

#### Ecology 8

### Introduction

- This chapter has been prepared by LUC and considers the potential effects of the proposed development 8.1 on ecology. It constitutes an Ecological Impact Assessment (EcIA).
- The chapter presents and interprets the findings of desk-based and field studies and follows good 8.2 practice methods in assessing the potential significance of effects on ecological features.
- The chapter assesses effects during the construction phase of the project; potential operational effects 8.3 on all ecological features have been scoped out of detailed assessment, as discussed further below.
- This chapter should be considered in conjunction with the following chapters, which inform, or have been 8.4 informed by, this assessment:
  - Chapter 2: Approach to the EIA which describes the approach taken to scoping and consultation;
  - Chapter 4: Project Description and Construction, Operation and Maintenance which provides details of the proposed development; and
  - Chapter 5: Planning Policy Context which provides information in relation to nature conservation policy at the national and local level.
  - Chapter 7: Hydrology and Water Resources which considers potential effects on the water environment.
- Appendices include the detailed findings of the desk-based and field studies that have informed this 8.5 assessment. These comprise:
  - Appendix 8.1: Extended Phase 1 Habitat Survey Report;
  - Appendix 8.2: Bat Survey Report; and
  - Appendix 8.3: Fisheries Survey Report

### Scope of Assessment

- As detailed in **Chapter 2**, potential effects arising from the then proposed extension to Glenlee 8.6 substation were originally included in the Scoping exercise associated with the KTR Project (April 2017). SPEN subsequently agreed with D&GC that additional scoping for the proposed development as a standalone project would not be necessary.
- 8.7 In the absence of a formal Scoping exercise, the scope of this chapter has been determined through the findings of preliminary desk study and survey work, the professional judgement of the EIA team and SPEN's experience from other projects of a similar nature. It has also been informed by the scoping exercise undertaken for the KTR Project.

### **Effects Assessed in Full**

- Based on detailed desk studies and field surveys, the following potential effects have been assessed in 8.8 full:
  - construction effects on habitats of conservation concern<sup>1</sup>; and
  - construction effects on protected species.

### **Effects Scoped Out**

- 8.9 Based on detailed desk studies and field surveys, the following potential effects have been scoped out of further assessment:
  - construction effects on designated sites;
  - construction effects on common and widespread habitats; •
  - construction effects on Groundwater Dependent Terrestrial Ecosystems (GWDTEs)
  - construction effects on protected species where surveys highlight a lack of suitable habitat or likely absence (including fisheries);
  - all operational effects on ecological features, on the basis that all likely significant effects will occur during construction when habitats are disturbed or lost; and
  - not warrant consideration of cumulative effects.
- 8.10 Where potential effects on ecological features are scoped out, further information is provided in the relevant technical appendices.

### Assessment Methodology

### **Legislation and Guidance**

### Legislation

- 8.11 Legislation of relevance to statutorily designated sites, protected habitats and protected species, as detailed in this assessment, includes:
  - the Nature Conservation (Habitats, &c.) Regulations 1994 (as amended in Scotland);
  - the Wildlife and Countryside Act 1981 (as amended in Scotland)
  - the Protection of Badgers Scotland Act 1992 (as amended in Scotland);
  - the Water Environment and Water Services (Scotland) Act 2003 (WEWS); and
  - the Water Environment (Controlled Activities) (Scotland) Regulations 2011

### Guidance

- 8.12 Nature conservation policy or guidance of relevance to locally-designated sites and habitats and species of conservation interest, as detailed in this assessment, includes:
  - the Scottish Biodiversity List<sup>i</sup>;
  - the Dumfries and Galloway Biodiversity Action Plan<sup>ii</sup>; and
  - Scottish and Local Planning Policy and Supplementary Guidance, as detailed in Chapter 5
- 8.13 Relevant guidance that informs assessment methods adopted in this chapter includes:
  - Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal, and Marine. CIEEM (2018)<sup>III</sup>;
  - Scottish Natural Heritage, Series on Species Advice Notes for Developers<sup>iv</sup>; and •
  - Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (GWDTE). SEPA (2014).
- 8.14 Further guidance in relation to survey methods and the interpretation of ecological data is referenced in relevant Appendices, where appropriate.

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cumulative effects on ecological features. The proposed development was originally included in the KTR Project Scoping exercise, which explained why cumulative effects would not be assessed. While the proposed development is now considered in isolation, its scale and limited ecological effect does

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As listed in Annex 1 of the Habitats Directive; the Scottish Biodiversity List and the Dumfries and Galloway Biodiversity Action Plan.

### Consultation

8.15 As noted above, consultation specific to the proposed development was not undertaken. This chapter has taken cognisance of consultation responses to the KTR Project and applied these where appropriate, including, in particular, responses from the Scottish Government Energy Consents Unit (ECU), Scottish Natural Heritage (SNH), D&GC and relevant fisheries organisations including the Galloway Fisheries Trust who also undertook surveys for the proposed development (findings presented in Appendix 8.3)

### **Study Area**

8.16 The Study Area adopted in this assessment varies by ecological feature, as defined by best practice, and as detailed in **Table 8.1**. The Site boundary and 2km designated site search buffer are shown spatially in Figure 8.1.

### **Table 8.1: Study Area Description**

Desk-based Studies			
Ecological Feature	Study Area		
Statutory Designated Sites	Planning application site (Site) boundary plus a 2km buffer		
Non-Statutory Designated Sites			
Existing Protected Species Data			
Field Studies			
Habitat and Vegetation Surveys	Site boundary and 50m buffer where access permitted		
Protected Species (incl. bats)	Site boundary and further buffer, up to 200m, as defined by best practice methods.		
Fisheries	Representative sampling points within Site boundary.		

- 8.17 The application includes the construction or upgrade of a number of passing places along the U2S, to the south-west of Glenlee substation, and the A762 between Glenlee and Allangibbon Bridge. Detailed ecological surveys were not undertaken at these locations; however a site visit was made to identify potential likely ecological constraints.
- 8.18 Detailed descriptions of the Study Area, as it relates to each ecological feature, are provided in Appendices 8.1-8.3

#### **Desk Based Research and Data Sources**

- Prior to the commencement of field studies, a desk study was undertaken to identify known ecological 8.19 features within the relevant Study Areas described above. Searches were made for those sites, habitats and species noted above. The following resources were used:
  - SNH SiteLink (statutory designated sites);
  - Dumfries and Galloway Local Development Plan (Non-statutory designated sites)
  - The Ancient Woodland Inventory (AWI);
  - The Carbon and Peatland Map, SNH (2016)
  - National Biodiversity Network Atlas Scotland; and
  - South West Scotland Environmental Information Centre.
- 8.20 Where appropriate, other scientific resources were referred to when determining protected species behaviour or population sizes. These resources are referenced in the chapter where appropriate.
- 8.21 Further information relating to the desk study method is provided in **Appendix 8.1**.

### **Field Survey**

- 8.22 A suite of habitat and species surveys were undertaken to inform this EcIA. Field studies included:
  - Extended Phase 1 Habitat Survey (which include consideration of GWDTEs);
  - Otter survey;

- Bat surveys (including Bat Roost Potential Survey, manual emergence/re-entry and activity surveys, • and static detection surveys); and
- Fisheries survey.
- 8.23 All ecology surveys were undertaken over a two year period, 2017-2019, in appropriate conditions and, where necessary, appropriate seasons. Detailed accounts of survey rationale and methods are provided in Appendices 8.1-8.3.
- 8.24 Although fisheries surveys were undertaken by Galloway Fisheries Trust in 2018 (the full report is provided in Appendix 8.3), embedded Good Practice Measures (e.g. buffers from riparian corridors) and standard construction phase mitigation techniques (e.g. pollution prevention measures) will remove any anticipated significant effects on aquatic receptors, such as salmonids. This approach to aquatic mitigation will also address any biosecurity concerns around aquatic invasive non-native species, such as American signal crayfish. As such, these aquatic receptors have been scoped out of further assessment.

### Determining Ecological Importance, Potential Effects and Effect Significance

8.25 The assessment undertaken in this chapter is based on methods described in 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Marine, and Coastal'. CIEEM (2018). The guidelines recommend that the 'importance' of a given site in relation to each of its ecological features is determined within a defined geographical context. The geographical context as it relates to the proposed development is described in Table 8.2.

#### **Table 8.2 Ecological Importance Criteria**

Ecological Importance	Qualifying Criteria		
	A Study Area is considered of international ecological importance when it supports:	Europe	
International	<ul> <li>An internationally designated site or candidate site (SPA, pSPA<sup>-</sup> SAC, cSAC, pSAC<sup>-</sup> Ramsar site, Biogenetic Reserve) or an area which SNH has determined meets the published selection criteria for such designations, irrespective of whether or not it has yet been notified.</li> </ul>		
	<ul> <li>A viable area of a habitat type listed in Annex 1 of the Habitats Directive, or smaller areas of such habitat which are essential to maintain the viability of that ecological resource at an international scale.</li> </ul>		
	<ul> <li>&gt;1% of the European resource of an internationally important species, i.e. those listed in Annex 1, 2 or 4 of the Habitats Directive.</li> </ul>		
	A Site is considered of national ecological importance when it supports:	UK/Scotland	
UK/National	<ul> <li>A nationally designated site (SSSI, NNR, Marine Nature Reserve) or a discrete area which SNH has determined meets the published selection criteria for national designation irrespective of whether or not it has yet been notified.</li> </ul>		
	<ul> <li>A viable area of a priority habitat referenced in the UK Post-2010 Biodiversity Framework or Scottish Biodiversity List, or smaller areas of such habitat which are essential to maintain the viability of that ecological resource at a national scale.</li> </ul>		
	<ul> <li>&gt;1% of the National Resource of a regularly occurring population of a nationally important species, i.e. a priority species listed in the Scottish Biodiversity List and/or Schedules 1, 5 (S9 (1, 4a, 4b)) or 8 of the Wildlife and Countryside Act.</li> </ul>		
	A Study Area is considered of regional ecological importance when it supports:	South-west	
Regional	<ul> <li>Non-statutory designated sites that represent a scale, or habitat/species assemblage, of importance across a number of counties within a recognised regional context. Non-designated sites that the designating authority has determined meet the published ecological selection criteria for designation, particularly large or represent habitat or species assemblages of importance at a regional level.</li> </ul>	Scotland	
	<ul> <li>Viable and extensive areas of legally protected habitat/habitat identified in Regional BAP or County BAP, or smaller areas of such habitats that are essential to maintaining the viability of the resource at a regional scale.</li> </ul>		
	<ul> <li>Any regularly occurring population of an internationally/nationally important species or a species in a relevant policy which is important for</li> </ul>		

Ecological Importance	Qualifying Criteria	Relevant Context
	the maintenance of the regional meta-population.	
	Semi-natural ancient woodland greater than 0.5ha.	
	A Study Area is considered of county ecological value when it supports:	Dumfries and
	• County sites and other sites which the designating authority has determined meet the published ecological selection criteria for designation, e.g. Local Nature Conservation Sites.	Galloway
County	• Viable areas of legally protected habitat/habitat identified in Council BAP, or smaller areas of such habitats that are essential to maintaining the viability of the resource at a county scale.	
	• Any regularly occurring population of an internationally/nationally important species or a species in a relevant County BAP which is important for the maintenance of the county meta-population.	
	Semi-natural ancient woodland greater than 1ha.	
	Networks of species-rich hedgerows.	
	A Study Area is considered of local ecological value when it supports:	Study Area
Local	• Commonplace and widespread semi-natural habitats, e.g. scrub, poor semi-improved grassland, coniferous plantation woodland, intensive arable farmland, which, despite their ubiquity, contribute to the ecological function of the local area (habitat networks, etc.);	pius a 5km radius.
	• Very small, but viable, populations of internationally/nationally important species or a species in a relevant UK/Council BAP which is important for the maintenance of the local meta-population.	
	Networks of linear features, including species-poor hedgerows	
	A Study Area is considered of Study Area ecological value when it supports:	Study Area
Study Area	Habitats of limited ecological value, e.g. amenity grassland, but which contribute to the overall function of the application site's ecological functions.	

- 8.26 Following the assessment of Ecological Importance, potential effects are identified. This process involves the study of the proposed substation extension's construction methods and timescales with a view to identifying the pathways by which ecological features may be affected. Design and programme information presented in Chapter 4 has informed this stage of the assessment. Similarly, in-built mitigation and sensitive design consideration, also known as 'Good Practice Measures' have been reviewed. Further information on these measures are provided in later sections of this chapter.
- 8.27 Potential direct and indirect effects can be grouped into the following broad types:
  - Direct habitat loss
  - Severance (disruption of ecological processes through fragmentation, isolation and barriers);
  - **Mortality** (loss of life to faunal species or populations, including designated site qualifying features, through direct contact or following pollution events, etc.);
  - Disturbance (disruption to ecological processes through increased human presence, noise, ٠ vibration, etc.).
- 8.28 To determine significance, effects are considered with reference to the following parameters:
  - Positive or negative;
  - Extent;
  - Magnitude;

- Duration;
- Frequency; and
- Reversibility.
- 8.29 A degree of confidence, based on professional judgement, is used to assess the likelihood of an effect occurring. The following scale is referred to:
  - Certain/near-Certain: probability estimated at ≥95%;
  - Probable: probability estimated at 50 95%; •
  - Unlikely: probability estimated at 5 50%; and
  - Extremely unlikely: probability estimated at  $\leq$  5%.
- 8.30 Based on the combination of these parameters and likelihood, an effect is then considered to be either significant or not significant in the context of the EIA Regulations. An effect is considered to be significant if it has the potential to affect the integrity of a habitat or the conservation status of a species. Technical definitions of integrity and conservation status follow CIEEM guidelines<sup>III</sup>.
- 8.31 The significance of a potential effect is considered, using professional judgement, within the context of the geographically-based ecological importance of the feature. For example, the significance of a potential effect on a habitat of local ecological importance is considered to be significant, or not significant, at a Local level. In some cases, where only a small part of an ecological feature is affected, the potential effect may be significant at a lower geographical level; for example, an effect deemed to be significant on a feature of local ecological importance may be only considered significant at the Study Area level.
- 8.32 Best practice guidance<sup>iii</sup> does not recommend that significance is defined as 'major', 'moderate' or 'minor' due to the complexities of ecological processes. Therefore, for the purposes of EcIA, all 'significant' effects are considered significant within the context of the EIA Regulations.
- 8.33 However, to allow the potential effects identified in this EcIA to be considered alongside those addressed in other topic chapters, a 'conversion' has been undertaken as set out in **Table 8.3**. Converted effects of Major and Moderate are considered 'significant' in the context of the EIA Regulations.

### **Table 8.3 Effect Significance Conversion**

EcIA Significance	Conversion
Site	Minor
Local	Minor
County	Moderate
Regional	Moderate
UK/National	Major
International	Major

### **Identifying Mitigation and Assessing Residual Significance**

- 8.34 Where potential significant effects are identified, mitigation measures are identified to reduce their significance. The standard mitigation hierarchy applies, whereby the following sequential measures are considered:
  - Avoidance: the effect is avoided by removing its pathway, e.g. by changing the route of an access track to avoid broadleaved woodland;
  - undertaken outside the breeding bird season to avoid disturbing and damaging nest sites; and
  - **Compensation**: where the effect cannot be reduced, alternative action is taken elsewhere within the site boundary, e.g. landscape proposals include native species of local provenance.
- 8.35 Using the assessment method described above, significant effects are re-assessed on the basis that mitigation measures will be applied, and a residual significance identified. An important part of this step is the identification of the likely success, or confidence in, the proposed mitigation measure.

**Mitigation**: measures are taken to reduce the significance of the effect, e.g. vegetation clearance is

### **Assessment Limitations**

8.36 Ecological surveys are limited by a variety of factors which affect the presence of flora and fauna; for example, climatic variation, season, and species behaviour may mean that evidence of protected species is not always recorded during a survey. This does not mean that a species is absent; hence the surveys also record and assess the ability of habitats to support species. All ecological surveys provide a snapshot of activity and cannot be used for long-term interpretation. Within these constraints, it is considered that the baseline data collected has allowed a robust and thorough assessment of potential effects to be undertaken. A further account of constraints is provided in Appendices 8.1-8.3

### **Existing Conditions**

### **Designated Sites**

- 8.37 Appendix 8.1 provides further detail in relation to designated sites while Figure 8.2<sup>2</sup> shows their spatial arrangement.
- 8.38 There are no statutory designated sites<sup>3</sup> within the Site boundary. However, the following non-statutory designated area was identified within the Site Boundary:
  - Black Bank Wood AWI Site located partly with the Site, at the Site's southern boundary. Although this woodland feature is designated as an AWI site, the part of the designation within the Site had been felled and recently replanted with broadleaved stock. Although located within the Site, no works are proposed within or adjacent to the designation.
- 8.39 Statutory designated sites within 2km of the Site boundary include:
  - Water of Ken Woods SSSI comprising five distinct woodland units over a wider area, this SSSI is designated for its lichen assemblages and upland oak woodland. Glenlee substation is located between two of these blocks. Carse wood is located approximately 200m north-west, while Glenlee Park is located approximately 50m to the east. Despite their proximity, there is no structural or functional connectivity between the Site and the SSSI woodlands.
  - Hannaston Wood SSSI located adjacent to the Water of Ken Woods SSSI located to the north of Glenlee and on the opposite side of the U2s, this SSSI is also designated for its lichen assemblages and upland oak woodland, as well as lowland neutral grassland habitat. There is no structural or functional connectivity between the Site and the SSSI.
- 8.40 As the proposed development will not affect the structure or function of either the AWI or SSSI, they are not further considered in this assessment.

### Habitats and Vegetation

- Appendix 8.1 provides further detail in relation to the Study Area's habitat assemblages while Figure 8.41 8.3 shows Phase 1 Habitat Survey mapping.
- 8.42 The Study Area's habitats are predominantly agricultural grasslands, typical of the wider lowland environment. The composition of the grasslands are influenced by two factors:
  - Grazing livestock are present within the Study Area and they have affected the diversity of the grassland swards identified. Grazing pressure was most noticeable in the north-west where grassland were largely categorised as 'improved'.
  - Topography the main part of the Site slopes steeply from south-west to north-east and, as a consequence, surface water movement affects grassland assemblage. 'Marshy grassland' was recorded in a number of locations where water temporarily slows due to topographical constraints.
- 8.43 Other grasslands present include semi-improved neutral grassland, which represents a slightly more diverse sward as a consequence of reduced grazing pressure.
- Other habitats within the Study Area included broadleaved woodland which, other than the small section 8.44 of Black Bank Wood, largely comprised isolated stands of oak, ash, beech and alder. The exception is

an area of broadleaved woodland, in assemblage with mixed woodland, immediately adjacent to the existing substation's informal overflow carpark. Woodland at this location is connected to riparian habitat along the Water of Ken.

- 8.45 Other habitats of note include the swampy, ruderal habitats immediately adjacent to the Water of Ken and other areas where pooling water has allowed the establishment of species such as *Phragmites*. A short spur of the Water of Ken and a number of drainage ditches were also recorded, however the latter were largely dry at the time of survey.
- 8.46 **Table 8.4** provides a brief summary of the habitat composition of the Study Area.

### Table 8.4: Habitat Types and Percentage Coverage

Habitat type	Area within Study Area (Ha)	Proportion of Study Area (%)
A1.1.1 Broadleaved woodland (semi-natural)	2.512	15.08%
A1.1.2 Broadleaved woodland (plantation)	0.826	4.96%
A1.3.2 Mixed woodland (plantation)	0.083	0.49%
A2.1 Scrub (dense/continuous)	0.617	3.70%
B2.2 Neutral grassland (semi-improved)	0.197	1.18%
B2.2 Neutral grassland (semi-improved)/A3.1 Broadleaved scattered trees	1.573	9.44%
B4 Improved grassland	2.423	14.54%
B5 Marshy grassland	3.751	22.51%
B5 Marshy grassland/A2.2 Scrub (scattered)	0.063	0.38%
C1.1 Bracken (continuous)	0.136	0.91%
C1.1 Bracken (continuous)/ A3.1 Broadleaved scattered trees	0.016	0.1%
C3.1 Other tall herb and fern (ruderal)	0.062	0.38%
C3.2 Other tall herb and fern (non-ruderal)	0.131	0.78%
F1 Swamp	0.064	0.38%
G2 Running water	0.527	3.16%
HS Hardstanding	0.784	4.71%
J5 Other habitat/Survey not required	2.895	17.37%
Total	16.662	100.00%

- 8.47 As noted above, the habitats in the proposed passing places were not surveyed in detail. Instead, a brief site walkover was undertaken to identify any potential constraints, particularly in relation to protected species. Habitats within proposed passing places were broadly typical of roadsides, comprising amenity grassland (heavily influenced by salt enrichment) and scrub with occasional semimature and mature trees.
- 8.48 The majority of the habitats within the Study Area were considered to be common and widespread within the lowland agricultural context and are scoped out of this assessment. However, Table 8.5 provides further details of those habitats of conservation concern identified during field surveys.

### **Table 8.5: Habitats of Conservation Concern**

Phase 1 Habitat Type	Policy Priority	Description	Total Habitat Area (ha)
Broadleaved woodland (semi-natural and plantation)	Scottish Biodiversity List and Dumfries and Galloway Biodiversity Action Plan	Woodland cover on site is primarily limited to the peripheries. In general, it is typical of the surrounding landscape.	3.338
Marshy Grassland	Dumfries and Galloway Biodiversity Action Plan	The marshy grassland within the Site varies little on location. It is dominated by purple-moor grass and soft rush. It is located throughout the site and can be attributed primarily to the	3.751

<sup>&</sup>lt;sup>2</sup> Data from SNH.

<sup>&</sup>lt;sup>3</sup> Note that as ornithology has been scoped out of assessment, sites designated for their ornithological features are not included here. This includes Special Protection Areas (SPAs) and SSSIs notified for their avian assemblages.

Phase 1 Habitat Type	Policy Priority	Description	Total Habitat Area (ha)
		topography. Water run-off from the slopes south of the Site, flows down to more level areas before feeding into Coom Burn and the Water of Ken.	
Rivers (Water of Ken)	Scottish Biodiversity List	The river systems are not being directly affected by the proposed development. The river system supports a wide variety of flora and fauna.	0.527

8.49 Marshy grassland habitats include NVC communities that could indicate groundwater dependency. However, the steeply sloped nature of the habitat Study Area and its clear relationship with the Water of Ken suggests that these habitats are the consequence of surface water flow. GWDTEs are not considered to be present and are not considered further in this assessment.

### **Protected Species**

### Badger

8.50 The Study Area supported extensive suitable habitat for badger. The mosaic of broadleaved woodland and grassland offered suitable sett excavation and foraging opportunities while the adjacent Water of Ken provided dispersal routes. However, despite suitable habitat being present, no evidence of the species was recorded. Badger is therefore not further considered in this assessment. Further information is provided in Appendix 8.1.

### Red squirrel

- 8.51 Central Dumfries and Galloway is often considered a 'hot spot' for red squirrel, however this is normally associated with the County's extensive coniferous forestry habitats. The Study Area offers some suitable habitat for red squirrel, primarily in the form of broadleaved woodland, which offers sheltering and foraging opportunities.
- 8.52 Although no dreys or foraging remains were recorded during the Extended Phase 1 Habitat Survey, a single red squirrel was observed in the north west of the Study Area, suggesting their presence in the wider area. Although no dreys were recorded, it should be recognised that surveys were undertaken during summer months when canopies were at their densest and may have obscured dreys from observation.
- 8.53 Further information is provided in **Appendix 8.1** while red squirrel evidence is presented in **Figure 8.4.**

### Bats

- 8.54 Bat Roost Potential (BRP) was identified in a number of buildings within the existing substation and within ten mature trees scattered within the site boundary.
- 8.55 Bat surveys involved a number of techniques including climb-and-inspect surveys, roost emergence/reentry surveys, transects and automated static recordings.
- 8.56 One roosting soprano pipistrelle was recorded within an existing substation building while automated static surveys recorded a moderate volume of bat passes across the Study Area. As is typical of this part of Scotland, the assemblage was dominated by soprano pipistrelle, however a very low number of registrations of *Myotis, Plecotus* and *Nyctalus* were also recorded.
- 8.57 Further information is provided in **Appendix 8.2** while bat evidence is presented in **Figure 8.4**.

### Otter and Water vole

8.58 There are a number of drainage ditches within the site boundary. However, at the time of survey, many of these were dry. Those that weren't dry were shallow with a maximum width of 1m. In-stream vegetation was lacking while bankside vegetation, largely rush, was poached and trampled by livestock in many locations. An existing culvert beneath the substation creates a functional break between the drainage ditches and the Water of Ken. No evidence of otter or water vole was recorded along the drainage ditches.

- 8.59 In the north, the Study Area also supports the Water of Ken and Coom Burn. Both offer suitable habitat for otter, particularly in terms of sheltering and foraging. Spraint was recorded on both watercourses, within the Study Area. The fast flow of water in these watercourses largely precludes water vole.
- 8.60 Based on the likely absence of water vole from the Study Area, this species is not further considered in this assessment.
- 8.61 Further information is provided in **Appendix 8.1** while otter evidence is presented in **Figure 8.4**. Fisheries

### 8.62 A detailed fisheries survey is presented in **Appendix 8.3.** The survey, which also included a search for evidence of white clawed crayfish, identified suitable habitat but no evidence of either taxa. The survey noted the presence of an existing grilled culvert as a significant barrier to movement between the site and the adjacent Water of Ken.

8.63 On the basis that the good practice measures in relation to pollution prevention have been built into project design, fisheries are not further considered in this assessment.

### **Implications of Climate Change**

- 8.64 The predicted effects of climate change are likely to influence the future ecological status of the Study Area. Drawing on the UK Climate Projections CP18, which generally predict hotter, drier summers and milder, wetter winters, it is likely that ecological features will be subject to:
  - An increase in invasive species diversity and range.
  - Changes to vegetation assemblages.
  - Range contraction/expansion of faunal species
- 8.65 These predicted changes to the climate are unlikely to significantly affect the findings of this assessment, if they occur.

## The 'Do Nothing' Scenario

- 8.66 Ecological features are rarely static in their extent, distribution and condition. Habitats and species populations are dynamic and so the prediction of future baseline is complex.
- 8.67 However, in the absence of the Glenlee substation extension project it is likely that existing land uses will persist and habitat structure, function and protected species assemblages will broadly reflect their current condition. The exception to this is in relation to bats. In the absence of silvicultural management, it is likely that the site's trees will increase in their value for roosting bats.

## Micrositing

8.68 The proposed development layout has been designed to avoid effects on ecology as far as possible, but it is possible that further micrositing of temporary works may be necessary. The design of the substation extension is considered to be sufficiently progressed that micrositing of the permanent infrastructure is unlikely to be required. Any minor (non-material) changes would be within the site boundary, would be agreed with D&GC, and would not affect the findings of the assessment.

## Design Considerations and Good Practice Measures

- 8.69 Where possible, the design process has sought to retain existing vegetation, including mature broadleaved trees and woodland. This is particularly important in maintaining ecological connectivity across the site. In addition to retention, proposed screen planting will be locally-sensitive and will only include native species of local provenance.
- 8.70 A Soil Resources Management Plan (SRMP) will be prepared prior to construction and will ensure topsoil is separated, retained and reused during restoration phases, particularly around construction compounds and temporary access roads.

8.71 A detailed Construction Environment Management Plan (CEMP) will be developed prior to construction and will set out detailed measures to protect the water environment during construction and operational phases. The principles of pollution prevention have been included in project design.

### Assessment of Effects

8.72 The assessment of effects is based on the project description as outlined in **Chapter 4: Project** Description and Construction, Operation and Maintenance.

### **Identification of Ecological Importance**

8.73 **Table 8.6** provides an interpretation of the Study Area's Ecological Importance for those habitats and species scoped into the assessment.

### Table 8.6: Ecological Importance Assessment

Ecological Feature		Ecological Importance of Study Area for Feature	Rationale	
		<sup>1</sup> Study Area	With the exception of Black Bank Wood, which won't be affected by proposals, the Study Area's broadleaved woodland resource is limited. In the west of the Study Area the woodland is relatively isolated and its ground layer is heavily affected by livestock grazing pressure.	
Broadlea woodland	Broadleaved woodland		Woodland in the north of the Study Area, adjacent to the substation's existing overflow car park is more diverse, less disturbed and better connected via its proximity to the Water of Ken.	
			However, the very small scale nature of the overall resource suggests it is only of Ecological Importance at the Study Area level, i.e. it does not contribute significantly to woodland resources beyond that geographical scale.	
Habitats of Conservation Concern Marshy grassland		The Study Area's marshy grassland comprises areas of rough pasture where topographical constraints results in the slowing and partial pooling of surface water.		
	Marshy grassland	Study Area	Species assemblages are limited to those species that can withstand grazing pressure and very few forbs were identified.	
			While marshy grassland is recognised in the Local Biodiversity Action Plan, the Study Area's resource is broadly similar to the wider landscape's plentiful grazed marshy grassland resource.	
	Rivers	Study Area	The Study Area includes the tailrace of the Glenlee hydro power station, which forms a short spur of the Water of Ken. In its own right, the watercourse within the Study Area is of limited Ecological Importance as it offers very limited connectivity or species diversity.	
Red squirrel			While the species was confirmed as present during surveys, the Study Area has only marginal suitability for the species.	
		Study Area	Field signs were generally absent, suggesting that, while present, the Study Area does not support a population of particular importance to the viability of the meta-population.	
Bat		Study Area	Although the Study Area supports wide ranging suitable habitat for bats, only a single roosting bat was identified.	
			Activity surveys identified moderate foraging activity, but the species assemblage was dominated by	



### **Identification of Potential Effects**

8.74 In the table below, project information set out in **Chapter 4** is used identify construction activities, pathways to effects and subsequent broad effect types.

### **Table 8.7: Potential Effect Identification**

Ecological Feature	Development Activity	Potential Effect Pathway	Potential Effect
Habitats of Conservation	<ul> <li>Vegetation removal to facilitate enabling works</li> </ul>	<ul> <li>Physical removal of habitat</li> </ul>	Direct Habitat Loss
	<ul><li>Diversion of drainage ditches</li><li>Extension of existing culvert</li></ul>	Changes in water     quality and volume	Severance
Red squirrel	Vegetation removal to facilitate     enabling works	Physical removal of sheltering and foraging habitat	Direct Habitat Loss
	Construction, including the use of plant, equipment and presence of site	Accidental disturbance	Mortality
	STATT	plant	Disturbance
Bats	Vegetation removal to facilitate     enabling works	<ul> <li>Physical removal of roosting and foraging habitat</li> </ul>	Direct Habitat Loss
	<ul> <li>Construction, including the use of plant, equipment and presence of site staff</li> </ul>	<ul> <li>Accidental disturbance from site staff and</li> </ul>	Mortality
	The use of security lighting at compound locations	plant	Disturbance
Otter	Construction, including the use of     plant, aggingent and processes of site	Accidental disturbance     from site staff and	Mortality
	staff	plant	Disturbance

### **Potential Effect Significance**

8.75 Having identified the Ecological Importance of the Study Area, and potential effects, for scoped-in ecological features, the sections below consider significance.

### Habitats of Conservation Concern

8.76 The Study Area is considered to be of 'Study Area' Ecological Importance for Habitats of Conservation Concern. This relatively low level of importance reflects the limited size, connectivity and diversity of the habitats. Table 8.8 provides details of the scale of habitat loss associated with the proposed development.

### **Table 8.8: Habitat Loss Calculations**

Phase 1 Habitat Code	Existing Res		
	Absolute (ha)	Relat	

### Rationale

soprano and common pipistrelles, both of which are common and widespread in Scotland.

In the absence of more important roosts, or more diverse species assemblages, the Study Area cannot be considered of more than 'Study Area' Ecological Importance for bats.

Watercourses within the Study Area offered suitable habitat for the species however activity was limited to two spraints; one on the Water of Ken and one on the Coom Burn. Both watercourses are considered, then, to form part of an activity territory, however the absence of resting sites suggests that the Study Area does not form a core part the territory.



Phase 1 Habitat Code	Existing Resource		Area to be	Relative (% of
Broadleaved woodland	3.338	20%	0.054	2%
Marshy grassland	3.814	23%	1.046	27%

8.77 In considering the above, **Table 8.9** assesses the significance of potential effects.

### Table 8.9: Assessment of Potential Effect Significance – Habitats of Conservation Concern

Parameter	Potential Effect			
rurunceer	Direct Habitat Loss	Severance		
Extent	Permanent loss of both broadleaved woodland and marshy grassland is limited to a very small proportion of the wider available Dumfries and Galloway resource.	Severance relates only to watercourses within the Study Area, as a consequence of culvert extension.		
	A small area of open watercourse will be lost.			
	Commitments to the use of native species in landscape proposals will partly offset the effect of broadleaved woodland loss. Similarly, the use of marshy grassland seed mixes will achieve a similar result.			
Magnitude	The loss of broadleaved woodland, marshy grassland and open watercourse will not result in changes to the viability of these habitats beyond the Study Area level.	Limited to watercourses within the Study Area, as a consequence of culvert extension.		
Duration	Permanent	Permanent		
Frequency	Perpetual	Perpetual		
Reversibility	Irreversible	Irreversible		
Likelihood	Certain	Certain		
Significance (EcIA)	Not Significant	Not Significant		
Conversion	None	None		
(EIA Regs)				

### Red Squirrel

- 8.78 The Study Area is considered to be of 'Study Area' Ecological Importance for red squirrel. Evidence of the species was limited to a single sighting; however dense canopies at the time of survey could have obscured dreys.
- 8.79 Habitat within the Study Area is marginally suitable, however it is recognised that this part of Dumfries and Galloway is considered a 'hot spot' for the species. Table 8.10 assesses the significance of potential effects.

### Table 8.10: Assessment of Potential Effects – Red squirrel

Paramotor	Potential Effect			
Faranieter	Direct Habitat Loss	Mortality	Disturbance	
Extent	Limited to a relatively small area (0.054ha) of suitable habitat, which may support dreys.	Likely limited to a relatively small proportion of the wider population (on the basis of the limited scale of suitable habitat loss).	Limited to potential interactions between works and species, e.g. on woodland edges, particularly at both proposed construction compounds.	
Magnitude	Limited to a small proportion of wider suitable resources for the species. Notably the Study <b>Area's habitat is only marginally</b> suitable.	On the basis that the resident population is small, any mortality could result in the Study Area population becoming unviable.	Significant disturbance could affect breeding success at Study Area population level.	
Duration	Permanent	Two months of felling	Duration of construction programme (greatest disturbance during the first half)	

Parameter		Potential Effect	
Frequency	Perpetual	One off event during felling	Potentially repeatedly during construction programme
Reversibility	Functionally irreversible	Potentially irreversible at the Study Area population level	Reversible at the individual animal level and likely at Study Area population level
Likelihood	Certain	Possible	Unlikely
Significance (EcIA)	Not significant	Significant (Study Area)	Not significant
Conversion (EIA Regs)	None	Minor	None

### Bats

8.80 The Study Area is considered to be of 'Study Area' Ecological Importance for bats. While roosting activity was low, potential for roosting was high across the Study Area. Activity levels were moderate and largely related to foraging. Species assemblages were dominated by common and widespread pipistrelle species. **Table 8.11** assesses the significance of potential effects.

### Table 8.11: Assessment of Potential Effects – Bat

Parameter		Potential Effect		
Farameter	Direct Habitat Loss	Mortality	Disturbance	
Extent	Limited to a relatively small number of trees, associated with felling to support enabling works. Notably no works are proposed to the existing building where the only roost was identified.	Bats can roost in large numbers in trees, establishing important maternity colonies quickly. While no roosts were identified during surveys, the Study <b>Area's trees</b> are likely to become increasingly important for bats and roosts may form before construction works commence. This may include maternity roosts.	Limited to potential interactions between works and species, e.g. on woodland edges, particularly at both proposed construction compounds where night-time lighting is proposed.	
Magnitude	Bats can roost in large numbers in trees, establishing important maternity colonies quickly. While no roosts were identified during surveys, the Study <b>Area's trees are likely to</b> become increasingly important for bats and roosts may form before construction works commence.	Loss of maternity roosts could have an effect on species viability at the Study Area level.	Loss of maternity roosts could have an effect on species viability at the Study Area level.	
	Loss of maternity roosts could have an effect on species viability at the Study Area level.			
Duration	Permanent	Two months of felling	Duration of construction programme (greatest disturbance during the first half)	
Frequency	Perpetual	One off event during felling	Potentially repeatedly during construction programme	
Reversibility	Irreversible	Potentially irreversible at the Study Area population level	Reversible at the individual animal level and likely at Study Area population level	
Likelihood	Certain	Possible (based on current programme)	Likely	
Significance (EcIA)	Significant (Study Area)	Significant (Study Area)	Significant (Study Area)	
Conversion	Minor	Minor	Minor	
(EIA Regs)				

### Otter

- 8.81 The Study Area is considered to be of 'Study Area' Ecological Importance for otter. Field signs were limited to spraint on watercourses beyond the northern boundary of the site. However, the proposal for a construction compound in the existing substation overflow carpark, which abuts the Water of Ken, could bring construction and otter into conflict.
- 8.82 In considering the above, **Table 8.12** assesses the significance of potential effects.

### Table 8.12: Assessment of Potential Effect Significance – Otter

Darameter	Potential Effect			
i di dilicter	Mortality	Disturbance		
Extent	Limited to an individual otter that moves into the construction compound area during foraging or commuting.	Limited to an individual otter that forages and commutes past the construction compound.		
	The effect would be experienced as a consequence of collision with plant or vehicles.			
Magnitude	As otter territories are very large, the loss of a single otter could have implications for a wider meta-population	Limited to effects on an individual animal		
Duration	Permanent	Duration of construction programme (greatest disturbance during the first half)		
Frequency	Potentially multiple events during construction programme	Potentially multiple events during construction programme		
Reversibility	Irreversible	Reversible		
Likelihood	Very unlikely <b>on the basis of the species'</b> crepuscular nature (active at dawn and dusk).	Very unlikely on the basis of the species' crepuscular nature (active at dawn and dusk).		
Significance (EcIA)	Not Significant	Not Significant		
Conversion	None	None		
(EIA Regs)				

### Proposed Mitigation

- Mitigation measures are set out below for potential negative significant (EcIA) effects identified in 8.83 Tables 8.9-8.12. Specific mitigation is designed to reduce the significance of effects, while general site-wide mitigation provides a mechanism for measures that will support compliance with wildlife legislation, irrespective of the significance of effects.
- 8.84 Mitigation measures set out in the table below represent a combination of standard, well-rehearsed techniques and measures specifically designed for the proposed development. It is extremely likely that these mitigation measures will be successful. Good Practice Measures, described at the outset of this chapter, are not repeated below.

### **Table 8.13: Proposed Mitigation**

Ecological Feature	Potential Effect	Specific Mitigation	General site-wide mitigation
Red Squirrel	Mortality	<ul> <li>Pre-construction surveys, no more than six months prior to felling, to identify changes in baseline. This should include trees within proposed passing places.</li> <li>Species licensing route where surveys suggest presence of resting sites.</li> <li>Sensitive timing of felling works to avoid breeding season where pre-</li> </ul>	<ul> <li>Preparation of Species         Protection Plans for felling             and construction phases, as             part of the project's wider             CEMP. The Species             Protection Plans should set             out measures to protect all             species covered by             legislation in the UK.             Species Protection Plans             should include nesting birds             which, although not scoped             into the assessment, are         </li> </ul>



#### Residual Construction Effects

8.85 On the assumption that mitigation measures are successfully and correctly applied, there are no likely significant residual effects.

## Further Survey Requirements and Monitoring

8.86 Monitoring requirements are limited to pre-construction surveys. These should form part of the ECoW role, which should be appointed and developed at an early stage and in consultation with relevant stakeholders.

### Summary of Effects

8.87 **Table 8.14** below summarises the predicted effects of the proposed development on ecology, including 'not significant effects' which do not require mitigation measures. General site-wide mitigation is as detailed in Table 8.13.

### Table 8.14: Proposed Mitigation

Ecological Feature	Potential Effect	Significance	Specific Mitigation	Significance of Residual Effect
Habitats of Conservation Concern	Direct Habitat Loss	None	N/A	None
	Severance	None	N/A	None
	Direct Habitat Loss	None	N/A	None
Red Squirrel	Mortality	Minor	<ul> <li>Pre-construction surveys, no more than six months prior to felling, to identify changes in baseline. This should include trees within proposed</li> </ul>	None

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tigation	General site-wide mitigation
ction surveys identify e of dreys.	legally protected.
talks for all site tors.	Environmental Clerk of Works (ECoW) during all
on of trees with BRP possible.	ongoing support and monitoring. The ECoW role
struction surveys, no an six months prior g, to identify s in baseline. s may include climb- pect approach or surveys of individual art of ECoW role).	should be developed in accordance with current good practice guidelines <b>Error! Bookmark</b> not defined.
e timing of felling o avoid breeding where pre- ction surveys identify	
tion of bat roost n retained trees. Up boxes, similar to the ler 1FF box, should ted as advised by the ECoW.	
talks for all site tors.	

Ecological Feature	Potential Effect	Significance	Specific Mitigation	Significance of Residual Effect
			passing places.	
			Species licensing route where surveys suggest presence of resting sites.	
			• Sensitive timing of felling works to avoid breeding season where pre- construction surveys identify presence of dreys.	
			• Toolbox talks for all site contractors.	
	Disturbance	None	N/A	None
Bats	Direct Habitat Loss	Minor	Retention of trees with BRP where possible.	None
	Mortality	-	Pre-construction surveys, no more     then site menths price to folling, to	
	Disturbance	-	identify changes in baseline. Surveys may include climb-and-inspect approach or activity surveys of individual trees (part of ECoW role).	
			<ul> <li>Sensitive timing of felling works to avoid breeding season where pre- construction surveys identify roosts.</li> </ul>	
			<ul> <li>Installation of bat roost boxes on retained trees. Up to nine boxes, similar to the Schwegler 1FF box, should be erected as advised by the project ECoW.</li> </ul>	
			• Toolbox talks for all site contractors.	
Otter	Mortality	None	N/A	None
	Disturbance	None	N/A	None

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<sup>&</sup>lt;sup>1</sup>Scottish Biodiversity List (2013). Available at https://www.gov.scot/Topics/Environment/Wildlife-Habitats/16118/Biodiversitylist/SBL

<sup>&</sup>lt;sup>ii</sup> The Dumfries and Galloway Biodiversity Action Plan. Available at https://swseic.org.uk/resource/dglbap-part2/

<sup>&</sup>lt;sup>iii</sup> Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine. 3<sup>rd</sup> Edition. CIEEM (2018)

<sup>&</sup>lt;sup>iv</sup> Available at https://www.nature.scot/professional-advice/planning-and-development/natural-heritage-advice-planners-and-developers



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## Figure 8.3: Phase 1 Habitat Survey

	Planning application boundary
	Substation extension
c,	Temporary compound and access for main works
c, n	Temporary construction vehicle holding area
	Drainage ditch diversion
	Glenlee Site Boundary 50m buffer (excluding access)
Phase ?	1 habitat (linear features)
	J2.1.2 Intact hedge (species-poor)
	J2.5 Wall
	J2.6 Dry ditch
• • •	TL Tree line
Phase ?	1 habitat
	A1.1.1 Broadleaved woodland (semi- natural)
	A1.1.2 Broadleaved woodland (plantation)
	A1.3.2 Mixed woodland (plantation)
	A2.1 Scrub (dense/continuous)
	B2.2 Neutral grassland (semi-improved)
	B2.2 Neutral grassland (semi-improved) / A3.1 Broadleaved scattered trees
	B4 Improved grassland
	B5 Marshy grassland
	B5 Marshy grassland / A2.2 Scrub (scattered)
	C1.1 Bracken (continuous)
• •	C1.1 Bracken (continuous) / A3.1 Broadleaved scattered trees
	C3.1 Other tall herb and fern (ruderal)
• •	C3.2 Other tall herb and fern (non ruderal)
sale: """	F1 Swamp
	G2 Running water
	Survey not required

SP ENERGY NETWORKS



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