ness Glen SSSI					v		
Sub Total	8	0	1	2	5		
% of Sub Total	100	0	13	25	63		
Estates							
Craigengillan Estates				v			
Forest Estate - Fred Olsen Sporting Estates					٧		
Sub Total	2	0	0	1	1		
% of Sub Total	100	0	0	50	50		
Events							
Dumfries and Galloway Arts Festival					v		
Dumfries and Galloway Wildlife Festival				٧			

	Total	Major Negative Effect	Moderate Negative Effect	Minor Negative Effect	No Effect
Newton Stewart Walking Festival				v	
Spring Fling - Art and Craft Open Studio Event					v
The Hairth Music Festival and World Ceilidh				٧	
Sub Total	5	0	0	3	2
% of Sub Total	100	0	0	60	40
Visitor Attractions					
Arndarroch Gardens				v	
Blairquhan Castle					V
Carricks of Carsphairn			V		
Carsphairn Heritage Centre			V		
Cathcartson Visitor Centre/Doon valley Museum					v
Loch Doon Castle and Visitor Centre					V
The Polmaddy Historic Settlement					v
Sub Total	7	0	2	1	4
% of Sub Total	100	0	29	14	57
Activity Centres					
Craigmalloch Outdoor Centre					V
Sub Total	1	0	0	0	1
% of Sub Total	100	0	0	0	100
Accommodation					
Hotels					
Bellsbank Country House Hotel				v	
Clachan Inn					V
Eglinton Hotel				V	
Lochinvar Hotel					V
Riverdoon Hotel & Lancers Restaurant					v
B&B					
Muirdrochwood				V	
The Lodgings					V
The Porridge House					V
Caravan and Holiday Parks					
Carskeoch Caravan Park					V
Self Catering					
5 Wayside					V
Arden					V
Auchencheyne Guest House				v	
Clachan Cottage					V
Cloud Cuckoo Lodge					V
Dukieston Cottage					V
Lavender Holiday Cottages				v	· ·
Youth Hostel					
Kendoon Youth Hostel			V		
		1			1

	Total	Major Negative Effect	Moderate Negative Effect	Minor Negative Effect	No Effect
Sub Total	17	0	1	5	11
% of Sub Total	100	0	6	29	65
Total	284	0	43	69	172
% of Total	100	0	15	24	61

G.3.2 Beneficial Tourism and Recreation Audit Impact Assessment

1 Table G3.2 contains the facilities and activities related to tourism and recreation within the Study Area and the potential beneficial effect that the proposed removal of the N-Route overhead transmission line, and the replacement of the N-Route with a L7 Tower Line, would have on them. There are subtotals for the effect on each individual section and then a total effect figure at the end of the table. Some of the activities and facilities contained within this assessment are additional to the original audit due to the extended nature of the N-Route 12km north west of Dalmellington, extending the boundary of the audit Study Area.

Table G3.2 - Findings from the Tourism and Recreation Audit Beneficial Impact Assessment

	Total	Major Beneficial Effect	Moderate Beneficial Effect	Minor Beneficial Effect	No Beneficial Effect
Principal Settlements					
Bellsbank			v		
Burnfoot			v		
Carsphairn					٧
Dalmellington				v	
Kendoon					٧
Patna			v		
St. John's Town of Dalry					٧
Straiton					٧
Waterside			v		
Sub Total	9	0	4	1	4
% of Sub Total	100	0	44	11	44
Principal Tourist Routes					
A702					٧
A713 Galloway Tourist Route			v		
B7000					٧
B729					v
B741				v	
Sub Total	5	0	1	1	3
% of Sub Total	100	0	20	20	60
Principal Walking Routes					
Cairnsmore of Carsphairn					٧
Carsphairn Trail					٧
Corriedoo and Goathouse Glen					٧

	Total	Major Beneficial Effect	Moderate Beneficial Effect	Minor Beneficial Effect	No Beneficial Effect	
Dalmellington Town Trail			V			
Dodd and Moorbrock Hills					٧	
Halfmark to Blackcraig Hill					٧	
Lady Hunter Blair's Walk					٧	
Meikle Millyea from the Clenries					v	
Milldown via Hawse Burn					٧	
Patna Walk			v			
Straiton Village Ramble					٧	
Stroanpatrick Trail					٧	
The Church Walk					٧	
The Hill Wood					٧	
The Monument and Bennan Circuit					V	
Troquhain Hills					٧	
Windy Standard and Blue Peter Memorial					V	
Windy Standard and Lorg					٧	
HT 79					٧	
HT 80				v		
HT 81					v	
HT 82					v	
HT 83					v	
HT 84				v		
HT 85					٧	
Sub Total	25	0	2	2	21	
% of Sub Total	100	0	8	8	84	
Rights of Way						
DS3					V	
DS4					٧	
DS5					٧	
DS6					v	
DS7					٧	
DS8					٧	
DS9					٧	
DS10					٧	
DS11					٧	
DS15					<u>ا</u>	
DS19					<u>ا</u>	
DS21					√	
DS22					√	
DS23					√	
DS24					 √	
DS25					v	
D\$27					ν 	
DS28					v v	
DS30					v v	
DS32					v 1	
0532					v v	
DS32 DS33					√ √	

	Total	Major Beneficial Effect	Moderate Beneficial Effect	Minor Beneficial Effect	No Beneficial Effect
DS34					V
DS35					v
DS36					V
DS38					V
DS39					V
DS40					V
DS41					V
DS43					V
DS44					V
DS45					V
DS49					V
DS52					V
DS53					v
DS54					v
D\$55					v
DS56					v
DS57					v
DS58					v
D\$59					v
DS60					v
DS62					v
DS221					v
DS222					V
DS223					V
DS247					v
SCD1			v		
SCD2			V		
SCD3			v		
SCD4				V	
SCD5				v	
SCD6			v		
SCD7			v		
SCD8			v		
SCD9			v		
SCD10			v		
SCD11				v	
SCD13				V	
SCD14			v	•	
SCD15			v		
SCD16			v		
SCD108				v	
SCD109			v	•	
SCD110				v	
SCD111					v
SKC7					v v
SKC11					v v
Sub Total	67	0	12	6	49
% of Sub Total	100	0	12	9	73
	100	0	10	9	75



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	Total	Major Beneficial Effect	Moderate Beneficial Effect	Minor Beneficial Effect	No Beneficial Effect
Core Paths					
EA					
D4				٧	
D5			٧		
D6				٧	
D10			٧		
D11					٧
D12			٧		
D13				٧	
D15			٧		
D16				٧	
D17					v
D18				٧	
D&G					
51					v
52					v
53					v
54					v
55					v
56					v
58					v
60					v
61					V
62					v
65					v
72					v
74					v
75					v
76					v
83					
84					v v
87					v
ол					v
05					v v
100					v N
100					V
102					v N
103					V
105					V
105					V
110					V
441					V
446					V .
451					V
452					V
453					V
458					٧
462					V

	Total	Major Beneficial Effect	Moderate Beneficial Effect	Minor Beneficial Effect	No Beneficial Effect
466					V
467					v
468					v
470					V
471					v
478					v
479					V
485					v
487					v
490					v
496					v
497					v
498					v
499					v
501					v
502					V
505					v
506					v
507					v
508					v
516					v
517					v
518					v
519					v
521					v
524					V
532					v
534					V
544					V
560					v
970					V
971					v
976					v
979					v
985					V
986					v
987					v
990					v v
991					v بر
994					v
997					v
1000					v
1001					v
2126					v
2786					v N
2200					V
2210					V V
3310					V

	Total	Major Beneficial Effect	Moderate Beneficial Effect	Minor Beneficial Effect	No Beneficial Effect
3311					V
3316					V
3340					V
3357					v
4073					V
4074					V
4086					V
4121					V
4122					V
6000					V
Sub Total	101	0	4	5	92
% of Sub Total	100	0	4	5	91
Climbing Routes					
Cairnsmore of Carsphairn					
Beninner					V
Moorbrock					V
Craig Michael					V
Rhinns of Kells					
Better Gully					V
Bigger Gully					V
Central Gully					V
Craignelder Gairy					V
Milldown					V
Millfire					v
North Gairy Top					V
Sub Total	10	0	0	0	10
% of Sub Total	100	0	0	0	100
Principal Cycling Routes					
B7045					v
Carsphairn Loop to Moniaive and Dalry					V
Lochinvar Circular Route					v
St John's Town of Dalry to Drumlanrig Castle					V
The National Byway					v
The Scottish Coal Cycle Route				v	
Sub Total	6	0	0	1	5
% of Sub Total	100	0	0	17	83
Golf					
Doon Valley Golf Course			V		
Sub Total	1	0	1	0	0
% of Sub Total	100	0	100	0	0
Fishing					
Castle Douglas Angling Association					v
Dalry Angling Association					V
Glencairn Angling Club					V
Mid Nithsdale Angling Club					V

	Total	Major Beneficial Effect	Moderate Beneficial Effect	Minor Beneficial Effect	No Beneficial Effect
New Cumnock Angling Association					V
New Galloway Angling Association					V
Barscobe Loch					V
Carsfad Loch					V
Carsphairn lane					V
Earlstoun Loch					V
Loch Doon					V
Loch Finlas					V
Loch Howie					V
Loch Skae					V
Lochinvar Reservoir					V
Moss Roddock Loch					V
Polmaddy Burn					V
River Doon (including Carrick Lane)			v		
Water of Deugh					V
Water of Ken					V
Sub Total	20	0	1	0	19
% of Sub Total	100	0	5	0	95
Forest Parks					
Bellsbank Plantation			v		
Benbeoch/Pennvvenie Glen				v	
Bogton Loch SSSI				v	
Castlemaddy Wood					V
Dalmellington Moss				V	
Dunaskin Glen SSSI				V	
Dundeugh Hill Woodland and Dundeugh Castle Remains					V
Ness Glen SSSI					V
Sub Total	8	0	1	4	3
% of Sub Total	100	0	13	50	38
Estates	100	0	10		30
Craigengillan Estates			v		
Forest Estate - Fred Olsen				V	
Sub Total	2	0	1		0
% of Sub Total	100	0	50	50	0
Events					
Dumfries and Galloway Arts Festival					v
Dumfries and Galloway Wildlife Festival				V	
Newton Stewart Walking Festival				٧	
Spring Fling - Art and Craft Open Studio Event					V
The Hairth Music Festival and World Ceilidh					V

		Major	Moderate	Minor	No
	Total	Beneficial Effect	Beneficial Effect	Beneficial Effect	Beneficial Effect
Sub Total	5	0	0	2	3
% of Sub Total	100	0	0	40	60
Visitor Attractions					
Arndarroch Gardens					V
Blairquhan Castle					V
Carricks of Carsphairn					V
Carsphairn Heritage Centre					V
Cathcartson Visitor Centre/Doon valley Museum			v		
Loch Doon Castle and Visitor Centre					V
The Polmaddy Historic Settlement					v
Sub Total	7	0	1	0	6
% of Sub Total	100	0	14	0	86
Activity Centres					
Craigmalloch Outdoor Centre					V
Sub Total	1	0	0	0	1
% of Sub Total	100	0	0	0	100
Accommodation					
Hotels					
Bellsbank Country House Hotel					V
Clachan Inn				٧	
Eglinton Hotel					V
Lochinvar Hotel				V	
Riverdoon Hotel & Lancers Restaurant				٧	
B&B					
Muirdrochwood					V
The Lodgings					V
The Porridge House					V
Caravan and Holiday Parks					
Carskeoch Caravan Park			٧		
Self Catering					
5 Wayside					V
Arden					V
Auchencheyne Guest House					V
Clachan Cottage					V
Cloud Cuckoo Lodge					V
Dukieston Cottage					V
Lavender Holiday Cottages					V
Youth Hostel					
Kendoon Youth Hostel					V
Sub Total	17	0	1	3	13
% of Sub Total	100	0	6	18	76
Total	284	0	29	26	229
% of Total	100	0	10	9	81

G.4 G.4.1

- www.scotexchange.net
- www.sustrans.org.uk/
- www.snh.org.uk/
- www.ramblers.org.uk/
- www.visitscotland.com
- www.cyclingscotland.com
- www.rspb.org.uk/
- www.srpba.com/
- www.scotland.gov.uk/
- www.walkingbritain.co.uk/
- www.visitbritain.com
- www.walkscotland.com/
- www.multimap.com
- www.rampantscotland.com/
- www.ukclimbing.com
- www.smc.org.uk
- www.flyfish-scotland.com
- www.letsflyfish.com/links.htm
- www.myghillie.com



Sources of Information

Websites

www.walkingwild.com

• http://cycling.visitscotland.com/

• www.undiscoveredscotland.co.uk/

- - www.edinburgh-bicycle.co.uk
- www.ridinginscotland.com/
- www.scottishendurance.com
- www.scottishequine.co.uk
- www.bhs.org.uk
- www.horseways.org
- www.scta.co.uk
- www.scottishrifleassociation.org.uk/
- www.ssra.co.uk/
- www.stsf.org.uk/
- www.southayrshire.gov.uk
- http://www.barrhill.org.uk/
- http://www.ayrshire-arran.com/about/
- http://www.barrhill.co.uk
- http://www.ayrshire-arran.com/about/
- http://www.stincharfishing.co.uk/accommodation.htm
- http://www.visitsouthernscotland.com/
- http://www.scottishcampingguide.com/index1.php
- http://ww2.east-ayrshire.gov.uk/craftayrshire/reg4.htm

G.4.2 Reference Books

- Scottish Hill Tracks- A Guide to the Hill Paths, Old Roads and Rights of Way: D.G.Moir, C.Stone, D.J.Bennet, Fourth Edition (Revised), the Scottish Rights Of Way Society and the Scottish Mountaineering Trust, 2004.
- The Official Guide to the National Cycle Network: SUSTRANS, Tony Robinson, Published for SUSTRANS, 2002.

G.4.3 Leaflets/Guides/Brochures

- Wildlife Scotland: VisitScotland.
- Scottish Hill Tracks Map: ScotWays.
- National Cycle Network in Scotland: The National Cycle Network.
- 2 Extra information was gained from VisitScotland standard datasets Tourism Facts & Figures by Tourist Board Area (2002-2003): www.scotexchange.net

Maps of Tourism and Recreation Activities and Facilities in Study Area

G.5



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Principal Tourist Routes

Accomodations

- 1. Clachan Inn
- 2. Eglinton Hotel
- 3. Lochinvar Hotel
- 4. Carskeoch Caravan park
- 5. Kendoon Youth Hostel
- 6. Bellsbank Country House Hotel
- 7. Riverdoon Hotel & Lancers Restaurant

Estates

- 1. Craigengillan Estates
- 2. Forrest Estate Fred Olson Sporting Estates

Visitor Attractions

- 1. Arndarroch Gardens
- 2. Carricks of Carsphairn
- 3. Carsphairn Heritage Centre
- 4. Cathcartson Visitor Centre/Doon Valley Museum
- 5. Loch Doon Castle and Visitor Centre
- 6. The Polmaddy Historic Settlement
- 7. Blairquhan Castle

2.5km	7.	5km	
5	m		10km



Figure G.01 - Loch Doon Area Tourist Sites





Figure G.02 - Walking Routes



	-		
10.00			

)	15	20
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Figure G.03 - Rights of Way



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Figure G.04 - Core Paths - Ayrshire







Figure G.05 - Core Paths - Dumfries & Galloway (1)



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Figure G.06 - Core Paths - Dumfries & Galloway (2)







Figure G.07 - Core Paths - Dumfries & Galloway (3)





Figure G.08 - Core Paths - Dumfries & Galloway (4)







a	g			
Ω,	g			
π.	g	-		
	2	c	1	

Figure G.09 - Loch Doon area Tourist Sites (1)









Figure G.10 - Loch Doon area Tourist Sites (2)



Traffic & Transport

Blackcraig and Margree Windfarms Grid Connection **Technical Appendices**

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Traffic & transport H.0

Traffic flow distribution figures H.1



NB: AADT figures in *italics* taken from Mott MacDonald Survey 2007, factored up to 2009 Base

Figure H.01 - Baseline AADT

Figure H.02 - 2011 AADT

Figure H.03 - Felling AADT



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Figure H.04 - Access tracks AADT

Figure H.05 - Blackcraig substation AADT

Figure H.06 - Margree substation AADT



Figure H.07 - Wood Pole OHL AADT

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Figure H.09 - All construction traffic AADT





Figure H.10 - Percentage impact of Blackcraig & Margree traffic (substations) AADT

Figure H.11 - Blackcraig Windfarm AADT

Figure H.12 - Margree Windfarm AADT



Figure H.13 - Combined Blackcraig & Windfarm traffic AADT

Figure H.14 - Combined substation and windfarm traffic AADT



Dumfries

Figure H.15 - Percentage impact of combined substation and windfarm AADT

H.2 Trips breakdown for construction period

			Length of Construction Period (months)																				
Aspect of Construction	Average number of trips per	Type of Vehicle	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	Month	All	242	242	242	242	242	242															
FELLING		HGV only	242	242	242	242	242	242															
	Day	All	12.1	12.1	12.1	12.1	12.1	12.1															
	,	HGV only	12.1	12.1	12.1	12.1	12.1	12.1															
	Month	All		164	164	164	164	164	164										164	164	164	164	164
ACCESS TRACKS		HGV only		164	164	164	164	164	164										164	164	164	164	164
	Day	All		8.2	8.2	8.2	8.2	8.2	8.2										8.2	8.2	8.2	8.2	8.2
		HGV only		8.2	8.2	8.2	8.2	8.2	8.2	200	200	200	200	200	200	200	200	200	8.2	8.2	8.2	8.2	8.2
	Month	All				299	299	299	299	299	299	299	299	299	299	299	299	299	299	299	299	299	
BLACKCRAIG		HGV only				19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	
SOBSTATION	Day	All				15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
		HGV only			202	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
	Month	All			303	303	303	303	303	303	303	303	303	303	303	303	303	303	303	303	303	303	
MARGREE SUBSTATION		HGV Only			23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	
	Day	All			15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
		HGV only			1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	
	Month	All				2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014						
WOODEN POLES		HGV Only				100.7	100.7	100.7	100.7	014	100.7	100.7	100.7	100.7	100.7	100.7	100.7						
	Day					20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7						
					2152	2152	2152	2152	2152	2152	2152	2152	2152	2152	2152	2152	2152	2152	2152	2152	2152		
	Month	HCV only			1214 5	1214 5	1214 5	1214 5	1214 5	1214 5	1214 5	1214 5	1214 5	1214 5	1214 5	1214 5	1214 5	1214 5	1214 5	1214 5	1214 5		
STEEL TOWERS					107.65	107.65	107.65	107.65	107.65	107.65	107.65	107.65	107.65	107.65	107.65	107.65	107.65	107.65	107.65	107.65	107.65		
	Day	HGV only			65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7		
			2/12	406	2862	5175	5175	5175	/022	4769	1769	4769	4769	4769	4769	4769	4769	2755	2010	2010	2010	766	164
	Average number of trips per month	HGV only	242	406	1743 5	2376 5	2376 5	2376 5	2134 5	1970 5	1970 5	1970 5	1970 5	1970 5	1970 5	1970 5	1970 5	1356 5	1520.5	1520 5	1520.5	206	164
TOTALS	A successful to a f	^II	17.1	20.2	1/12 05	257 65	257 65	257 65	2154.5	228 25	228 25	228 25	228 25	228.25	228.25	228 25	228 25	137.65	1/5 25	1/5 85	1/15 95	28.2	8.2
	Average number of trips per day	HGV only	12.1	20.3	87 16	118.8	118.8	118.8	106.7	98 5	98 5	98.5	98 5	98.5	98.5	98.5	98 5	67.8	76	76	76	10.3	8.2
		nov only	12.1	20.5	07.10	110.0	110.0	110.0	100.7	50.5	56.5	50.5	50.5	50.5	50.5	50.5	50.5	07.0	70	70	70	10.5	0.2
		All	954.8	954.8	954.8	954.8	954.8	954.8	954.8	954.8	954.8	954.8	954.8	954.8									
	Month	Deliveries	405	405	405	405	405	405	405	405	405	405	405	405									
	Wonth	Personnel	550	550	550	550	550	550	550	550	550	550	550	550									
BLACKCRAIG	-	HGV only	294.8	294.8	294.8	294.8	294.8	294.8	294.8	294.8	294.8	294.8	294.8	294.8									
WINDFARM		All	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4									
	Dav	Deliveries	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4									
		Personnel	25	25	25	25	25	25	25	25	25	25	25	25									
		HGV only	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4									
		All	1018	1397	2623	2623	2623	2623	2623	2599	1612	1612	773	403	403								
	Month	Deliveries	683	728	1619	1619	1619	1619	1619	1261	274	274	104	68	68								
		Personnel	335	669	1004	1004	1004	1004	1004	1338	1338	1338	669	335	335								
MARGREE WINDFARM		HGV only	683	728	1619	1619	1619	1619	1619	1261	274	274	104	68	68								
		All	47	64	121	121	121	121	121	120	74	74	36	19	19								
	Day	Deliveries	31	33	74	74	74	74	74	57	12	12	5	3	3								
		Personnel	15	30	46	46	46	46	46	61	61	61	30	15	15								
		HGV only	31	33	74	74	74	74	74	58	13	13	5	3	3								



Operational Noise & EMF

Blackcraig and Margree Windfarms Grid Connection **Technical Appendices**

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Operational Noise & EMF i.0

i.1 **Operational Noise**

i.1.1 Introduction

- 1 The conductors of transmission lines are designed to be free of audible noise (AN) under ideal conditions. Protrusions on the conductor surface (particularly water droplets on or dripping off the conductors), however, can cause electric fields near the conductor surface to exceed the levels that cause breakdown of the insulating properties of the air. The partial electrical breakdown of the air around the conductors of an overhead transmission line produces a dissipation of energy and heat in a small volume near the conductor surface that changes the sound pressure in the surrounding air. If this small local pressure change exceeds ambient background levels it may be perceived as AN. This AN can be characterized as a hissing, crackling sound that may be accompanied by a 100-Hertz (Hz) hum at higher rain rates. Thus, transmission lines do not generate substantial AN during fair weather; AN is generated largely during foul weather (wet conductors). Wet conductors can occur during periods of rain, fog, snow, or ice. Similarly, debris on the conductors may also give rise to multiple point sources of acoustic discharge.
- 2 The AN performance of the overhead line proposed to connect the Blackcraig and Margree wind farms to the grid are evaluated in this report.
- 3 The amplitude of a sound wave is the incremental pressure resulting from sound above atmospheric pressure. The sound-pressure level is the fundamental measure of AN; it is generally measured on a logarithmic scale with respect to a reference pressure. The sound-pressure level (SPL) in decibels (dB) is:

$SPLdB = 20 \log 10 (P/P0)$

where P is the effective rms sound pressure and PO is the reference pressure of 20 micropascals (μ Pa). The human auditory response depends on frequency, with the most sensitive range roughly between 2,000 and 4,000 Hz. The frequencydependent sensitivity is reflected in various weighting scales for measuring AN. The capability to detect noise from the line at residential dwellings was evaluated by calculating the AN in dB on the A-weighted scale. The A-weighted scale weights the various frequency components of a noise in approximately the same way that the human ear responds.

i.1.2 **AN Sources and Exposure Considerations**

i.1.2.1 **Background Levels**

1 Baseline monitoring was not performed due to the limited number of sensitive noise receptors (dwellings) and the generally large separation distances of the route from dwellings. The expectation, however, is that since most portions of the routes are rural, typical sources of AN will include sounds of birds, animals, streams, distant traffic, rustling of foliage, and agricultural equipment. Some of these sources are likely to be variable or intermittent (e.g., traffic sounds or agricultural equipment), or depend on weather conditions (e.g., rustling of leaves is most pronounced when the wind speeds are highest).

2 To appreciate the context for the calculations of operational noise, the AN levels associated with a range of common experiences, locations, and sources as sound pressure levels (Pa) and dBA are summarized in Table i.1.1 below:

Table i.1.1 - Examples of audible noise levels

Sound Pressure	dBA	Condition
	140	
100 Pa	134	Threshold of Pain
	130	
		Pneumatic Wood Chipper; Jackhammer
	120	
10 Pa	114	Loud Auto Horn (~ 3'); Rock Concert
1 Pa	94	Inside Subway Train (NY)
	90	
		Inside Bus
	80	
100 milli-Pa	74	Traffic on Street Corner
	70	
		Conversational Speech
	60	
10 milli-Pa	54	Typical Business Office
	50	
		Suburban Living Room
	40	
1 milli-Pa	34	Quiet Library
	30	
		Quiet Bedroom at Night
	20	
100 micro-Pa	14	Broadcast Studio
	10	
20 micro-Pa	0	Threshold of Hearing

i.1.2.2 **Study Area Description**

1 The proposed lines and substations comprising the Project are located within the boundaries of East Ayrshire, South Ayrshire and Dumfries, and Galloway. These are all rural council areas that are primarily agricultural, with moorlands and forest. Scattered settlements, and isolated houses and other buildings are largely related to upland farming and other countryside activities. The existing 132-kV N-Route transmission line located 50-100 m to the west of the proposed route is an existing noise source. The conductors of this line will be relocated to the L7H tower line to join the new transmission line. The closest dwelling to the centreline of the L7H tower line is 98 m whilst the closest dwelling to the wood-pole line is 170 m.

i.1.2.3 **Possible Effects**

discussed later in this chapter.

Table i.1.2 - Source of Source of Effect Electric field

Areas.'

i.1.3 Assessment Methodology And Data Sources

- assessment.



1 Table i.1.2 below outlines the sources and possible significant effects of the proposed overhead line. These possible field effects can be addressed or mitigated by compliance with standards, industry practices, or precautionary measures as

Effects and Possible Effects on Environment/Persons				
	Possible Effects on Environment/Persons			
	Detection of noise possibly resulting in annoyanceHissing or crackling sound			
	Pure tone hum			

2 The Scoping Opinion (SPT, 2009) stated that no significant effects of operational noise are anticipated, nevertheless, SPT has recommended that operational noise be considered in the Environmental Statement and assessed against BS 4142: 1997 'Method for Rating Industrial Noise Affecting Mixed Residential and Industrial

1 Exponent is a scientific research and engineering firm with expertise in over 90 scientific and engineering disciplines. Its multidisciplinary team of scientists, engineers, physicians, and regulatory specialists perform in-depth research and analyses for evaluations for projects worldwide. Exponent is certified to ISO 9001. Exponent's experts in electrical engineering and exposure assessment prepared this

2 Exponent's engineers modelled the conditions associated with the typical operation of the existing and proposed overhead lines operating at 132 kV to characterize the expected levels of AN associated with the proposed project.

3 Post-construction AN levels were calculated using computer algorithms developed by the Bonneville Power Authority, an agency of the U.S. Department of Energy (BPA, 1991). These algorithms have been shown to accurately predict AN levels measured near power lines. The inputs to the program are data regarding voltage, current flow, circuit phasing, and conductor configurations. The AN levels were estimated along profiles perpendicular to lines. The program assumed that the transmission conductors were at the statutory minimum mid-span height of 6.7 m for the entire distance between structures over flat terrain. The program assumed an overvoltage condition of 5 percent for these 132-kV transmission lines.

4 The AN levels are expressed in dBA as $L_{\!_{S\!n}}$ values, which are the sound-pressure levels exceeded 50 percent of the time. Fair weather levels were calculated by the subtraction of 25 dBA from the calculated foul weather values as recommended by the BPA. An altitude of 350 m was used in the calculation; a sound-receiver height of 1.52 m was assumed. At lower altitudes the levels of AN will be less.

5 Basic input data for the calculations were obtained from SPT. The assumptions of overvoltages on the lines and a 350 m altitude for AN modelling are conservative (i.e., produce increased calculated AN levels). The number of residences represents

i.1.3.1 Significance Criteria

- 1 It is difficult to provide a general guideline for 'acceptable' levels of AN given that many important factors vary across locations including the frequency of foul weather, normal levels of ambient noise, and the number and location of residences; there is further variation in the AN levels that different persons find 'acceptable.'
- 2 Given that a detailed study of background noise levels was not performed, the criteria and methods contained in the British Standard 'Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas' (BS 4142: 1997) and a related publication (BS 7445-1:2003) were applied. These criteria are similar to recommendations from the Scottish government for screening purposes (PAN 56, 1999). The limits on community noise for outdoor living areas of 50-55 dBA recommended by the WHO (2001) were also considered as a relevant criterion.

Table i.1.3 - Operational Noise Significance Criteria*

Change in AN Level (dBA)	Condition
10	
5	Threshold of Pain
-10	
	Change in AN Level (dBA) 10 5 -10

* From BS 4142: 1997.

- 3 Comparisons of the relative sound intensity of AN expressed in decibel units are sometimes difficult for people to understand. An increase in the sound intensity by a factor of 3 increases the measured sound level by approximately 5 dBA. An increase in the sound intensity by a factor of 10 increases the decibel rating by 10 dBA. When the acoustic energy from one sound source is added to another, the dB levels are not simply added together. For example, two uncorrelated sources that each produce a 30 dBA sound individually will produce a measured sound level of only 33 dBA when present at the same time.
- 4 AN is expressed in decibels because the *perceived* loudness of a sound is not linearly proportional to the physical intensity of the sound. It is more nearly proportional to the logarithm of the intensity. Thus, the ear perceives a 10-fold increase in the sound intensity as much less than a 10-fold increase in the perceived sound level. The human ear requires almost a doubling of the sound intensity (3 dBA) in order to perceive a noticeable increase or just-noticeable-difference in the loudness of the sound. An increase of 5 dBA is clearly perceptible and may elicit some complaints, while an increase of 10 dBA would be perceived as approximately a doubling in loudness and elicit numerous complaints. Sound levels at background levels or lower would be very difficult to detect.

i.1.3.2 Good Practice Measures

1 The following good practice measures would be implemented in the Blackcraig and Margree Windfarm Project as described below.

G.1.3.2.1 Routeing

2 SPT has sought to route towers and poles away from residences and other buildings in order to minimise landscape and visual impacts and maintain residential amenity. Consistent with this goal the Project records have identified a very small number of dwellings within 500 m. There are 33 dwellings within 500 m of the wood pole structures, with none closer than 170 m from the centreline. Twenty-four dwellings are within 500 m of the centreline of the L7H towers, with none closer than 98 m.

G.1.3.2.2 Conductor care

- 3 SPT will follow industry practices to ensure that the conductors are free from nicks, burrs, or oils that might increase AN levels, which would include setting specifications for the manufacture, transport, and inspection of the conductors during installation. The AN generated by transmission lines has been considered by SPT in its previous transmission projects and the experience and practices developed should prove useful for application to this project.
- Given the considerable distance between the route of the 132-kV lines to residences, the application of standard design and construction practices should make AN a de minimus issue.

i.1.3.3 Strategic Routeing And Modifications To Scheme Design

1 The strategic routeing studies outlined in Section 3.0 Route Selection and Alternatives describe the preferred route and show how this route avoids buildings, as far as possible, in order to minimise landscape and visual impacts and maintain residential amenity. This process resulted in the location of structures and conductors at a considerable distance from residential dwellings. These actions have the effect of reducing the potential for operational noise to be a nuisance to residents and landowners.

The 'Do Nothing' Scenario i.1.3.4

1 In the absence or presence of the Project, the exposures of landowners to AN from the transmission lines would be expected to be largely unchanged from background levels.

i.1.3.5 Effects Of Lines On AN Levels

G.1.3.5.1 Existing Conditions

1 As described in paragraph 4 above, ambient background sound levels would accrue from many sources including the existing 132-kV N-Route transmission line and for the purposes of this evaluation the sound levels from all these sources are assumed to be in the range of 30-35 dBA, characteristic of a quiet rural area.

Assessment of Effects G.1.3.5.2

2 The modelled AN values perpendicular to the proposed overhead lines are plotted in the figures below for foul (wet) weather conditions. The number of days of rain in the region is estimated to be 175-200 days per year (DEFRA, 2010). The AN levels in fair weather the rest of the year are below the threshold of hearing. While no fixed boundaries define a wayleave, the levels of AN for overhead lines were tabulated at either ± 40 m, a distance similar to that required for forestry felling, for ease of making comparisons. AN levels at these distances are summarized in Table i.1.4 for both foul and fair weather conditions¹.

Blackcraig Substation to Dalshangan

Dalshangan to Meikle Hill Substation

- encountered by residents on a daily basis.

3 The proposed 132-kV overhead single-circuit line section will be supported by heavy duty wood pole structures as illustrated in Figure NTS 01 in the NTS. The AN calculated along a transect perpendicular to the line is shown in Figure i.1.1.

4 There are 33 residence buildings within 500 m of this line section. The closest residence to this section of line, however, is estimated to be approximately 170 m from the centreline. At this distance, AN is calculated to be 15.0 dBA in rain, well within the range of AN levels encountered by residents on a daily basis. Even without considering the masking effect of the rain, which could increase background levels from 30-35 dBA to perhaps as high as 65 dBA, the AN level would still be far below ambient noise levels. Post-construction levels, therefore, would be far below the limit recommended by the WHO of 50-55 dBA for outdoor living spaces. In fair weather, no sound from the conductors on the wood-pole line would be audible.

5 Between Dalshangan and the Meikle Hill Substation the new 132-kV transmission line and the existing N-Route transmission line will be supported on steel doublecircuit lattice L7H towers, as illustrated in Figure NTS 02 in the NTS. The AN along a transect perpendicular to the line is shown in Figure i.1.2. There are 24 residences within 500 m of this section of line. The closest residence is estimated to be 98 m from the centreline of this section of the proposed route. At this distance, AN is calculated to be 1.3 dBA, at the very lowest end of the range of AN levels possibly

Even without considering the masking effect of the rain, which could increase background levels from 30-35 dBA to perhaps as high as 65 dBA, the AN level would be far below ambient levels. Post-construction levels, therefore, would be far below the limit recommended by the WHO of 50-55 dBA for outdoor living spaces. In fair weather, no sound from the conductors on the wood pole line would be audible.

^{1 -} The calculated values in Table i.1.4 are somewhat different than were modelled for the SWS Project Environmental Statement (SPT, 2008), which result from a lower minimum conductor height (6.7 m minimum statutory clearance vs 12 m typical operating clearance) and some differences in assumed cross arm lengths in the current analyses. These differences, however, do not affect the conclusions of either assessment.
Figure i.1.1 - AN associated with the proposed single-circuit 132-kV line between Blackcraig and Dalshangan.



Figure i.1.2 - AN associated with the proposed overhead double-circuit, 132-kV line from Dalshangan to the Meikle Hill Substation.



Table i.1.4 - Calculated AN values at wayleaves edges in foul and fair weather *

	Line Section*	Audible Noise (dBA)			
		Fair Weather		Foul Weather	
		(-) wayleave edge	(+) wayleave edge	(-) wayleave edge	(+) wayleave edge
	Dalshangan- Margree Substation to Blackcraig Substation (Wood Pole)	<0†	<0†	22.1	21.1
	Meikle Hill Substation to Dalshangan (L7H Tower)	<0†	<0†	5.6	5.6

*For all sections, ± wayleave edge denotes ± 40 m.

+<0 is below the threshold of hearing</p>

Comparison to Rating Criterion

7 As measurements of AN would be difficult to make in foul weather and would be confounded by the noise of rain, the appropriate condition to assess AN from the conductors is fair weather. Taking 0 dBA as the calculated AN value in fair weather shown at the edges of the wayleave in Table i.1.4 as the criterion location (even though BS4142:1997 recommends at buildings), 5 dBA was added as an acoustic correction to account for a hum of 100 Hz to obtain the Rating Level. When background AN levels of 30-35 dBA are subtracted from this value the resulting values are -25 dBA to -35 dBA. Even when this procedure is followed for the assessment of AN in foul weather, the AN values are calculated to be below background noise levels and so noise complaints would be very unlikely even if the masking effects of wind and rain were neglected. The AN levels would be still lower outside residences located much further from the wayleave edges. Thus, the modelled operational noise levels from the Project meet the BS 4142: 1997 criterion. As shown in the SWS Environmental Statement, the modelled AN values also meet the Scottish government's recommendations on AN contained in PAN 56 (SO, 1999) and limits on noise exposure at outdoor living areas recommended by the WHO (2001).

i.1.3.6 Survey Requirements/Monitoring

1 No need for surveys or monitoring of AN for the proposed project was identified.

i.1.3.7 Summary of Effects

1 The proposed Project under typical operating conditions will add so very little to the background levels of AN at the edge of the wayleave that AN is unlikely to be detected at all. The level of AN at even the closest residence would not be sufficient for detection because the level would be well below assumed rural background noise levels. The analysis of AN modelling based on conservative assumptions followed specific recommendations of BS 4142: 1997 and this too confirmed that AN would not be detectible in fair weather. Even at the edges of the wayleaves in foul weather, complaints would be unlikely and typically would be further masked by other noise sources associated with foul weather, i.e., rain, wind, etc.

i.1.3.8 **Cumulative Effects**

of line supported on L7H towers.

i.1.3.9 Summary

installation.

i.1.3.10

- 1991.
- 1997.
- T 300dpi/T Fig2.49.png
- 1999.

- 9 September 2009.
- No. 258, 2001.



2 Because the Project is not proposed to be routed adjacent to other power lines or in close proximity to other weak noise sources, no specific cumulative effects are expected. The combined effects of the existing N-Route transmission line and the proposed transmission line were considered in the modelling of AN for the section

1 In conclusion, the proposed overhead transmission line that is part of the Project is not expected to cause any unacceptable increases in noise levels or even easily be detectible at wayleave edges or at the closest residences based on the proposed routeing. The likelihood that the new line will produce higher AN can be managed by preventing damage or contamination of the conductors prior to and during

References

1 Bonneville Power Administration (BPA). Corona and Field Effects Computer Program,

2 British Standards Institution (BSI). Method for rating industrial noise affecting mixed residential and industrial areas. BS 4142: 1997. London: BSI, 1997.

3 British Standards Institution (BSI). Description and measurement of environmental noise - Part 1: Guide to quantities and procedures. BS 7445: 2003. London: BSI,

4 Department for Environment, Food and Rural Affairs (DEFRA). UK Climate Projections (UKCP09). http://ukclimateprojections.defra.gov.uk/images/stories/Trends images/

5 The Scottish Office (SO). Planning Advice Note: PAN 56 – Planning and Noise, April,

6 SP Transmission (SPT). South West Scotland Renewables Connection Project

7 Environmental Statement. December 2008.

8 SP Transmission (SPT). Blackcraig & Margree Windfarms Overhead Line Grid Connection : Request for an Environmental Impact Assessment Scoping Opinion.

10 World Health Organization (WHO). Occupational and community noise. Fact Sheet

i.2 **EMF** Radiation

i.2.1 Introduction

- 1 Electricity used in our homes and workplaces is transmitted over considerable distances from generation sources to transmission and distribution systems. Most generation sources are powered by the combustion of coal and oil, nuclear power, or hydroelectric dams. To minimise environmental impacts of these generation sources, there is increasing interest in the generation of electricity by renewable resources; in this Project, for example, a new line is proposed to connect two new windfarm generation sources to the grid.
- No matter what the generation source, the electricity supplied by transmission and distribution companies to customers to power electrical appliances and equipment in homes, schools, and workplaces has a base frequency of 50 Hertz (Hz), i.e., the direction and amplitude of the electricity oscillates 50 times per second. The frequency of these fields associated with electricity falls in the extremely low frequency (ELF) range. Anything connected to the electricity transmission grid will be a source of **ELF electric and magnetic fields (EMF)**. It is important not to confuse this EMF with lower frequency fields that are commonly found in nature, such as the static magnetic field of the earth which causes the needle of a compass to point to the North Pole, or with the much higher man-made frequencies (millions to billions of Hz) associated with communications, including radio and television transmitters and mobile phones. The physical properties and environmental interactions of these sources are guite different from the ELF EMF associated with the proposed overhead and underground cables because of differences in frequency.
- Electric fields are the result of voltages applied to electrical conductors and equipment. The electric field is expressed in measurement units of volts per metre (V/m) or kilovolts per metre (kV/m); 1 kV/m is equal to 1,000 V/m. Most objects including fences, shrubbery, and buildings easily block electric fields. Therefore, certain appliances within homes and the workplace are the major sources of electric fields indoors, while power lines and electric trains are the major sources of electric fields outdoors.
- Magnetic fields are produced by the flow of electric currents; however, unlike electric fields, most materials do not readily block magnetic fields. The levels of magnetic fields in the environment are commonly expressed as magnetic flux density in units called microTesla (µT). The magnetic field level at any point depends on characteristics of the source, including the arrangement of conductors, the amount of current flow through the source, and its distance from the point of measurement. The levels of both electric fields and magnetic fields diminish with increasing distance from the source.
- The key objectives of this section are to: 1) characterise the possible effects of the proposed transmission line; 2) compare these levels to those commonly found in communities; and 3) determine the likelihood that the Project's EMF levels would have any adverse effects on health or the environment, as judged by criteria adopted by the United Kingdom (UK) government following extensive consultation with the Radiation Protection Division (RPD) of the Health Protection Agency (HPA) and other

independent evaluations of the research literature by national and international health agencies.

i.2.2 **Field Sources and Exposure Considerations**

1 The wiring within a home, appliances, and power lines outside the home produce EMF levels over a wide range. All are sources of exposure to EMF, but since electric fields are easily blocked by walls and buildings, magnetic field levels are the main focus of exposure considerations and have been the main focus of health research.

i.2.2.1 **Background Levels**

1 There are few surveys of background levels of EMF in the UK, but within residences electric fields would be expected to be 1-20 V/m and magnetic fields 0.01-0.2 μ T (HPA, 2008a). Spot measurements taken in 684 residences from 3 studies summarised by Swanson and Kaune (1999) resulted in a geometric mean magnetic field level of 0.038 μ T. Based on limited data, these authors estimated that personal exposure of individual persons to magnetic fields is about 40 percent higher than spot measurements made within residences.

G.2.2.1.1 Appliances

1 Sources of magnetic fields such as appliances, the intensity of which may diminish more quickly with distance than magnetic fields from power lines, are nonetheless important sources of everyday exposure. In fact, the strongest sources of magnetic fields that are encountered indoors are electrical appliances. Magnetic fields near appliances vary over a wide range, from a fraction of 1 μ T to 100 μ T or more. At 50 centimetres (cm) from appliances, the average magnetic field measured in 50 homes in the UK was 1.65 μ T (microwave ovens), 1.00 μ T (washing machines), 0.82 μ T (dishwashers), 0.78 μT (vacuum cleaners), and 0.48 μT (electric showers). Twentythree other appliances produced lower magnetic field levels, including clock radios at 0.05 µT (Preece et al., 1999).

G.2.2.1.2 Transmission and Distribution Lines

- 1 The highest levels of magnetic fields outdoors are often near distribution and transmission lines. Since the intensity of magnetic fields diminishes rapidly with distance from the source, however, the magnetic field levels within the home from power lines (if any) are reduced to levels much lower than found underneath these lines. High-voltage sources, including overhead transmission lines, accounted for 23 percent of the magnetic fields measured above 0.2 µT, and 43 percent of those above 0.4 µT, in a study of UK homes. Low-voltage sources associated with the distribution electricity supply accounted for 77 percent of magnetic fields measured above 0.2 μ T, and 57 percent of those above 0.4 μ T. Most of these exposures were linked to net currents in circuits inside and around the home (Maslyanj et al., 2007).
- 2 10. Underground transmission and distribution lines are not sources of electric fields above ground because of the metallic cladding around the cables and shielding by the earth. While the magnetic field is not similarly shielded, magnetic field levels from underground cables tend to diminish more quickly with distance than do fields from overhead lines because the closer spacing of the cables underground results in greater cancellation of the field.

G.2.2.1.3 Substations

G.2.2.1.4 Measurements of Personal Exposure

- including:
 - Distance from power lines to the residence; and
 - Modelling of EMF from nearby overhead transmission lines using information on loading, height, configuration, etc.
- and modelling.
- Kaune, 1999).

1 Transformers and other equipment within the associated substations are also potential EMF sources, but have little or no impact on exposure to the general public because experience indicates that EMF levels from substations 'attenuate sharply with distance and will often be reduced to a general ambient level at the substation security fencing. The exception is where transmission and distribution lines enter the substation' (IEEE Std. 1127-1998). This conclusion is consistent with measurements taken by the National Radiation Protection Board (NRPB), now the RPD-HPA, and National Grid (HPA, 2004). Hence, addressing the EMF associated with transmission lines effectively addresses potential EMF exposures from substations like those proposed at the Blackcraig and Margree windfarms.

1 Aside from measurements in residences and other buildings, the intensity of fields associated with electrical sources in the UK have been estimated by other methods

2 Distance, however, is a poor surrogate of EMF exposure, compared to measurements

3 While the above methods provide estimates of field intensity at specific locations, they provide little information about our personal exposure, i.e., our exposure to EMF averaged over time. It is important to note that estimates of magnetic field exposure provided in some epidemiologic studies, while given in units of µT, are not the same as the magnetic field values at a fixed location. The difference is that the exposure estimated in these studies is intended to reflect a person's exposure to magnetic fields from all sources at all locations over a long period of time.

4 It is evident then that brief encounters with higher magnetic fields (for example, walking under a distribution or transmission line, at home in front of a refrigerator or television, or at a grocery store near the freezer) would not significantly alter the long-term exposure of a person to magnetic fields, as reflected in their time-weighted average (TWA) exposure, because they spend such a small fraction of their time at these locations. An appliance like a clock radio, however, that produces a relatively weak field may contribute a great deal to a person's TWA exposure because of the many hours each night that a person in bed may be in proximity to this appliance (Pearce et al., 1999). A failure to distinguish between magnetic field measurements or calculations at one location from the accumulated exposure to magnetic fields from many sources over time is a common source of confusion (Bailey and Wagner, 2008). In the United States (U.S.) and Canada, scientists have frequently measured TWA exposure directly by having persons wear magnetic field meters for several days to record magnetic field exposure over time. One large study in the UK of 204 subjects has reported average TWA personal exposures of 0.054 µT (Swanson and

Study Area Description i.2.2.2

- 1 The proposed lines and substations associated with the Project are located within the boundaries of East Ayrshire, South Ayrshire and Dumfries, and Galloway. These are all rural council areas that are primarily agricultural, with moorlands and forest, scattered settlements, and isolated houses and other buildings largely related to upland farming and other countryside activities. The proposed 132-kV transmission line will be supported on heavy duty wood poles where it begins at the proposed Blackcraig Windfarm substation, continues 1.8 km to the proposed Margree Windfarm substation, and on about 10.4 km to Dalshangan, north of Kendoon. There, the transmission line will be transferred to new double-circuit L7H towers 50-100 metres (m) to the east of the existing 132-kV N-Route transmission line to a point just south of Dalmellington. The N-Route transmission line will be relocated from existing structures to the west side of the L7H towers. After construction, the existing N-Route structures will be removed along this section and for the additional 12 km of the N-Route that continues north of Dalmellington. Both the transmission lines on the L7H towers will continue northwest to terminate at the Meikle Hill Substation. The entire length of the section of the line route on L7H towers is 24.6 km. Residents in the study area, as elsewhere, will have background exposures to EMF from many ambient sources, mostly from low-voltage sources. In addition, the N-Route line is an existing source that is close to the proposed section of L7H towers between Kendoon and Dalmellington.
- 2 The routeing studies took account of the location of residential properties. No dwellings are close to the proposed transmission line route; the dwellings closest to the wood pole and the L7H structures are 170 m and 98 m, respectively, as measured from the proposed centreline of the overhead transmission lines.

i.2.2.3 **Possible Effects**

1 Table i.2.1 below outlines the sources and possible significant effects of the proposed overhead and underground lines. All possible EMF effects can be addressed or mitigated by compliance with standards, industry practices, or precautionary measures, as discussed later in this chapter. The Scoping Opinion (SPT, 2009) stated that no significant effects of EMF are anticipated, nevertheless, SPT has commissioned this assessment to confirm this opinion.

Table i.2.1 - Source of Effects and Possible Effects on Environment/Persons

Source of effect	Possible effects on environment/persons	
Electric field*	 Radio interference Audible noise (see Section i.1)	
Magnetic field	 Induction on fence wires, pipelines, or other conductive objects that parallel overhead lines for long distances Possible association with childhood leukaemia for long-term average exposures above 0.4 µT 	

* The electric field from a 132-kV line would not normally be sufficient to cause persons to perceive the field or experience 'nuisance' shocks.

i.2.3 Assessment Methodology And Data Sources

- 1 Exponent is a scientific research and engineering firm with expertise in over 90 scientific and engineering disciplines. Its multidisciplinary team of scientists, engineers, physicians, and regulatory specialists perform in-depth research and analyses for evaluations for projects worldwide. Exponent is certified to ISO 9001. Exponent's experts in electrical engineering, exposure assessment, epidemiology, toxicology, and public health prepared this assessment.
- 2 Exponent's engineers modelled the conditions associated with the typical operation of the proposed new 132-kV transmission line to characterise the expected levels of EMF associated with the proposed project.
- 3 Pre- and post-construction EMF levels were calculated using computer algorithms developed by the Bonneville Power Administration (BPA), an agency of the U.S. Department of Energy (BPA, 1991). These algorithms have been shown to accurately predict EMF levels measured near power lines. The results were confirmed to closely match those obtained by the National Grid EMD2D modelling program. The inputs to the program are data regarding voltage, current flow, circuit phasing, and conductor configurations. The resultant root-mean-square (rms) fields associated with power lines were estimated along profiles perpendicular to lines at the point of lowest conductor sag, i.e., closest to the ground. All calculations were referenced to a height of 1 m above ground according to standard practice (IEEE Std-1308, 1994; BS EN 62110: 2009) and were performed consistent with BS EN 50413: 2009. The program assumed that the transmission conductors were at the statutory minimum conductor clearance of 6.7 m at mid-span for the entire distance between structures and flat terrain and that the phase currents were balanced. The electric field from the overhead line conductors was also calculated using this minimum mid-span height. The program assumed an overvoltage condition of 5 percent above the nominal 132kV line voltage. While no fixed boundaries define a wayleave, the levels of EMF for overhead lines were tabulated at either \pm 40 m, a distance similar to allowances made for forestry felling, for the ease of making comparisons.
- 4 Basic input data for the calculations were obtained from SPT. The use of maximum normal loadings assumed on lines for magnetic field modelling and over voltages for electric field modelling is conservative, and except under certain conditions, the magnetic and electric field levels from the transmission lines during operation would be expected to be lower. Furthermore, the power for these transmission lines is generated by the wind, so inevitably the loading on the lines will be variable, and there will be periods throughout the year when the loads will be lower, which contrasts to the more even loading on transmission lines connected to nuclear or combustion generation sources. The data regarding the number of residences representing dwellings, however, do not take account of how many individual residences may be at each location, e.g., a barn conversion containing a number of individual properties has, for the purposes of the study, been counted as one residence.

i.2.3.1 **Determining Significance Of Effect**

1 The secondary effects of the electric field on radio interference and audible noise and the possible induction effects of magnetic fields are considered by SPT in its transmission projects and have been the subject of study by the electric power

industry for many decades. Given the distance between the route of the proposed 132-kV transmission lines to residences and the lack of specialized land uses and pipelines, electrified fences, etc. that parallel the proposed sections of the Project for long distances, the application of standard design and construction practices make these de minimus issues. Nevertheless, the potential for operational audible noise associated with the electric field was assessed in Section i.1.

transmission line.

i.2.3.2 **UK Government Guidelines**



2 The perception of the electric field, including 'nuisance' shocks, and the induction of current density within the body by strong electric and magnetic fields are also well-known and are the subject of guidelines adopted by the UK government, as described below. At 132 kV, indirect effects are of negligible concern for the proposed

1 In 2004, the NRPB of the UK recommended that the 1993 NRPB exposure limit for the general public be reduced below occupational limits by a factor of five and that the UK government adopt exposure guidelines developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) (NRPB, 2004b), as reflected in a recommendation of the Council of the European Commission (CEC, 1999). Both ICNIRP and NRPB guidelines for exposure were developed following a full weight-of-evidence review of the literature, including epidemiologic and experimental evidence related to both short-term and long-term exposure. Both reviews concluded that the stimulation of nerves and the central nervous system could occur at very high exposure levels immediately upon exposure. This evidence is the basis for setting exposure limits to prevent adverse effects of exposure to EMF. Their reviews further concluded that there was not sufficient evidence to support a causal role for EMF in the development of cancer or other long-term adverse health effects. Therefore, they found no basis to recommend quantitative exposure guidelines to prevent such long-term effects (NRPB, 1994a; ICNIRP, 1998; NRPB, 2004b). Following the publication of their 1998 guidelines, ICNIRP published an evaluation of the epidemiologic literature (ICNIRP, 2001) and a full weight-ofevidence evaluation of long-term health effects (ICNIRP, 2003), concluding again that there is no basis for proposing exposure restrictions for long-term health effects. In 2010, ICNIRP evaluated research published since their 1998 guidelines and issued a new standard in which the limit for magnetic field exposures of the general public is increased in the frequency range of 1 Hz – 100 kilohertz (kHz). The other Reference Levels summarized in Table 2 were not changed.

2 24. For public and occupational exposures to electric and magnetic fields in the frequency range of 4 to 1,000 Hz, ICNIRP recommended Basic Restrictions on the induced electric field in tissues (ICNIRP, 2010). For the general public, this limit is 8 mV/m in the central nervous system. This basic restriction would not be exceeded if exposures at 50 Hz did not exceed Reference Levels for electric fields of 5 kV/m and magnetic fields of 200 µT (see Table 2). These limits apply to locations where persons spend significant amounts of time (CEC, 1999).

3 Exposures above these levels are permitted if it can be shown that the Basic Restrictions are not exceeded by dosimetric modeling, e.g., (Dimbylow, 2005).

4 Based upon a similar review of the literature, another scientific committee, the International Committee for Electromagnetic Safety (ICES), published Reference Levels that are higher than the ICNIRP Reference Levels (ICES, 2002). Both the ICNIRP and ICES standards incorporate large safety factors, i.e., large reductions in the levels where effects are known to occur to account for unknown variability or susceptible populations. Additional technical details regarding the ICNIRP and ICES guidelines can be found in Bailey et al. (1997) and Kavet et al. (2008).

Table i.2.2 - Guidelines for EMF exposure at 50 Hz

Exposure (50 Hz)	Electric field	Magnetic field	
ICNIRP			
Occupational			
Basic restriction	40 mV/m		
Reference levels	10 kV/m	500 μΤ	
General Public			
Basic restriction	8 mV/m		
Reference levels	5 kV/m	200 μΤ	
ICES			
Occupational	20 kV/m	2,710 μΤ	
General Public	5 kV/m*	904 μT	

Sources: ICES, 2002; ICNIRP, 1998

*Within power line wayleaves, the guideline is 10 kV/m under normal load conditions.

- 5 The HPA applies these Reference Levels to projects to determine compliance. If an external field is at or below the Reference Levels, then compliance with the Basic Restriction is assumed. If an external field is expected to be higher than the Reference Level at a location where persons spend significant time, then more sophisticated assessments may be required to determine compliance (HPA, 2007a).
- 6 The NRPB and ICNIRP standards are consistent with the consensus of the general scientific community regarding potential EMF effects on health (see below). The World Health Organization (WHO) also recommends adoption of the ICNIRP standards (WHO, 2007a; 2007b). The ICNIRP EMF exposure guidelines are now being applied throughout the European community and by some other nations. Current policy within the UK is summarized elsewhere (DEEC, 2009)
- 7 The HPA continues to stay informed on new research that might affect its policies through the work of its Advisory Group on Non-Ionising Radiation (AGNIR) and advisory council.²
- 8 The following is the latest assessment of the scientific research on possible longterm health effects by the HPA and AGNIR:

The residential epidemiology has suggested that there may be a small risk related to leukaemia in children and young persons and in particular to those exposed at levels of average domestic exposure to magnetic fields at or above 0.4 μ T (400 nT). However the evidence is inconclusive. The epidemiological association may be due to chance, confounding factors or some unrecognised artefact related to the way the data have been collected. The review of experimental studies gives no clear support for a causal relationship between exposure to ELF EMF and cancer. AGNIR also concluded that there is no reason to believe that residential exposure to EMF is involved in the development of cancer in adults, and in particular of leukaemia or brain cancer (HPA, 2008b).

i.2.3.3 **Reviews by National and International Scientific and** Health Agencies

- 1 Since exposure to magnetic fields is ubiquitous and questions about potential health risks have been raised by some studies, major scientific organisations throughout the world have appointed panels of experts to carefully review the body of available research and offer conclusions on the status of the science. As previously discussed, the NRPB of the UK issued full evaluations of the research in 1992, 2001, and 2004, with supplemental updates (1993, 1994a) and topic-specific reports (2001b; 2004c; HPA, 2006) published in the interim.
- This section describes the scientific organisations and health agencies in addition to the NRPB and HPA that have assembled independent panels of experts reflecting the full diversity of research experience required to conduct a valid weight-of-evidence assessment of the relevant scientific research.
- 3 In the U.S., the government mandated the formation of a program for research on EMF in 1992, in response to public concern about the safety of magnetic fields. This program was referred to as the EMF RAPID Program and included more than 100 animal and laboratory studies. At the conclusion of the RAPID program in 1998, the National Institute of Environmental Health Sciences (NIEHS) assembled a 30-person Working Group to review the cumulative body of epidemiologic and experimental data and provide conclusions and recommendations to the U.S. Government (NIEHS, 1998. 1999).
- 4 Several international, scientific organisations subsequently conducted thorough evaluations of the research on EMF; the IARC completed a full carcinogenic evaluation of magnetic fields in 2002 and the ICNIRP³ published a report in 2003.
- 5 In Europe, the Health Directorate of the European Commission requested a report from its Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) in March 2009 to update previous conclusions issued in 2007; the Health Council of the Netherlands (HCN) evaluated the cumulative body of research in 1992, followed by updates in 2000, 2001, 2004, and 2005.
- 6 The conclusions of these reviews provide a basis for summarising the current state of the science, given that these panels consisted of individuals with extensive experience in the relevant areas and were organised by nationally and internationally recognised scientific agencies. The three most recent reviews are summarised below.

i.2.3.4 World Health Organization (2007)

- (GHz).
- Criteria (EHC) Programme (WHO, 2007b).
- topic published after that date.
- of experimental animals.
- - 347).

1 The WHO is a scientific organisation within the United Nations system whose mandate includes providing leadership on global health matters, shaping the health research agenda, and setting norms and standards. The WHO established the International EMF Project in 1996, in response to public concerns about exposures to EMF and possible adverse health effects. The Project's membership includes 8 international organisations, 8 collaborating institutions, and over 54 national authorities. The overall purpose of the project is to assess health and environmental effects of exposure to static and time varying EMF in the frequency range 0-300 GigaHertz

2 A key objective of the Project is to evaluate the scientific literature and make a status report on health effects, to be used as the basis for a coherent international response, including the identification of important research gaps and the development of internationally acceptable standards for EMF exposure. The WHO's weight-ofevidence review was published in June 2007 as part of their Environmental Health

3 The WHO used standard scientific procedures to conduct its health risk assessment. The Task Group responsible for the report's overall conclusions consisted of 21 scientists from around the world with expertise in a wide range of disciplines. The Task Group relied on the conclusions of a previous weight-of-evidence review by the IARC (with regard to cancer) in 2002 and mainly focused on evaluating studies on this

4 Specific terms were used by the Task Group to describe the strength of the evidence in support of causality. Limited evidence was used to describe a body of research where the findings are inconsistent or there are outstanding questions about study design or other methodological issues that preclude making strong conclusions. Inadequate evidence describes a body of research where it is unclear whether the data is supportive or unsupportive of causation because there is a lack of data or there are major quantitative or qualitative issues. The WHO also used the IARC method for categorising exposures based on their likely carcinogenicity. Categories include (from highest to lowest risk): carcinogenic to humans, probably carcinogenic to humans, possibly carcinogenic to humans, unclassifiable, and probably not carcinogenic to humans. These categories are intentionally meant to err on the side of caution, giving more weight to the possibility that the exposure is truly carcinogenic and less weight to the possibility that the exposure is not carcinogenic. The category possibly carcinogenic to humans denotes exposures for which there is limited evidence of carcinogenicity in epidemiology studies and less than sufficient evidence of carcinogenicity in studies

5 The WHO Report provided the following conclusions:

New human, animal, and in vitro studies published since the 2002 IARC Monograph, 2002 [sic] do not change the overall classification of ELF as a possible human carcinogen (p.

Acute biological effects [i.e., short-term, transient health effects such as a small shock] have been established for exposure to ELF electric and magnetic fields in the frequency range

^{2 -} The AGNIR was reconstituted in 1999 as an independent advisory group; it now reports to the sub-committee of the board of the HPA that deals with radiation, chemical, and environmental hazards. In addition to the work of the Advisory Group, subgroups address specific issues. The position of AGNIR with respect to this issue was confirmed on 21 October 2008 as 'The AGNIR continues to keep under review published research related to health concerns arising from exposure to power frequency electromagnetic fields. At present there is insufficient new information to justify the development of an update to the 2001 report, although it will be needed at some point in the future' (AGNIR, 2008). The latest report from AGNIR on power-frequency fields was published in 2006: 'Power frequency electromagnetic fields, melatonin and the risk of breast cancer. Report of an independent Advisory Group on Non-ionising Radiation' (HPA, 2006).

^{3 -} ICNIRP is the formally recognised organization for providing guidance on the safety of nonionising radiation for the WHO.

up to 100 kHz that may have adverse consequences on health. Therefore, exposure limits are needed. International guidelines exist that have addressed this issue. Compliance with these guidelines provides adequate protection. Consistent epidemiological evidence suggests that chronic low-intensity ELF magnetic field exposure is associated with an increased risk of childhood leukaemia. However, the evidence for a causal relationship is limited, therefore exposure limits based upon epidemiological evidence are not recommended, but some precautionary measures are warranted (p. 355).

i.2.3.5 Swedish Radiation Protection Authority (2008)

- 1 The Swedish Radiation Protection Authority (SSI) has published a review of EMF and health research (SSI, 2008). This review summarises the conclusions of an expert panel that consisted of individuals with the appropriate scientific expertise and who followed standard, scientific methods in their analysis.
- 2 The SSI appointed an international, independent expert group of eight scientists. Using other major scientific reviews as a starting point, this expert group evaluated recent studies in consecutive annual reports with the goal of providing an ongoing health risk assessment. Each annual report focuses on several, key health topics; the 2008 report focused on epidemiologic studies of childhood leukaemia and cardiovascular disease and experimental data related to genotoxic effects. An additional component of the 2008 report included an overview of recently published reviews, including a large section on the conclusions of the most recent weight-ofevidence review by the WHO.
- 3 The overall conclusion of the SSI report was that research published during 2007 does not alter the conclusion that ELF magnetic fields should be classified as a possible carcinogen. This classification is based on findings of a statistical association between childhood leukaemia and exposure to high, average magnetic fields in epidemiology studies that is not considered to be causal because animal and cellular studies do not provide evidence of adverse effects.
- 4 The SSI noted that some in vitro and in vivo studies from 2007 reported genotoxic effects at very high magnetic field exposure levels, but that the results required replication and are of unknown significance to human exposures at much lower levels. The SSI also noted findings from epidemiologic studies that tested new hypotheses related to magnetic fields and childhood leukaemia that require further study. In addition, the group reviewed studies related to the hypothesis that magnetic fields increase the risk for cardiac arrhythmia-related conditions and acute myocardial infarction, concluding that the studies do not support this hypothesis.

i.2.3.6 Scientific Committee on Emerging and Newly Identified Health Risks (2009)

1 The European Commission requested that the Directorate-General for Health and Consumer Protection from the SCENIHR provide scientific advice to the Commission on matters relating to consumer safety, public health, and the environment that is based on the principles of excellence, independence, impartiality, and transparency. The Committee's task is to address questions related to potential risks associated with interaction of risk factors, synergic effects, cumulative effects, antimicrobial resistance, new technologies such as nanotechnologies, medical devices, tissue engineering, blood products, fertility reduction, cancer of endocrine organs, physical hazards such as noise and EMF, and methodologies for assessing new risks.

2 The latest review of potential health effects of exposure to EMF was carried out by a working group of three SCENIHR Committee members and six consulting experts. The working group reviewed new epidemiology, animal, and in vitro studies to update the Committee's assessment performed in 2007. The conclusions and recommendations were similar to those released in 2007, except that SCENIHR recommended that further epidemiologic and experimental investigations of the apparent association between ELF EMF and the development of Alzheimer's disease should be given priority.

i.2.3.7 **A Dissident Perspective**

- 1 A review not published by an established scientific organisation is also discussed here, given the media attention this report has received in Europe. This online report written by an ad hoc group of 14 individuals was put forth to 'assess scientific evidence on health impacts from electromagnetic radiation below current public exposure limits' (The BioInitiative Working Group, 2007; Hardell and Sage, 2008). The report was released on a website in September 2007 and a summary of the report was recently published in a journal (Hardell and Sage, 2008).
- 2 The report concluded that magnetic field exposure standards lower than those currently recommended by scientific agencies are warranted. Specifically, the report recommended that exposure standards be set below levels associated with childhood leukaemia in epidemiology studies. This recommendation deviates substantially from recommendations made by national and international scientific and health organisations because, as recently noted by the HCN in 2008 and the European Commission in 2007, the authors of the BioInitiative report largely ignored basic scientific methods. They did not draw consensus statements based on a collaborative review by a multidisciplinary panel nor did they review the cumulative body of evidence in the areas of epidemiology, in vivo, and in vitro research. And, finally, they did not perform a critical evaluation of each study or evaluate the entire body of research together to reach conclusions about causality. The HCN concluded the following:

In view of the way the Biolnitiative report was compiled, the selective use of scientific data and the other shortcomings mentioned above, the Committee concludes that the BioInitiative report is not an objective and balanced reflection of the current state of scientific knowledge. Therefore, the report does not provide any grounds for revising the current views as to the risks of exposure to electromagnetic fields (HCN, 2008).

3 Similarly, the EMF-NET Coordination-Action Steering Committee of the European Commission concluded,

There is a lack of balance in the report; no mention is made in fact of reports that do not concur with authors' statements and conclusions. The results and conclusions are very different from those of recent national and international reviews on this topic. (EC, 2007)

4 Unlike the BioInitiative report, the WHO report was the product of a multidisciplinary scientific panel assembled by an established public health agency that followed appropriate scientific methods, including the systematic and critical examination of the relevant evidence. The WHO report concluded that the current magnetic field of public health.

technical advisors.

Good Practice Measures i.2.4

Project as described below.

i.2.4.1 **Standard Measures**

i.2.4.2 **Precautionary Measures**

- - magnetic field levels.



exposure standards recommended by scientific agencies are sufficiently protective

5 In sum, the conclusions of the recent WHO, SSI, and SCENIHR reports support the conclusions of earlier reviews of the literature and the position of the HPA and its

1 Two types of good practice measures regarding EMF will be implemented in this

1 The first type of good practice measure encompasses standard utility practices for the design of the transmission lines to minimise corona-related phenomena, including radio interference and audible noise, and avoiding routeing lines for long distances parallel to fence wires, pipelines, or other conductive objects.

1 The second type of good practice measure relates to the management of potential ELF EMF exposures. Included in this category are SPT's routeing design and siting actions, primarily based on general amenity considerations, which also achieve compliance with the UK government's EMF exposure guidelines at locations where people spend significant time. The above actions with respect to compliance with the UK government's guidance are based upon science-based risk assessments and therefore constitute a precautionary approach (RRSAG, 1994). The essence of the precautionary principle is to take steps to reduce exposures that are proportional to the perceived level of risk associated with the exposure, with the current scientific consensus as the basis for establishing that level of risk.

2 In addition, SPT has taken additional actions, which reduce potential exposures to EMF along the proposed route, including the following:

 Where possible, towers were sited away from residences and other buildings for reasons of general residential amenity. Project records have identified a very small number of dwellings within 500 m. There are 33 dwellings within 500 m of the wood pole structures, with none closer than 170 m of the centerline. There are 24 dwellings within 500 m of the centerline of the L7H towers, with none closer than 98 m. At this and greater distances, EMF levels from the line would be within the range of other common exposures that we encounter daily.

• SPT proposes to reverse the phasing of one of the circuits constructed on the double-circuit L7H towers. This is a design well known for its ability to minimise

3 These two actions are consistent with the precautionary principle, in that they are not dictated strictly by scientific considerations. The precautionary principle is a policy for risk management of possible but unproven adverse effects, which emerged in Europe in the 1970s regarding environmental issues. In response to the submission of a report from the NRPB (NRPB, 2004a) that recommended that the UK government

consider the possible need for further precautionary measures with regard to the exposures of children, the government initiated discussions through the Stakeholder Advisory Group on ELF EMF (SAGE) to identify and explore the implications for a precautionary approach to EMF and make practical recommendations for precautionary measures.

- In April 2007, SAGE issued its first report that recommended two precautionary measures: 1) provide more information to members of the public about exposures and the actions they could take themselves to reduce exposures if they wished; and 2) choose the optimal relative phasing for the two circuits of an overhead transmission line that can reduce the distance for the magnetic field to fall to a given level. This chapter is responsive to the first SAGE recommendation. Furthermore, SPT has chosen to implement the second recommendation for the Blackcraig and Margree Windfarms Project. The HPA has supported the SAGE recommendations to the Health Ministers but rejected the mandatory separation of new or existing facilities from residences discussed in the SAGE report as not supported by health or economic analyses (Letter from Professor Pat Troop to RT Hon Dawn Primarolo MP, Minister of State for Public Health, 15 October 2007 in HPA, 2007b).
- More recently, the UK government has responded to the recommendations and analyses in the SAGE report, and has agreed with the HPA position in its conclusion that the EMF association with childhood leukaemia is weak and unproven and therefore only no-cost/low-cost options to reduce EMF exposure are justified by the evidence (HMG, 2009). This view is consistent with an independent assessment and risk ranking of buildings' hazards on human health and safety which identified and ranked 32 health and safety hazards but declined to rate EMF as there was no basis for the assessment of risk (CLG, 2008).

i.2.5 **Strategic Routeing And Modifications To** Scheme Design

1 The strategic routeing studies outlined in Chapter 3 'Route Selection and Alternatives' describe how the preferred route was developed and show how this route avoids buildings and residential properties, so far as possible, in order to minimise landscape and visual impacts and maintain residential amenity. This process resulted in the location of structures and conductors at considerable distance from residential dwellings. These actions collectively have the effect of reducing the potential exposure of landowners to EMF from the proposed Project.

i.2.6 The 'Do Nothing' Scenario

1 In the absence or presence of the Project, the exposures of landowners to EMF would be expected to be largely unchanged.

Effects Of Lines And Cables On Emf Levels

i.2.7.1 **Existing Conditions**

i.2.7

1 The exposures of landowners and visitors in the project vicinity to existing sources of EMF are described in section 'Field Sources and Exposure Considerations' above.

i.2.7.2 Assessment of Effects

1 This section focuses on the magnetic field levels associated with the operation of the proposed lines. There is a general consensus, as expressed by the WHO, that 'there are no substantive health issues related to ELF electric fields at levels generally encountered by members of the public' (WHO, 2007a); therefore, the electric field calculations are not presented in profiles. Calculated values of both magnetic and electric fields on wayleaves or other reference locations, however, are summarised near the end of this section in Tables i.2.3 and i.2.4, respectively.⁴

G.2.7.2.1 Blackcraig Substation to Dalshangan

- 1 The proposed 132-kV overhead single-circuit line will be supported by heavy duty wood pole structures as illustrated in Figure NTS 01. The magnetic field levels calculated along a transect perpendicular to the transmission line at a normal maximum load of 140 mega-volt-amperes (MVA) on this circuit is shown in Figure i.2.1.
- 2 There are 33 residence buildings within 500 m of this line section. The closest residence to this section of line, however, is estimated to be approximately 170 m from the centreline. At this distance, the maximum typical electric and magnetic fields are computed to be 0.001 kV/m and 0.02 μ T, respectively. There are no closer facilities or land uses where people might spend significant amounts of time.

Figure i.2.1 - Magnetic field associated with the proposed single-circuit, 132-kV line between the Blackcraig Substation and Dalshangan.



G.2.7.2.2

maximum normal loading



4 - The calculated values in Table i.2.3 and i.2.4 are somewhat different than were modeled for the SWS Project's Environmental Statement (SPT, 2008) which result from a lower minimum conductor height (6.7 minimum statutory clearance vs 12 m typical operating clearance) and some differences in assumed cross arm lengths in the current analyses. Such differences, however, are too minor to affect the evaluation of potential impacts.

1 A new double-circuit 132-kV line supported on steel lattice towers, based on the L7H series, as illustrated in Figure NTS - 02, will connect the new circuit proposed to bring 241 MVA of power from the Black Hill and Margree Substations and 241 MVA of power over the existing N-Route circuit to the Meikle Hill Substation. The magnetic field at these maximum loadings is shown along a transect perpendicular to the line in Figure 2. There are 24 residences within 500 m of this section of line. The closest residence is estimated to be 98 m from the centreline of the L7H route section. At this distance, the maximum electric and magnetic fields at this location are estimated to be 0.004 kV/m and 0.04 µT, respectively.

Figure i.2.2 - Magnetic field associated with the proposed overhead doublecircuit, 132-kV line on L7H towers from Dalshangan to the Meikle Hill Substation at

Table i.2.3 - Calculated values of magnetic fields on wayleaves and at greater distances (see footnotes)

	Magnetic Field (IT) at Location*			
Line Section	(-) wayleave edge	Maximum on wayleave	(+) wayleave edge	
Blackcraig Substation to Dalshangan (Wood Pole)	0.4	15.1	0.4	
Dalshangan to Meikle Hill Substation (L7H Tower)	0.5	25.2	0.5	

*For all sections, ± wayleave edge denotes ± 40 m. Magnetic field calculations performed at minimum conductor height 6.7 m and normal maximum load.

Table i.2.4 - Calculated values of electric fields (at minimum conductor height [6.7m] and normal maximum load) on wayleaves and at greater distances (see footnote)

	Electric Field (kV/m) at Location*			
Line Section	(-) wayleave edge	Maximum on wayleave	(+) wayleave edge	
Blackcraig Substation to Dalshangan (Wood Pole)	0.03	1.86	0.03	
Dalshangan to Meikle Hill Substation to (L7H Tower)	0.04	2.95	0.04	

*For all sections, ± wayleave edge denotes ± 40 m. Electric field calculations performed at minimum conductor height 6.7 m.

Survey Requirements/Monitoring i.2.8

1 No need for surveys or monitoring of EMF was identified.

i.2.9 **Summary Of Effects**

- 2 The proposed Blackcraig and Margree Windfarms Grid Connection Project will pass within 500 m of relatively few dwellings and even at the closest dwellings the potential contribution of the Project to typical background levels in UK dwellings would be very small. The highest magnetic field contributed by the proposed line at a dwelling would be expected to be less than or equal to 0.04 μ T, which is in the range of average magnetic field levels in UK homes and at a low level where no association with childhood leukaemia has been identified based on estimated average or TWA levels (WHO, 2007b). The highest electric field calculated at any dwelling (0.002 kV/m) would be at the bottom of the range of electric fields measured in UK homes, and further reduced by shielding by any intervening trees and shrubbery.
- The maximum electric field, which will be near the conductors, would be less than 3 kV/m under normal operating conditions and not likely to be perceived or produce detectible nuisance shocks. The electric fields associated with the proposed design specifications on the wayleave and outside the wayleave would comply with UK government limits. Adherence to this limit will minimise the perception of electric fields and possible 'nuisance' shocks from contact from large ungrounded objects, e.g., large trucks, on the wayleave.

- 4 The Project incorporates recommendations for good practice, precautionary measures including the routeing of the line away from residences and other land uses, and the 'reverse' phasing of double-circuit lines to minimise magnetic fields as a precautionary response, which are consistent with the recommendations of HPA, SAGE, and WHO.
- 5 Other possible effects including radio interference and magnetic induction are phenomena electric utilities have considerable experience in addressing in the design and routeing of transmission lines and will be addressed by the application of standard practices. Audible noise is addressed in Section i.1.

i.2.10 **Cumulative Effects**

1 Because the Project is not proposed to be routed adjacent to other power lines or in close proximity to dwellings, where cumulative effects of multiple sources might be significant, no specific cumulative effects are expected.

i.2.11 References

- 1 Advisory Group on Non-Ionising Radiation (AGNIR). Programme of work of the AGNIR and its subgroups: Power frequency electromagnetic fields. Updated 21 October 2008. http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/ 1207821636407?p=1207821636407.
- 2 Bailey WH and Wagner ME. Editorial IARC evaluation of EMF magnetic fields: Public understanding of the 0.4µT exposure metric. Journal of Exposure Science and Environmental Epidemiology 18:233-235, 2008.
- 3 Bailey WH, Su SH, Bracken TD, Kavet R. Summary and evaluation of guidelines for occupational exposure to power frequency electric and magnetic fields. Health Physics 73:433-53, 1997.
- 4 BioInitiative Working Group. BioInitiative: A Rationale for a Biologically-based Exposure Standard for Electromagnetic Radiation. August 2007.
- 5 Bonneville Power Administration (BPA). Corona and Field Effects Computer Program, 1991.
- 6 British Standards Institution (BSI). Basic Standard on Measurement and Calculation Procedures for Human Exposure to Electric, Magnetic and Electromagnetic Fields (0 Hz — 300 GHz. London: BSI British Standards. BS EN 50413, 2009.
- 7 British Standards Institution (BSI). Electric and Magnetic Field Levels Generated by AC Power Systems - Measurement Procedures with regard to Public Exposure. London: BSI British Standards. BS EN 621100, 2009.
- 8 Council of the European Community (CEC). Council Recommendation of 12 July 1999 on the Limitation of Exposure of the General Public to Electromagnetic Fields (0 Hz to 300 GHz). Official Journal of the European Communities, L199:59-65, 1999.
- 9 Communities and Local Government (CLG). Review of Health and Safety Risk Drivers. BD2518. London Communities and Local Government, September 2008.

- note. April, 2009.
- Report), October 30, 2007.

- 20 http://www.gr.nl/adviezen.php
- 1158934607796?p=1158934607796.



10 Department of Energy and Climate Change (DECC). The Statutory Consents Regime for Overhead Power Lines in England and Wales and New Measures introduced by the Overhead Lines (Exemption) (England and Wales) Regulations 2009: guidance

11 Dimbylow P. Development of the female voxel phantom, NAOMI, and its application to calculations of induced current densities and electric fields from applied low frequency magnetic and electric fields. Phys Med Biol 50:1047-70, 2005.

12 European Commission (EC). EC FP6 Coordination Action-EMF-NET. Effects of the Exposure to Electromagnetic Fields: From Science to Public Health and Safer Workplace — Comments on the BioInitiative Working Group Report (BioInitiative

13 Hardell L and Sage C. Biological effects from electromagnetic field exposure and public exposure standards. Biomedicine & Pharmacotherapy 62: 104-9, 2008.

14 Health Council of the Netherlands (HCN). ELF Electromagnetic Fields Committee. Extremely Low Frequency Electromagnetic Fields and Health. The Hague: Health Council of the Netherlands. Publication No. 1992/07, 1992

15 Health Council of the Netherlands (HCN). ELF Electromagnetic Fields Committee. Exposure to Electromagnetic Fields (0Hz – 10 MHz). Executive summary. The Hague: Health Council of the Netherlands. Publication No. 2000/6E, 2000. http://www. healthcouncil.nl/adviezen.php?ID=25&highlight=EMF

16 Health Council of the Netherlands (HCN). ELF Electromagnetic Fields Committee. Electromagnetic Fields: Annual Update 2001. The Hague: Health Council of the Netherlands. Publication No. 2001/14, 2001.

17 Health Council of the Netherlands (HCN). ELF Electromagnetic Fields Committee. Electromagnetic Fields: Annual Update 2003. The Hague: Health Council of the Netherlands. Publication No. 2004/1, 2004.

18 Health Council of the Netherlands (HCN). ELF Electromagnetic Fields Committee. Electromagnetic Fields: Annual Update 2005. The Hague: Health Council of the Netherlands. Publication No. 2005/14, 2005.

19 Health Council of the Netherlands (HCN). Biolnitiative report. The Hague: Health Council of the Netherlands, Publication no. 2008/17E, 2008.

21 Health Protection Agency (HPA). Electricity Substations and Power Lines, March, 2004. http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/

22 Health Protection Agency (HPA). Power Frequency Electromagnetic Fields, Melatonin and the Risk of Breast Cancer. Report of an Independent Advisory Group on Nonionising Radiation. Doc HPA, RCE-1, 2006.

23 Health Protection Agency (HPA). Application of ICNIRP Exposure Guidelines for 50 Hz Power Frequency Fields. Health Protection Agency (HPA). 11 April 2005 (Last reviewed, 7 December2007), 2007a. http://www.hpa.org.uk/webw/ HPAweb&HPAwebStandard/HPAweb C/1195733805036?p=1158934607693

- 24 Health Protection Agency (HPA). HPA Comments on the SAGE First Interim Assessment. Letter dated 15 October 2007 from Professor Pat Troop to RT Hon Dawn Primarolo MP, Minister of State for Public Health, 2007b.http://www.hpa.org.uk/webw/ HPAweb&HPAwebPrinterFriendly/HPAweb_C/1204276682532?p=1207897920036
- 25 Health Protection Agency (HPA). Non-ionising Radiation and ELF Electromagnetic Fields FAQs(Last reviewed 8 September 2008), 2008a. http://www.hpa.org.uk/webw/ HPAweb&HPAwebStandard/HPAweb C/1197637106633?p=1158934607761.
- 26 Health Protection Agency (HPA). EMF and Cancer FAQs(Last reviewed 8 September 2008), 2008b. http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_ C/1197637107234?p=1158934607761.
- 27 Her Majesty's Government (HMG) Department of Health, Department for Communities and Local Government & Department of Energy and Climate Change. Government response to the Stakeholder Advisory Group on extremely low frequency electric and magnetic fields (ELF EMFs) (SAGE) recommendations. 16 October 2009. http://webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/Publichealth/ Healthprotection/DH 4089500.
- 28 International Agency for Research on Cancer (IARC). IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Volume 80: Static and Extremely Lowfrequency (ELF) Electric and Magnetic Fields. Lyon France: IARC Press, 2002.
- 29 Institute of Electrical and Electronics Engineers (IEEE). IEEE recommended practice for instrumentation: specifications for magnetic flux density and electric field strength meters-10 Hz to 3 kHz. IEEE Standard 1308-1995, 1995. Reaffirmed 2001.
- 30 Institute of Electrical and Electronics Engineers (IEEE). IEEE guide for the design, construction, and operation of electric power substations for community acceptance and environmental compatibility. IEEE Std. 1127-1998, 2004.
- 31 International Commission on Non-Ionizing Radiation Protection (ICNIRP). Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz). Health Phys 74:494-522, 1998.
- 32 International Commission on Non-Ionizing Radiation Protection (ICNIRP). Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz to 100 kHz). Health Physics 99:818-836, 2010.
- 33 International Commission for Non-Ionizing Radiation Protection (ICNIRP). Review of the epidemiologic literature on EMF and health. Environ Health Perspect 109:S911-33, 2001.
- 34 International Commission on Non-Ionizing Radiation Protection (ICNIRP). Exposure to static and low frequency electromagnetic fields, biological effects and health consequences (0-100 kHz) - review of the scientific evidence on dosimetry, biological effects, epidemiological observations, and health consequences concerning exposure to static and low frequency electromagnetic fields (0-100 kHz). Matthes R, McKinlay

AF, Bernhardt JH, Vecchia P, Veyret B (eds.). International Commission on Non-Ionizing Radiation Protection, 2003.

- 35 International Committee on Electromagnetic Safety (ICES). IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields 0 to 3 kHz C95. 6-2002. Piscataway, NJ: IEEE, 2002, reaffirmed 2007.
- 36 Kavet R, Bailey WH, Bracken TD, Patterson RM. Recent advances in research relevant to electric and magnetic field exposure guidelines. Bioelectromagnetics. 7:499-526, 2008.
- 37 Maslanyj MP, Mee1 TJ, Renew DC, Simpson J, Ansell P, Allen SG and Roman E. Investigation of the sources of residential power frequency magnetic field exposure in the UK Childhood Cancer Study. J. Radiol. Protect 27:41-58, 2007.
- 38 National Institute of Environmental Health Sciences (NIEHS). Assessment of Health Effects from Exposure to Power-line Frequency Electric and Magnetic Fields: Working Group Report. NIH Publication No. 98-3981. Research Triangle Park, NC: National Institute of Environmental Health Sciences of the U.S. National Institutes of Health, 1998.
- 39 National Institute of Environmental Health (NIEHS). Health Effects From Exposure to Power Line Frequency Electric and Magnetic Fields. NIH Publication No. 99-4493. Research Triangle Park, NC: National Institute of Environmental Health Sciences of the U.S. National Institutes of Health, 1999.
- 40 National Radiological Protection Board (NRPB). Electromagnetic fields and the risk of cancer. Report of an Advisory Group on Non-ionising Radiation. National Radiological Protection Board. 3:1-138, 1992.
- 41 National Radiological Protection Board (NRPB). Electromagnetic fields and the risk of cancer. Supplementary report by the Advisory Group on Non-ionising Radiation. National Radiological Protection Board. 4:65-69, 1993.
- 42 National Radiological Protection Board (NRPB). Electromagnetic fields and the risk of cancer. Supplementary report by the Advisory Group on Non-ionising Radiation. National Radiological Protection Board. 5:77-81, 1994a.
- 43 National Radiological Protection Board (NRPB). Health effects related to the use of visual display units. Report of an Advisory Group on Non-ionising Radiation. National Radiological Protection Board. 5:1-75, 1994b.
- 44 National Radiological Protection Board (NRPB). ELF Electromagnetic Fields and the Risk of Cancer: Report of an Advisory Group on Non-ionising Radiation. National Radiological Protection Board. Volume 12, No 1, 2001a.
- 45 National Radiological Protection Board (NRPB). ELF Electromagnetic fields and neurodegenerative disease. National Radiological Protection Board. Volume 12, No 4, 2001b.
- 46 National Radiological Protection Board (NRPB). Review of the Scientific Evidence for Limiting Exposure to Electromagnetic Fields (0-300 GHz). National Radiological Protection Board (NRPB). Volume 15, No 3, 2004a.

- Volume 15, No 2, 2004b.
- Rad Protect Dosimetry. 83:21-28, 1999.
- 1999.

- Health & Consumers, 2009.

- September, 2009.

- Organization, June 2007a.

47 National Radiological Protection Board (NRPB). Advice on Limiting Exposure to Electromagnetic Fields (0-300 GHz). National Radiological Protection Board (NRPB).

48 National Radiological Protection Board (NRPB). Particle deposition in the vicinity of power lines and possible effects on health. National Radiological Protection Board (NRPB). Volume 15, No 1, 2004c.Preece AW, Kaune WT, Grainger P, Golding J. Assessment of human exposure to magnetic fields produced by domestic appliances.

49 Preece AW, Kaune WT, Grainger P, Golding J. Assessment of human exposure to magnetic fields produced by domestic appliances. Rad Protect Dosimetry. 83:21-28,

50 Radiation, Risk and Society Advisory Group (RRSAG). In terms of risk: report of a seminar to help define important terms used in communicating about risk to the public. Documents of the NRPB. 15:1-14, 2004.

51 Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR). Possible Effects of Electromagnetic Fields (EMF) on Human Health. European Commission. Directorate C – Public Health and Risk Assessment, 2007.

52 Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR). Health Effects of Exposure to EMF. European Commission. Directorate General for

53 Stakeholder Advisory Group on ELF EMFs (SAGE) (2007). Precautionary Approaches to ELF EMFs. First Interim Assessment: Power Lines and Property, Wiring in Homes, and Electrical Equipment in Homes. RK Partnership Ltd, 27 April 2007. http://www. rkpartnership.co.uk/sage/Public/SAGE%20first%20interim%20assessment.pdf

54 Scottish Power Transmission (SPT). South West Scotland Renewables Connection Project: Environmental Statement, December 2008.

55 Scottish Power Transmission (SPT). Blackcraig & Margree Windfarms Overhead Line Grid Connection: Request for an Environmental Impact Assessment Scoping Opinion.

56 Swedish Radiation Protection Authority (SSI). Fifth annual report from SSI's Independent Expert Group on Electromagnetic Fields, 2007: Recent Research on EMF and Health Risks. SSI Rapport 2008:12, 2008.

57 Swanson J and Kaune WT. Residential power-frequency electric and magnetic fields: Sources and exposures. Rad Prot Dosimetry 83:9-14, 1999.

58 World Health Organization (WHO). Fact sheet No. 322: Electromagnetic Fields and Public Health - Exposure to Extremely Low Frequency Fields. World Health

59 World Health Organization (WHO). Environmental Health Criteria 238: Extremely Low Frequency (ELF) Fields. WHO, Geneva, Switzerland, ISBN 978-92-4-157

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