Appendix 10.1
Desk Study and Legal Context

Contents

Figures

Appendix 10.1: Desk Study and Legal Context

Introduction

10.1.1 This Appendix provides the findings of a desk study undertaken to inform an Ecological Impact Assessment (EcIA) of the proposed Kendoon to Tongland 132kV (kilovolts) Reinforcement Project (' 'the KTR Project'). It includes an account of the methods adopted and findings.

10.1.2 The Appendix also sets out the legal context that creates the mechanism for designated sites and protected species, which form the basis of the EcIA.

10.1.3 This Appendix should read in conjunction with Chapter 10: Ecology of the Environmental Impact Assessment (EIA) Report.

Relevant Legislation

10.1.4 The protections afforded to ecological features in Scotland are enshrined in the following key legislative instruments:

- The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended);
- The Wildlife and Countryside Act 1991 (as amended);
- The Nature Conservation (Scotland) Act 2004; and
- The Protection of Badgers Act 1992 (as amended).

10.1.5 A brief summary of each piece of legislation is provided below, with specific reference to development management.

10.1.6 It should be noted that protections offered to ecological features through national or local planning policy are not discussed in this section, nor are protections specifically offered to avian features (which are discussed in Chapter 11: Ornithology of the EIA Report. The protections offered to ecological and avian features and through national and local planning policy are addressed in Chapter 6 : Planning Policy Context

The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)

10.1.7 The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) transpose a number of European Union Directives into UK law and provide the highest level of legal protection available to ecological features. The Regulations make provision for the following protected sites and species.

The 'Natura 2000' Network

10.1.8 The 'Natura 2000' network extends to a Europe-wide system of sites designated for their ecological value. Sites are either designated as Special Areas of Conservation (SACs), the qualifying features for which are normally internationally important habitats or species assemblages, or Special Protection Areas (SPAs), which qualifying for their assemblages of birds.

10.1.9 SPAs and SACs receive considerable protection through the Regulations and these protections are normally reflected in national and local planning policy. Where developments have the potential to affect SPAs or SACs, an assessment process (Habitat Regulations Assessment) must first be undertaken.

10.1.10 In order that potential effects on the Natura 2000 network can be fully understood, it is important that they are considered fully in EcIA desk studies.

European Protected Species (EPS)

10.1.11 The Regulations afford wide-ranging protections to a list of species considered to be of international conservation importance. A species is normally considered important where it plays an important role in wider ecosystems and has historically suffered significant population decline. With regard to EPS, it is an offence to:

- capture, injure or kill such an animal;
- harass an animal or group of animals;
- disturb an animal while it is occupying structure or place used for shelter or protection;
- disturb an animal while it is rearing or otherwise caring for its young;
- obstruct access to a breeding site or resting place, or otherwise deny an animal use of a breeding site or resting place;
- disturb an animal in a manner or in circumstances likely to significantly affect the local distribution or abundance of the species;
- disturb an animal in a manner or in circumstances likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young;
- disturb an animal while it is migrating or hibernating;
- take or destroy its eggs (in Scotland, this is relevant only to the great crested newt and natterjack toad); and
- disturb any cetacean (dolphin, porpoise or whale).

The Wildlife and Countryside Act 1991 (as amended)

10.1.12 The Wildlife and Countryside Act 1991 (as amended) (WCA) is domestic legislation that regulates the management of invasive species and provides protections for species of national conservation importance. Important features of the legislation in relation to protected species are set out below.

Protected Species

10.1.13 Under the WCA, species considered to be of national conservation importance receive legal protections, often very similar to the protections available to EPS. For this reason, it is important that EcIA desk studies identify existing records of WCA protected species.

The Nature Conservation (Scotland) Act 2004

10.1.14 The Nature Conservation (Scotland) Act 2004 (2004 Act) Act details measures designed to conserve biodiversity and to protect and enhance the biological and geological natural heritage of Scotland. The 2004 Act details the arrangements for the establishment and protection of Special Site of Scientific Interest's (SSSI) and replaces much of part II of the WCA. Section 12 of the 2004 Act imposes a duty on the exercise by a public body or office-holder of any function on, or so far as affecting, any land which is or forms part of a SSSI to further the conservation and enhancement of the features specified in the SSSI notification.

Sites of Special Scientific Interest (SSSI)

10.1.15 The SSSI network in the UK extends to a system of sites designated for their national conservation value. Sites are designated for their biodiversity, habitats or species assemblages. Any development proposals which affect a site designated as a SSSI will require to be considered in terms of the duty under section 12 of the 2004 Act as well as having regard to any policy tests.

10.1.16 Subject to certain exceptions, SSSI consent is required for development within a SSSI. SSSI consent will often necessitate extensive mitigation or compensation. For this reason, it is important that EcIA desk studies identify SSSIs that may be affected by proposed development.

The Protection of Badgers Act (1992)

10.1.17 Although badgers are not rare in Scotland, they continue to receive protection due to the high levels of persecution they suffer. Badgers and their setts receive protection against killing, disturbance and destruction and, therefore, knowledge of existing records is of importance to EcIA desk studies.

Desk Study

Method

10.1.18 The table below lists the features targeted in the desk study, and the resources used to identify them. In order that the study was appropriately focussed, buffers were applied and these are also shown in the table.

Table 1: Desk Study Targets

Ecological Feature	Comment	Desk Study Resource	Buffer from site boundary (km)
Statutory Designated Sites	To include: • Natura 2000 network sites • SSSIs	Scottish Natural Heritage (SNH) Site Link Website[1]	5
Non-statutory Designated Sites	To include: • Local Nature Conservation Sites (LNCS) • Ancient/Long-established Woodland	Dumfries and Galloway Local Development Plan (LDP) Ancient Woodland Inventory [2]	5
Existing records of deep peat and carbon rich soils		The Carbon and Peatland Map. SNH (2016)	5
Existing Records of EPS and WCA Protected Species	To include all native EPS and WCA protected species	National Biodiversity Network Atlas Scotland[3] Forestry Commission Scotland Data	5

Designated Sites

10.1.19 The designated sites within the buffers described above are presented in Figure 1. Due to the linear nature of the KTR Project, several of the designated sites are affected by more than one connection. Each connection's Statutory designation sites within the Study Area are listed in Table 2 below, non-statutory designations are listed in Table 3.

Polquhanity to Glenlee (via Kendoon) Including Removal of N and R Route (North)

10.1.20 There are no statutory designated sites within the proposed development footprint, wayleave or wider windthrow areas. The nearest statutory designated sites (<1km) are:

- Cleugh SSSI – c.800m east – designated for its lowland neutral grassland.
- Hannaston Wood SSSI – c.900m west – designated for its lichen assemblages, upland oak woodland and neutral grassland.
- Water of Ken Woods SSSI – c.500m south-west – designated for lichen assemblages and upland oak woodland.

10.1.21 With the exception of the Water of Ken SSSI, there is no structural or functional connectivity between the Polquhanity to Glenlee via Kendoon (P-G via K) connection and the statutory designated sites. The Water of Ken SSSI comprises series of units across a wider area of woodland. While the P-G via K connection does not bisect any of the units, it does pass through woodland that provides connectivity between units.

10.1.22 Three distinct Ancient Woodland Inventory (AWI) sites are located within the wayleave. These are located immediately north of Kendoon substation, at Knocknalling wood and at Hag Wood. It should be noted that while Hag Wood is recorded on the inventory, the designation relates to its seed bank and the site has been planted over with a commercial conifer plantation.

10.1.23 Further non-statutory designated sites within 1km include:

- Polmaddy Local Wildife Site (LWS) – c.250m west – qualifying features unknown.

10.1.24 The Polmaddy LWS is upstream of the connection area, but is technically structurally and functionally connected to the P-G via K connection by a tributary of the Water of Ken, which flows through both the LWS and the wayleave.

Carfad to Kendoon

10.1.25 There are no statutory designated sites within the proposed development footprint, or wayleave. The nearest statutory designated site (<1km) is:

- Cleugh SSSI – c.600m east – designated for its lowland neutral grassland.

10.1.26 There is no structural or functional connection between the designation and the connection.

10.1.27 One AWI site is located within the wayleave, which is located north of Kendoon substation. The AWI here comprises semi-nature broadleaved woodland as part of a wider riparian woodland corridor.

10.1.28 Figure 1 shows the spatial arrangement of designated sites as they relate to the Carsfad to Kendoon (C-K) connection.

Earlstoun to Glenlee

10.1.29 There are no statutory designated sites within the proposed development footprint, wayleave or wider windthrow areas. The nearest designated sites (<1km) are:

- Hannaston Wood SSSI – c.900m west – designated for its lichen assemblages, upland oak woodland and neutral grassland.
- Water of Ken Woods SSSI – c.700m west and 400m south-east – designated for lichen assemblages and upland oak woodland.

10.1.30 There is no structural or functional connectivity between the Earlstoun to Glenlee (E-G) connection and Hannaston Wood SSSI. The Water of Ken SSSI comprises series of units across a wider area of woodland. While the E-G connection does not bisect any of the units, it does pass through woodland that provides connectivity between units.

10.1.31 One AWI site is located within the wayleave, which is located at Hag wood. The AWI here comprises commercial coniferous plantation over, presumably, ancient woodland soils and associated seed bank.

10.1.32 Figure 1 shows the spatial arrangement of designated sites as they relate to the E-G connection.

BG Deviation

10.1.33 There are no statutory designated or non-statutory designated sites within the proposed development footprint or wayleave. The nearest designated site (<1km) is:

- Water of Ken Woods SSSI – c.700m north-west and 400m south-east – designated for lichen assemblages and upland oak woodland.

10.1.34 There is no structural or functional connectivity between the SSSI and the BG Deviation.

10.1.35 One AWI site, Black Bank Wood, is located within the wayleave.

10.1.36 Figure 1 shows the spatial arrangement of designated sites as they relate to the BG Deviation.

Glenlee to Tongland Including Removal of R Route (South)

10.1.37 There are no statutory designated sites within the proposed development footprint, wayleave, or windthrow areas. Excluding sites designated for their ornithological features (refer to Chapter 11 the nearest (<1km) designated site is:

- Water of Ken Woods SSSI – c.700m north-west and 400m south-east – designated for lichen assemblages and upland oak woodland.

10.1.38 The Water of Ken SSSI comprises series of units across a wider area of woodland. While the Glenlee to Tongland (G-T) connection does not bisect any of the units, it does pass through woodland that provides connectivity between units.

10.1.39 The wayleave supports four AWI features:

- Black Bank wood – a large semi-natural broad-leaved woodland near Glenlee;
- Knocknairling Burn – a narrow strip of mixed riparian woodland on the edge of commercial forestry;

[1] www.snh.gov.uk, accessed in June 2017
[2] https://map.environment.gov.scot/sewebmap/ accessed in June 2017
[3] www.nbnatlas.org. accessed in June 2017

- Ross Hill Forest- mature commercial forestry,likely over ancient woodland soils and associated seed bank, near Mossdale; and
- Kenick Burn – a narrow strip of mixed riparian woodland, in the Laurieston forest.

10.1.40 A Unit of the Water of Ken Woods SSSI crosses the existing R route (south) to the north of New Galloway. There are no further designated sites within the route, but the following is within 1km:

- Kenmure Holms SSSI –c.700m west – designated for beetle and dragonfly assemblages and fen habitat.

10.1.41 There is no structural or functional connectivity between the R route (south) and the Kenmure Holms SSSI.

10.1.42 Figure 1 shows the spatial arrangement of designated sites as they relate to the G-T Connection and R Route (south).

10.1.43 Further non-statutory designated sites within 5km include:

- Culcaigrie Loch (LWS) – c.3.75km west – qualifying features unknown. Culcaigrie Loch is a 3.2 hectare water body located approximately 2km from Ringford. There are no listings for the qualifying features of this site.

Table 2: Statutory Designated Sites and Associated Connections

Designation	Site Name	Features listed	Connection(s) associated with designation
SSSI	Cleugh	Lowland Neutral Grassland	P-G via K, including Removal of N and R Routes (N and R Removal) (north) (E-G C-K
SSSI	Water of Ken Woods	Lichen Assemblage Upland Oak woodland	P-G via K E-G C-K BG Deviation G-T including removal of R Route (south)
SSSI	Hannaston Wood	Lowland Neutral Grassland Lichen Assemblage Upland Oak Woodland	P-G via K, including N and R Removal (north) C-K E-G BG Deviation G-T including R Removal (south)
SSSI	Kenmure Holms	Beetles Dragonfly assemblage Fen meadow	P-G via K, including N and R Removal (north) E-G BG Deviation G-T including N and R Removal (south)
SSSI	River Dee (Parton – Crossmichael)	Dragonfly assemblage Greenland white-fronted Goose (Anser albifons flavirostris), non-breeding Greylag goose (Anser anser), non-breeding Lowland Acid Grassland Open Water Transition Fen Whooper Swan (Cygnus cygnus), non-breeding	G-T including R Removal(south)
SSSI	Airds of Kells Wood	Upland Mixed Ash Woodland Upland Oak Woodland	G-T including R Removal (south)
SSSI	Woodhall Loch	Beetles Open Water Transition Fen Caddisfly (Phacopteryx brevipennis) Fen Meadow Oligotrophic Loch	G-T including R Removal (south)

Table 3: Non-Statutory Designations and Associated Connections

Site Name	Source	Features listed	Connection(s) associated with designation
Polmaddy Local Wildlife Site	Dumfries and Galloway LDP	None listed	P-G via K including N and R Removal (north) C-K
Culcaigrie Loch Local Wildlife Site	Dumfries and Galloway LDP	None listed	G-T including R Removal (south)

Deep Peat and carbon rich Soils

10.1.44 The desk study identified areas of Class 1 and 2 peat within the Study Area, suggesting the presence of nationally important peat deposits and priority habitat. However, the majority of the land across all five connections (including the removal of two existing lines) is underlain with non-peatland soils. The majority ofap the substrates are found to be of mineral soil and therefore not of conservation value. Where areas of Class 1 or 2 designation overlapped with the Phase 1 habitat surveys, consideration was given to the true ecological value of their habitats. Detailed habitat survey results are presented in Appendix 10.2: Phase 1 Habitat and NVC Survey and full details of the peat across the Study Area are provided in Chapter 9: Geology, Hydrology, Hydrogeology, Water Resources and Peat.

Existing Species Data

10.1.45 A search of species records (post year 2000) revealed several EPS and species listed under the WCA to be present within 5km of the KTR Project. Records for the following species were identified:

- Great Crested Newt;
- Otter;
- Pine marten;
- Red squirrel;
- Bat species including: *Pipistrelle* spp., Brown long eared, Leisler, Noctule, Daubentons, Whiskered, Unspecified species;
- Water Vole; and
- Badger.

10.1.46 With regards to pine marten and red squirrel data, LUC consulted with (then) Forestry Commission Scotland (FCS) and (then) Forest Enterprise Scotland (FES[4]) who had been conducting species studies within the Galloway Forest Park and surrounding area. FCS and FES provided geo referenced data on:

- species sightings;
- drey/den locations; and
- confirmed presence from trapping data.

10.1.47 This data was used in part to help inform both the desk study as well as identify locations across the connections where targeted surveys should be conducted, while not compromising the ongoing work

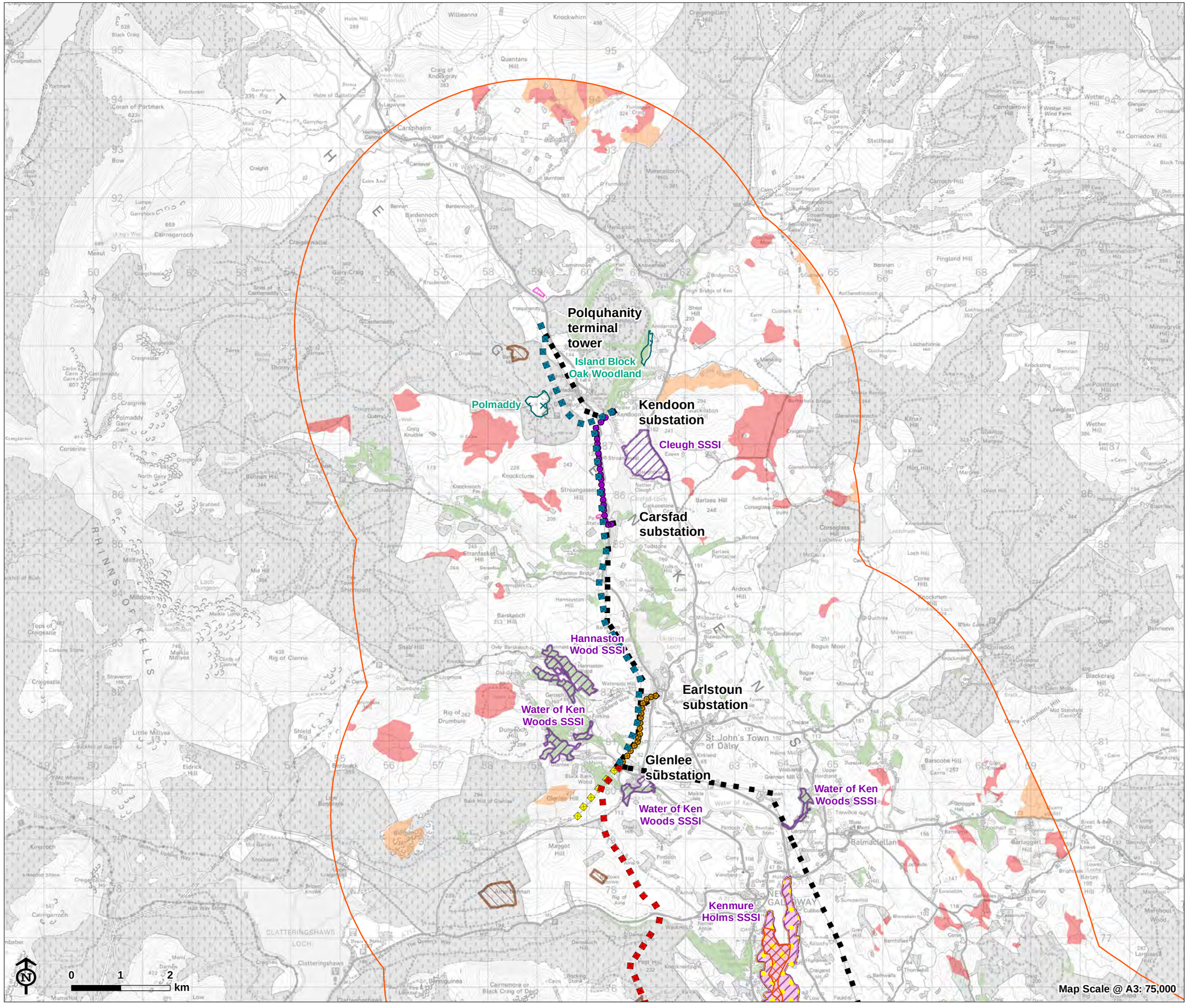
[4] FCS and FES became Scottish Forestry and Forestry and Land Scotland on 1st April 2019

being conducted by FCS/FES at that time. Full details of this are provided in Appendix 10.3: Protected Species Survey.

Figures

Technical Appendix 10.1: Desk Study and Legal Context

Figure 1.1: Biodiversity Sites



Overhead line infrastructure

- Polquhanity to Glenlee via Kendoon (steel lattice tower)
- Carsfad to Kendoon (wood pole)
- Earlstoun to Glenlee (wood pole)
- Glenlee to Tongland (steel lattice tower)
- BG route deviation (steel lattice tower)
- Existing tower for removal
- Construction compound
- Potential quarry working area

Designated sites

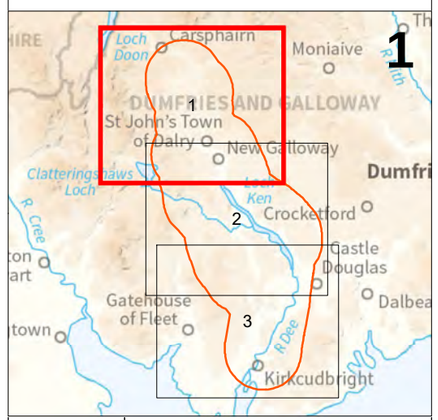
- 5km – statutory and non-statutory designated sites
- Special Protection Area (SPA) - Loch Ken and River Dee Marshes
- Site of Special Scientific Interest (SSSI)
- Ramsar Site (R) - Loch Ken and River Dee Marshes
- Ancient Woodland Inventory (AWI)

Non-statutory sites

- Local Wildlife Site
- RSPB Reserve - Ken-Dee Marshes

Priority peatland habitats

- Class 1
- Class 2



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KTR Project
EIA Report

Technical Appendix 10.1: Desk Study and Legal Context

Figure 1.2: Biodiversity Sites

Overhead line infrastructure

- Polquhanity to Glenlee via Kendoon (steel lattice tower)
- Earlstoun to Glenlee (wood pole)
- Glenlee to Tongland (steel lattice tower)
- BG route deviation (steel lattice tower)
- Existing tower for removal
- Construction compound
- Potential quarry working area

Designated sites

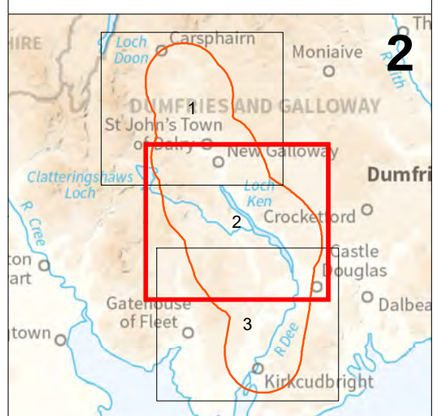
- 5km – statutory and non-statutory designated sites
- Special Protection Area (SPA) - Loch Ken and River Dee Marshes
- Site of Special Scientific Interest (SSSI)
- Ramsar Site (R) - Loch Ken and River Dee Marshes
- Ancient Woodland Inventory (AWI)

Non-statutory sites

- Local Wildlife Site
- RSPB Reserve - Ken-Dee Marshes

Priority peatland habitats

- Class 1
- Class 2



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KTR Project
EIA Report

Technical Appendix 10.1: Desk Study and Legal Context

Figure 1.3: Biodiversity Sites

Overhead line infrastructure

- Glenlee to Tongland (steel lattice tower)
- Existing tower for removal
- Construction compound
- Potential quarry working area

Designated sites

- 5km – statutory and non-statutory designated sites
- Special Protection Area (SPA) - Loch Ken and River Dee Marshes
- Site of Special Scientific Interest (SSSI)
- Ramsar Site (R) - Loch Ken and River Dee Marshes
- Ancient Woodland Inventory (AWI)

Non-statutory sites

- Local Wildlife Site

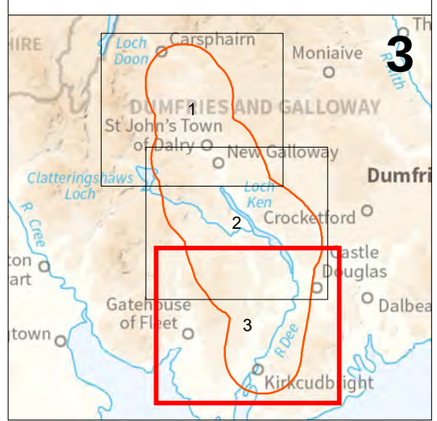
Priority peatland habitats

- Class 1
- Class 2

Laughenghie and Airie Hills SSSI
Woodhall Loch SSSI
River Dee (Parton to Crossmichael) SSSI
Threave and Carlingwark Loch SSSI
Culcaigrie and Trostrie Lochs
Tongland substation
Laurieston Forest
Glengap Forest
GATEHOUSE OF FLEET
KIRKCUDBRIGHT
CASTLE DOUGLAS
Twynholm

0 1 2 km

Map Scale @ A3: 75,000



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Appendix 10.2
Phase 1 Habitat and NVC Survey

Contents

Figures

Appendix 10.2: Phase 1 Habitat and NVC Survey

Introduction

10.2.1 This Appendix relates to the Phase 1 Habitat Survey and associated National Vegetation Classification (NVC) surveys undertaken to inform an Ecological Impact Assessment (EcIA) of the proposed Kendoon to Tongland 132 kilovolt (kV) Reinforcement Project (hereafter referred to as 'the KTR Project'). It includes an account of the methods adopted, baseline findings and an interpretation of results.

10.2.2 For the purposes of the EIA, the KTR Study Area encompasses five new overhead line (OHL) connections and the associated removal of the existing N and R routes. Reference should be made to Figure 1, and this Appendix should be read in conjunction with Chapter 10: Ecology of the EIA Report.

Scope of Survey

10.2.3 LUC was appointed by SP Energy Networks (SPEN) to complete a suite of ecological surveys, including habitat surveys, to inform an EcIA of the KTR project.

10.2.4 Habitat surveys extended to a Phase 1 Habitat Survey of pre-defined Study Areas (detailed in Table 1 below). Where further botanical or vegetation information was required, for example to identify habitats of conservation concern or Groundwater Dependent Terrestrial Ecosystems (GWDTE), NVC methods were adopted.

10.2.5 The surveys aimed to ensure sufficient botanical and vegetation data was available to support an assessment of potential effects of the KTR Project on ecological features.

Survey Method

Phase 1 Habitat Survey

10.2.6 A Phase 1 Habitat survey was undertaken during the accepted ecological survey seasons of 2017 and 2019. Phase 1 surveys can be conducted at any time of year; however, the optimal period is between April – September. NVC surveys should be completed within the months of May- August with the optimum time being June-July. The survey followed current best practice methods[i] and included the rapid classification of all broad habitat types within defined Study Areas.

10.2.7 The Study Areas adopted for each of the five connections are set out in Table 1 below. The Study Areas vary depending on the type of connection (steel lattice tower or wood pole) and the subsequent wayleave required for future maintenance of the OHLs. The Study Areas also included a 50m buffer on proposed wayleaves, which incorporates all necessary new access track requirements. The Study Area for N and R routes, which are to be removed, was reduced to 100m to reflect the likely reduced impact of these parts of the KTR Project, and the fact that the infrastructure already exists.

10.2.8 Table 1 below and Figure 1 provide an overview of the Study Area for each connection.

Table 1: Study Area Definition

Working Area	Study Area
Polquhanity toGlenlee via Kendoon (P-G via K) including the removal of N and R route (north)*1	180m corridor *1 – 100m where the existing N and R OHs are located
Carsfad toKendoon (C-K)	170m corridor
Earlstoun toGlenlee (E-G)	170m corridor
BG Deviation	180m corridor
Glenlee to Tongland (G-T) including the removal of R route (south)	180m corridor *1 – 100m where the existing N and R OHLs are located
Ancillary Infrastructure	The site footprint and a 50m buffer

10.2.9 During surveys, all broad habitat types were identified and defined. Sufficient botanical species identification was undertaken to confirm and verify habitat classification. Field surveys mapped habitat boundaries on GIS-referenced field tablets for accuracy and collected representative photographs and species lists. A wide range of identification keys were used to ensure species identification was accurate and robust.

10.2.10 Where necessary, target notes were used to identify key areas of interest or to describe typical habitats.

10.2.11 Where habitats were ill-defined, surveyors collected sufficient botanical data to allow 'mosaic' classifications to be made. Mosaics represent a combination of different broad habitat types, for example scattered scrub over improved grassland. Mosaic classifications are often important in heavily modified habitats where definition is much less obvious. For the purposes of classification, a mosaic is considered to be a broadly homogenous land parcel where no one habitat classification accounts for more than 90% of the habitat type.

GWDTE and NVC Surveys

10.2.12 Where Phase 1 habitat types had potential to support GWDTE vegetation communities[ii], further investigation was undertaken. Phase 1 habitat types that have potential to support GWDTE communities include:

- B5 Marshy Grassland;
- D1 – D6 Heathland;
- E1 – D4 Bog; and
- F1 – F2 Swamp.

10.2.13 Where appropriate, within habitats coded as above, the NVC method[iii] was used to identify potential GWDTE communities. However, to avoid unnecessary extensive botanical study, where Phase 1 habitat types were obviously attributable to surface water movement, rather than groundwater movement, no NVC was completed. This included stands of marshy grassland in hollows on steep slopes, obviously ombrogenous bogs etc.

10.2.14 However, where water influence was less clear, NVC was completed. As above, NVC data was also considered in light of wider influencing factors. Upon determining the NVC community, a decision tool was used to establish the level of dependency of each community on groundwater. Table 2 below shows the decision-making tool used in determining GWDTE presence.

Table 2: GWDTE Decision Tool. Determining the Level of Ground Water Dependency

Criteria	Yes	No
A. Is the GWDTE vegetation evidently influenced by groundwater? (i.e. base-enriched (M10, M11, M37 and/or M38) and/or discharging from an evident point source such as a spring head (M31, M32, M33).		
If the answer to A is 'Yes' then field assessment ends at this stage and the GWDTE is treated as 'high', as per the guidance. If 'No', continue to B.		
B. Is the GWDTE polygon associated with an evident surface water feature? i.e. is the vegetation located within one of the following topographic locations:		
Watershed/ridge		
Watercourse		
Floodplain		
Ponding location, pond, loch, etc (localised depression)		
Surface water conveyance (drain, gully, rill, etc.)		
If the answer to B is 'Yes' then the GWDTE polygon is no more than 'moderate' and very likely to be 'low'. Additional floristic and environmental data should be collected, including photographs to allow for further, desk-based determination of the groundwater dependency. If 'No', continue to C.		
C. Is the GWDTE polygon associated with an ombrogenous system? i.e. with blanket bog or wet heath habitat. This is especially relevant to M6 and M25:		
Presence/persistence of distinctive bog habitat, species and/or associations.		
Deep peat not confined to depressions/valleys (>0.5 m visible in drains or hagged areas).		

Criteria	Yes	No
If the answer to C is 'Yes' then the GWDTE is no more than 'moderate' and very likely to be 'low'. Additional floristic and environmental data should be collected, including photographs to allow for further, desk-based determination of the groundwater dependency.		

Constraints and Limitations

10.2.15 All ecological surveys represent a snap-shot in time. Habitats and species assemblages are dynamic and change over time in response to a range of variables. Data presented in this report should not be considered a long-term interpretation of ecological data and should not be relied upon as such.

10.2.16 While weather conditions were, in general, optimal, occasional rain, flooding, and snow showers may have resulted in the loss of evidence of indicator species. While this limitation is recognised, it is not considered to undermine the value of the data collected which is considered sufficiently robust for the purposes of informing the EcIA.

10.2.17 While care has been taken to collect and review habitat data, it is not possible to account for any changes that may occur from the period of data collection to the time of works commencing.

10.2.18 At the time of field surveys the peat depth was unknown and, as such, there may be areas where superficially similar communities have been recorded erroneously due to their relationship with peat depth.

Baseline

Approach and Overview

Approach

10.2.19 For ease of reference, habitats and vegetation communities are described for each Study Area of the five individual connections comprising the KTR Project.

10.2.20 Owing to the highly modified nature of the Study Areas, extensive areas of mosaic and/or ill-defined habitats were identified. In order that data can be considered and interpreted as accurately as possible, all habitat area calculations are based on 'amalgamated' Phase 1 Habitat types. The amalgamated approach sees broadly similar habitat types grouped together. Table 3 details how habitats have been amalgamated.

Table 3: Amalgamated Phase 1 Habitat Categories

Broad Habitat Type	Amalgamated Phase 1 Habitats
Grassland	• Acid grassland (unimproved/ semi-improved) (B1.1/B1.2) • Neutral grassland (unimproved and semi-improved) (B2.1/ B2.2) • Improved and poor semi-improved grassland (B4) • Marsh/Marshy grassland (B5) • Poor semi-improved Grassland (B6)
Heathland	• Dry dwarf shrub heath (D1) • Wet dwarf shrub heath (D2) • Dry heath/acid grassland (D5) • Wet heath/acid grassland (D6)
Mire	• Fen –basin mire (E3.2) • Fen- flood plain mire (E3.3) • Acid flush (E2.1) • Wet modified bog (E1.7) • Dry modified bog (E1.8)
Miscellaneous	• Arable (J1.1) • Ornamental planting (J5)
Broad Habitat Type	Amalgamated Phase 1 Habitats
	• Hard standing (J5) • Buildings (J3.6) • Amenity grassland (J1.2) • Bare ground (J4) • Other habitat (J5) • Survey not required (J5)
Open water	• Standing water (G1) • Running water (G2)
Rock exposure	• Acid/neutral rock (I1.4.1) • Basic rock (I1.4.2) • Quarry (I2.1)
Swamp, marginal inundation	• Swamp (F1) • Marginal and Inundation vegetation (F2.2)
Tall herb and fern	• Bracken Continuous/ scattered (C1.1/ C1.2) • Tall ruderal (C3.1) • Non-ruderal (C3.2)
Woodland and scrub	• Broadleaved woodland natural (A1), plantation (A1.1.2), semi-natural (A1.1.1), scattered (A3.1) • Coniferous woodland (natural (A1), plantation (A1.2.2), semi-natural (A1.2.1), scattered(A3.2)) • Mixed woodland (natural (A1), plantation (A1.3.2), semi-natural (A1.3.1), scattered (A3.3) • Scrub (A2) (scattered (A2.2), dense/continuous(A2.1)) • Recently felled (A4)

10.2.21 Where mosaics are identified, calculations are based on the dominant broad habitat type.

10.2.22 In the following habitat descriptions, data is presented for each Connection of the KTR Project and its associated Study Area. Ancillary infrastructure is discussed separately for each Study Area Connection as detailed at the end of each Study Area summary.

10.2.23 Full details on ancillary infrastructure can be found in Chapter 5: Felling, Construction, Operational Maintenance and Decommissioning of the EIA Report.

Overview

10.2.24 During the routeing process, care was taken, wherever possible, to avoid habitats of particular conservation concern. Consequently, many of the routes are located in heavily modified or artificial habitats with limited ecological importance.

10.2.25 In many of the Study Areas, two broad habitat types are overwhelmingly dominant: B classification agricultural grassland (in vary states of management and modification); and A classification plantation coniferous woodland. In some areas, remnant heath and bog habitats were identified, predominantly in open areas in the forest estate. These habitats were also heavily modified or isolated.

10.2.26 When considering the habitat descriptions below, reference should be made to the Phase 1 Habitat Map, provided in Figure 2, the GWDTE (NVC) Map provided in Figure 3, site photography provided in Annex 2 and target notes presented in Annex 3.

Polquhanity to Glenlee (via Kendoon) Including Removal of N and R (North) Routes

Study Area Overview

P-G via K

10.2.27 The P-G via K Study Area accounts for 15.81% of all habitats within the KTR Project Study Area.

10.2.28 The north of the Study Area primarily comprised operational commercial coniferous forest plantation, dominated by sitka spruce. Most of these areas are operational with some coups recently felled. Open ground in the north of the Study Area is dominated by improved grassland and species-poor marshy grassland. Existing access tracks though the forestry are composed of marshy grassland species, predominantly purple moor grass *Molinia caerulea.* These areas are regenerating over the highly disturbed ground within plantation woodland.

10.2.29 Within the dominant semi-improved neutral grassland mosaics of this Study Area, smaller patches of marshy grassland, typically associations of soft rush with neutral grassland species, are common and widespread. Grassland habitats are also often integrated with smaller non-distinct areas of habitat such as remnants of heath/acid grass or remnants of bog habitat in historically less grazed areas. These habitats are so heavily influenced by agricultural and forestry operations in the area that they are almost indistinct and difficult to recognise within the wider context of the overarching grassland mosaic.

10.2.30 Scattered scrub is also commonly in mosaic with agricultural grassland. Species are general mixes of gorse *Ulex uropaeus*, hawthorn *Crataegus monogyna* and small broadleaved trees. Within lower lying ground and in areas of marshier grasslands the scrub takes the form of willow *Salix* spp. and young sapling trees.

10.2.31 Within the eastern section of the Study Area, adjacent to Carsfad Loch, the grassland habitats become dominated by bracken and other stands of tall vegetation such as rosebay willowherb *Epilobium angustifolium* and stinging nettles *Urtica dioica.*

10.2.32 The southern part of the Study Area, from Carsfad to Glenlee comprises a mosaic of typical lowland agricultural habitats. Improved grassland, semi-improved neutral grassland and species-poor marshy grassland were identified. Extensive areas of bracken were recorded along with a small coniferous woodland plantation, Hag Wood. Hag Wood is a conifer plantation on ancient woodlands (PAWS).

10.2.33 Deciduous and mixed woodland were rare, however the Study Area included a small part of the Knocknalling Wood, between Towers 19 and 20. Riparian woodland associated within the Water of Ken was also recorded in this area. All other wooded habitats are associated with watercourses or visual screening provision around substations.

10.2.34 Invasive non-native species (INNS) was recorded on occasion across the route. Rhododendron was recorded within the following locations: the understory of the woodlands of Hagwood and Knocknalling, around the substations of Kendoon, Carsfad, Earlstoun and Glenlee. Refer to target note descriptions within Annex 3.

N Route

10.2.35 The existing N route runs in parallel to the P-G via K Study Area for much of its length between Polquhanity and Kendoon. However, it is located below the forestry line and dominant habitat types tend to be marshy grassland which is dominated by *Molinia caerulea* and fed from drainage channels and small burns flowing downslope from the wooded areas of the west. Extensive areas of bracken are common along this route and, most notably, a small area of wet modified bog is located near Dundeugh. The modified bog is of poor quality with little sphagnum moss layer, it is included as modified bog as although both marshy grassland and wet modified bog can share similar species, the composition of the species present (e.g. bog asphodel *Narthecium ossifragum* and bog myrtle *Myrica gale)* distinguished it from the surrounding marshy grassland.

R (North) Route

10.2.36 The R (north) route in this area extends from Kendoon substation to Glenlee substation. It runs in parallel to the P-G via K Study Area for much of its length and, consequently, its habitat composition is broadly similar to that described for the southern section of P-G via K.

10.2.37 Detailed habitat descriptions are provided below, according to their Phase 1 Habitat nomenclature. Table 4 provides a brief summary of the habitat composition of the P-G via K Study Area, including N Route and R (north) Route Study Area.

Detailed Habitat Descriptions

A1 Woodland

10.2.38 As described above, woodland cover across the route predominantly consisted of coniferous plantation woodland. Sitka Spruce was the most frequently recorded plantation woodland and large swathes of this type of plantation had been felled recently. Broadleaved woodland consisted of a mixture of native and non-native tree species including: oak *Quercus robur* and beech *Fagus sylvatica*, birch species *Betula* spp., hawthorn *Crataegus monogyna,* alder *Alnus glutinosa,* and sycamore *Acer pseudoplatanus*. The understory of the coniferous woodland plantation was in most cases almost entirely devoid of higher plants. Most woodland had a well-developed bryophyte layer typically of *Hypnaceae* and *Polytrichaceae* families common in the moist woodlands of south Scotland.

A2 Scrub- dense/Continuous

10.2.39 Scrub is vegetation dominated by native shrubs, usually smaller than 5m in height. It was recorded across the Study Area and usually in mosaic within other habitats, as an understory within woodlands or as the shrub layer within grasslands, but most commonly forming edge habitats. Dominant scrub species were hawthorn, birch and gorse.

B1-5 Grassland and marsh

10.2.40 This category is large and diffuse and found throughout the entire P-G via K Study Area. The majority of the grass and marsh habitats are common and widespread. In most cases the boundaries between the different grassland types are fairly indistinct and often overlapping, disappearing and reappearing within a discrete area. Improved grasslands are areas of grass-dominated habitat which have been so heavily influenced by agriculture, drainage, or other applications that the species present are limited to a few productive grasses e.g. Ryegrass *Lolium perenne* and Crested Dog's-tail *Cynosurus cristatus.*species. *Ranunculus* species and *Rumex* species were abundant throughout the area.

10.2.41 Marshy grassland is a diverse set of habitats including those dominated by rushes, sedges, and tall herbs where water is close to the surface but not obviously visible like in swamp habitat. Marshy grassland dominated the length of the Study Area. Typical marsh species were noted with purple moor-grass *Molinia caerulea* and *Juncus* spp. being dominant. The marshy grassland is fed from the sloping topography of the site and via the many watercourses and small burns which run throughout. In general, there were few areas of marsh; rather it was marshy grass over agricultural fields. This was noticeable from the surrounding character of the Study Area being predominantly agricultural land and from the high presence of improved forb species e.g. *Rumex* spp., *Trifolium repens*, *Cirsium* spp., *Ranunculus* spp. etc. scattered within the monocotelydon stands.

B2.2 Semi-improved Neutral Grassland

10.2.42 Neutral grassland covers a wide range of communities typically comprising enclosed areas with an element of management occurring, or having occurred in the recent past. The field immediately behind the existing substation consists of semi-improved neutral grassland. The dominant species being tufted hair-grass *Deschampsia cespitosa,* abundant false oat-grass *Arrhenatherum elatius,* and frequent Cock's-foot grass *Dactylis glomerata*.

C1-3 Tall Herb and fern

10.2.43 Bracken *Pteridium aquilinum*, was found to be common and widespread across the route. In some of the sloping topography, bracken was dense and dominated the landscape. Similar dense swards of bracken were noted in areas of higher ground where grazing pressure would be minimal.

10.2.44 Tall ruderal vegetation consists of stands of tall perennial or biennial dicotyledons. Rosebay-Willowherb *Epilobium angustifolium* and common nettle *Urtica dioica,* along with other ephermeral vegetation were present minimally across the Study Area but were common in unmanaged areas and around buildings.

10.2.45 Non-ruderal vegetation was present in small amounts in areas of woodland, riparian edge habitats. Particularly obvious at the edge of the Glenlee Hydro Power Station where there was an area dominated by great wood-rush *Luzula sylvatica*.

D1, 2, 5, 6 Heathland

10.2.46 Heathland habitat was recorded minimally across the Study Area and was never recorded as a primary habitat. The areas of forestry rides and fire breaks in the north of the Study Area provide the location of a mosaic containing D6 – wet heath/acid grassland. These areas are in mosaic with marshy grasslands B5 as the species recorded were characteristic of both habitat types.

E1.7 – E1.8 Mire

10.2.47 E1.7 Wet & E1.8 dry modified bog habitat comprises of bog vegetation with little or no sphagnum. Presence of Ericoids may be abundant, sparse or absent. Wet modified bog was recorded in the N route Study Area as described above and in smaller patches throughout the route on more or less flat ground.

10.2.48 Dry modified bog is bog was rarely recorded within the Study Area. Typically species composition closely resembled that of the Wet Modified Bog where purple moor-grass was dominant. Within the dry modified bog habitat classification however bog-mosses were notably absent.

F1 Swamp

10.2.49 Swamp habitat was recorded in a small number of locations within the 50m buffer of Glenlee Substation. Swamp vegetation is characterised by tall emergent vegetation which is typically standing in water for the majority of the year. *Typha, Pharagmites australis* and *Carex* spp. were recorded to the north east of the site. The western area of swamp was characterised by the high water table and the dominant vegetation was flag iris *pseudacorus*.

G1 - 2 Standing and Running Water

10.2.50 Running water is present in the form of a number of burns which run transversely through the Study Area and the river tributaries of the Water of Ken, along with the main water courses, wet ditches/small streams are scattered throughout the route. A number of different riparian habitats are associated with the water courses and small areas of standing water were recorded in the north of the Study Area.

I2 Quarries

10.2.51 Areas of former quarries were recorded across the Study Area, these were disused and remnants of exposed rock were noted with pioneer species such as self-heal *Prunella vulgaris,* toad rush *Juncus bufonius* etc. encroaching into the quarry areas.

J5 Other Habitat

10.2.52 A large percentage of the land within the site and its buffer consisted of other habitat. This included areas of hard-standing, Substation compound/ buildings, car parks and private domestic dwellings/gardens.

10.2.53 Table 4 sets out the total area of each habitat within the Study Area, along with their relative proportion of the Study Area.

Table 4: Amalgamated Habitat types and proportion of the Study Area of P-G via K Including Removal of N and Part of R Routes

Phase 1 Habitat type	Amalgamated Phase 1 Habitats	Area within Study Area (Ha)	Proportion of Study Area (%)
Grassland	• Acid grassland semi-improved (B1.2) • Neutral grassland semi-improved (B2.2) • Improved grassland (B4) • Marsh/Marshy grassland (B5) • Poor semi-improved grassland (B6)	122.61	47.92
Heathland	• Wet heath/acid grassland (D6)	0.79	0.31
Mire	• Wet modified bog (E1.7) • Dry modified bog (E1.8)	3.86	1.51
Miscellaneous	• Ornamental planting (J5)	10.14	3.96
Phase 1 Habitat type	Amalgamated Phase 1 Habitats	Area within Study Area (Ha)	Proportion of Study Area (%)
	• Hard standing (J5) • Buildings (J3.6) • Amenity grassland (J1.2) • Bare ground (J4) • Survey not required (J5)		
Open water	• Standing water (G1) • Running water (G2)	3.77	1.47
Rock exposure	• Quarry (I2.1)	0.11	0.04
Swamp, marginal inundation	• Marginal and inundation vegetation (F2.2)	0.07	0.03
Tall herb and fern	• Bracken continuous (C1.1), scattered (C1.2) • Tall ruderal (C3.1) • Non-ruderal (C3.2)	47.71	18.65
Woodland and scrub	• Broadleaved woodland semi-natural (A1.1.1), scattered (A3.1) • Coniferous woodland semi-natural (A1.2.1), plantation (A1.2.2), scattered (A3.2) • Mixed woodland plantation (A1.3.2), semi-natural (A1.3.1), scattered (A3.3) • Scrub (A2) scattered (A2.2), dense/continuous (A2.1) • Recently felled (A4)	66.81	26.11
Total		255.87	100

GWDTE

10.2.54 Ostensibly, the Study Area's many areas of marshy grassland suggest some level of groundwater dependency; however visual observations noted that topographical factors were key in influencing these vegetation communities.

10.2.55 For example, within the Study Area, marshy grassland predominantly sits below steep slopes or has formed in hollows or shallower slopes on otherwise steep ground. The habitat type is also common in areas where surface water collects and flows towards the Water of Deugh, or Carsfad or Earlston Loch. Commonly, marshy grassland is located on the margins of small watercourses and more closely associated with running water than groundwater. Occasionally marshy grassland communities sit in areas of very deep peat, on the margins of ombrogenous bog habitats. While many of these marshy grasslands can be categorised as NVC MG10, and therefore potentially of low - moderate groundwater dependence, the majority of marshy grassland within the Study Area is not considered to be groundwater dependent.

10.2.56 However, three areas of marshy grassland that accord with NVC M23 *Juncus effusus/acutiflorus - Galium palustre* rush-pasture, a mire community, were identified in the north of the Study Area, near towers 1 and 2 (refer to Figure 3). According to best practice[ii], M23 is considered to be potentially highly groundwater dependent.

10.2.57 These communities were much more species diverse than other marshy grasslands in the Study Area and included small *Sphagnum fallax* hummocks, tormentil and heath bedstraw. Although a small number of watercourses were identified within these vegetation communities, their reliance on groundwater could not be ruled out, however it is considered that their potential groundwater dependency is no greater than moderate.

Ancillary Infrastructure

10.2.58 P-G via K has a total of three Ancillary Infrastructure areas; Barlae Hill Quarry, and two construction compounds. Further detail is provided in Table 5.

Table 5: Additional Working Areas associated with P - G via K Including Removal of N and R Routes (north)

Additional Working Area	Description: habitat and species assessment
Barlae Hill Quarry (Q1)	• The area is dominated by coniferous woodland plantation; • A small area within the buffer is recorded as clear fell; • The habitat showed signs of red squirrel.
Construction compound 1: Site Access reference 2	• The area is composed of marshy grassland and coniferous woodland plantation; • There is a pond small pond here.
Construction compound 2: Site Access reference 18	• There are remnants of an old quarry site here which has become overgrown with grass and scrub species.

Carsfad-Kendoon

Study Area Overview

10.2.59 C-K Study Area accounts for 3.04% of the total habitat associated with the KTR Project. The proposed C-K wood pole Study Area is located parallel to a short section of the P-G via K Study Area, largely within the footprint of the existing R (north) Study Area (proposed for removal). Consequently, the Study Areas for C-K and P-G via K overlap.

10.2.60 The habitats at the north and south of this Study Area that surround the two substations, Kendoon and Carsfad, are broadly woodland areas with a number of buildings and miscellaneous habitats. The area between the two substations is primarily agricultural land with around two thirds of the area being composed of grassland and tall herb and fern, the latter being predominantly continuous bracken.

10.2.61 The A713 is a dominant feature in the landscape of this Study Area and runs almost entirely along the length of the Study Area. Continuous bracken dominates the area east of the road and semi-improved grasslands to the west. Within the semi improved grasslands are areas, of scattered scrub. This ranges from solely or a mixture of: Gorse *Ulex uropaeus*, Broom *Cytisus scoparius*, hawthorn *Crataegus monogyna* and small broadleaved trees.

Detailed Habitat Descriptions

A1 Woodland

10.2.62 Woodland has a canopy cover greater than 30% of trees more than 5m high when mature. Semi-natural woodland includes areas that do not obviously originate from planting. Mixed woodlands usually comprise a number of native and non-native species planted in either a formal or naturalistic way.

10.2.63 There are several areas recorded as semi-natural broadleaved or mixed woodland. These areas are found surrounding the substations of Carfad and Kendoon. These areas are predominantly of birch *Betula* spp with scattered spruce acting as wind breaks or providing screening. The understory of these areas of woodland consisted of maintained grassland and a layer scrub/shrub layer in localised areas of rhododendron.

A2 Scrub- dense/Continuous

10.2.64 Scrub is vegetation dominated by native shrubs, usually smaller than 5m in height. It was recorded across the Study Area and usually in mosaic within other habitats as an understory within woodlands or as a shrub layer within grasslands, but most commonly forming edge habitats. Scrub species varied by location but commonly *Willow* spp. and hawthorn *Crataegus monogyna* was recorded.

B1-5 Grassland and marsh

10.2.65 This category is large and diffuse and found throughout the entire C- K Study Area. The majority of the grass and marsh habitats are common and widespread. In most cases the boundaries between the different grass types are fairly indistinct and often overlapping, disappearing and reappearing within a discrete area. Improved grasslands are areas of grass-dominated habitat which have been so heavily influenced by agriculture, drainage, or other applications that the species present is limited to a few productive grasses e.g. ryegrass *Lolium perenne* and crested dog's-tail *Cynosurus cristatus* species. *Ranunculus* species and *Rumex* species were abundant throughout the area.

10.2.66 Marshy grassland is a diverse set of habitats including those dominated by rushes, sedges, and tall herbs where water is close the surface but not obviously visible like in swamp habitat.

10.2.67 Marshy grassland dominated the length of the Study Area. Typical marsh species were noted and purple moor-grass *Molinia caerulea* and *Juncus* spp. were dominant. The marshy grassland is fed from the sloping topography of the site and via the many water courses and small burns which run throughout. In general, there were few areas of marsh; rather it was marshy grass over agricultural fields. This was noticeable from the surrounding character of the Study Area being predominantly agricultural land and from the high presence of improved forb species e.g. *Rumex* spp., *Trifolium repens*, *Cirsium* spp., *Ranunculus* spp. etc. scattered within the monocotelydon stands.

C1-3 Tall Herb and fern

10.2.68 Bracken *Pteridium aquilinum*, was found to be common and widespread across the route. In some of the sloping topography, Bracken was dense and dominated the landscape. Similar dense swards of bracken were noted in areas of higher ground where grazing pressure would be lower.

10.2.69 Tall ruderal vegetation consists of stands of tall perennial or biennial dicotyledons. Rosebay-Willowherb *Epilobium angustifolium* and common nettle *Urtica dioica,* along with other ephermeral vegetation were present minimally across the Study Area but were common in unmanaged areas and around buildings.

F2.2 Inundation Vegetation

10.2.70 A small island of *Typha* and *Phragmities* was observed in the Water of Ken, adjacent to Kendoon Substation.

G1- 2 Standing and Running water

10.2.71 Running water is present in the form of a number of burns which run transversely through the Study Area and then river tributaries of the Water of Ken. Along with the main water courses, wet ditches/small streams are scattered throughout the route. A number of different riparian habitats are associated with the water courses and small areas of standing water were recorded in the north of the Study Area.

J5 Other Habitat

10.2.72 A l proportion of the land within the Study Area and its buffer consisted of other habitat. This included areas of hard-standing, Substation compound/ buildings, car parks and private domestic dwellings/gardens.

10.2.73 Table 6 below sets out the total area of each habitat within the Study Area, along with their relative proportion of the Study Area.

Table 6: Amalgamated Habitat types and proportion of the Study Area of C – K Route:

Phase 1 Habitat type	Amalgamated Phase 1 Habitats	Area within Study Area (Ha)	Proportion of Study Area (%)
Grassland	• Neutral grassland semi-improved (B2.2) • Improved grassland (B4) • Marsh/Marshy grassland (B5)	16.50	33.54
Miscellaneous	• Hard standing (J5) • Buildings (J3.6) • Survey not required (J5)	5.67	11.53
Open water	• Standing water (G1) • Running water (G2)	1.23	2.5

Phase 1 Habitat type	Amalgamated Phase 1 Habitats	Area within Study Area (Ha)	Proportion of Study Area (%)
Swamp, marginal inundation	• Inundation vegetation (F2.2)	0.05	0.10
Tall herb and fern	• Bracken continuous (C1.1), scattered (C1.2) • Tall ruderal (C3.1) • Non-ruderal (C3.2)	16.99	34.53
Woodland and scrub	• Broadleaved woodland semi-natural (A1.1.1), scattered (A3.1) • Mixed woodland plantation (A1.3.2), semi-natural (A1.3.1), scattered (A3.3) • Scrub (A2) scattered (A2.2), dense/continuous (A2.1)	8.74	17.76
Rock exposure	• Quarry (I2.1)	0.02	0.04
Total		49.20	100

GWDTE

10.2.74 Ostensibly, the Study Area's marshy grassland components could reflect a degree of groundwater dependency, however field studies identified that these features are predominantly small stands of *Juncus* and *Molinea* in low-lying areas of improved or semi-improved grassland features. The marshy grasslands have developed as a consequence of surface water flow and topography and are unlikely to be groundwater dependent.

Ancillary Infrastructure

10.2.75 There is no ancillary infrastructure to be considered for this Study Area.

Earlstoun to Glenlee

Study Area Overview

10.2.76 E-G habitats account for 2.40% of the KTR project. The connection runs in parallel to the P-G and R north route. The habitats comprise of a mosaic of lowland agricultural grasslands, tall herb and fern dominated by bracken, and smaller areas of semi-natural woodlands and scrub. This Study Area is within a relatively low gradient and sees the A762 pass to the east.

10.2.77 Much of the E-G Study Area is improved grassland used as pasture, dominant species present being perennial rye grass *Lolium perenne* and Yorkshire fog *Holcus lanatus* with abundant white clover *Trifolium repens*. In areas less managed, semi-improved neutral grassland appears with an increase in species diversity. Marshy grassland is found in connection with the drainage ditches and watercourses onsite.

10.2.78 Woodland and scrub is found within the Study Area near the substation of Earlstoun and Glenlee. In addition to these smaller areas a larger coniferous plantation woodland is present nearer the south of the Study Area; Hag wood, a conifer plantation on ancient woodlands (PAWS) site. Hag wood was recorded as having a substantial area of an INNS, Rhododendron.

10.2.79 Small areas of bracken were identified throughout the grassland with patches becoming locally dominant infrequently. A dense area of continuous bracken was recorded within an open area in Hag wood.

10.2.80 Running water is present in the form of a river tributary of the Water of Ken and as wet ditches/small streams. The river leading into the Glenlee Hydro station is a permanent feature while the small streams and ditches to the south of the site are periodically dry, as was noted from subsequent visits to the site following the initial field survey. The river was bordered by typical marshy grassland species and dominated by Purple moor-grass *Molinia caerulea*. The small streams were dominated by *Juncus* species notably soft rush *Juncus effusus*.

10.2.81 The remainder of the habitats are comprised of other habitat types which included: buildings, roads, hard standing, bare ground or areas where there was no permitted access.

Detailed Habitat Description

A1 Woodland

10.2.82 Woodland has a canopy cover greater than 30% of trees more than 5m high when mature. Semi-natural woodland includes areas that do not obviously originate from planting. Mixed woodlands usually contain a number of native and non-native species planted in either a formal or naturalistic way.

10.2.83 There are several areas recorded as semi-natural broadleaved woodland along this route, the most common species recorded was oak *Quercus robur;* although, a number of mature native species were recorded scattered across the Study Area including: Ash *Fraxinus excelsior,* alder *Alnus glutinosa,* rowan *Sorbus aucuparia and* birch *Betula* spp.

10.2.84 More dense sections of woodland surround the substations of Earlstoun and Glenlee. These areas are predominantly of Birch Species *Betula* spp but with spruce scattered or acting as wind breaks/providing screening. The understory of these areas of woodland consisted of maintained grassland and a layer scrub/shrub layer in localised areas of rhododendron.

A2 Scrub- dense/Continuous or scattered

10.2.85 Scrub vegetation dominated by native shrubs, was recorded across the Study Area and usually in mosaic with other habitats as an understory within woodlands or as the shrub layer within grassland communities, but most commonly forming edge habitats. Scrub species varied by location but commonly Willow *Salix* spp. tended to be associated with wetter habitats and hawthorn *Crategus monogyna* was recorded as the primary scattered scrub species. Additionally, as mentioned above, Rhododendron was another scrub species found as part of the broader woodland ecosystem and in small areas, bramble *Rubus fruticosus* created impenetrable areas.

B1-5 Grassland and marsh

10.2.86 Grassland is the dominant habitat and comprises the majority of the habitat compositions for this Study Area. Improved grasslands are areas of grass-dominated habitat which have been so heavily influenced by agriculture, drainage, or other applications that the species present are limited to a few productive grasses e.g. ryegrass *Lolium perenne* and crested dog's-tail *Cynosurus cristatus. Ranunculus* species and *Rumex* species were abundant throughout the habitats. Small areas of semi-improved neutral grassland are present near the proposed new access tracks, dominant species being tufted hair-grass *Deschampsia cespitosa,* abundant false oat-grass *Arrhenatherum elatius,* and frequent cock's-foot grass *Dactylis glomerata*.

10.2.87 The marshy grassland within the route is predominantly soft rush over pasture. Marshy grassland is fairly evenly spread across the route, sitting within areas of heavily grazed improved grass. A larger patch with willow *Salix* spp., purple moor-grass *Molinia caerulea* and *Juncus* spp. present nearer the south of the Study Area.

C1-3 Tall Herb and fern

10.2.88 Tall ruderal vegetation was recorded in scattered, but concentrated, pockets across the Study Area. Most frequently bracken was recorded, but other tall vegetation such as Rosebay willowherb *Epilobium angustifolium,* was frequent on roadside verges, embankments, and fenced-off areas.

10.2.89 An area adjacent to the large watercourse running into the hydro station and the staff car park was noted as being dominated with non-wooded stands of vegetation including Great wood-rush *Luzula sylvatica*.

G2 Running Water

10.2.90 Running water is present in the form of a river tributary of the Water of Ken and as wet ditches/small streams stemming from the neighbouring agricultural fields. Coom burn is an additional permanent feature while the small streams and ditches within the south of the Study Area are periodically dry.

J5 Other Habitat

10.2.91 A small percent of the route was classified as other habitat. This included areas of hard-standing, the Substation compound, buildings, car parks and private domestic dwellings/gardens.

10.2.92 Table 7 provides a brief summary of the habitat composition of the Study Area.

Table 7: Amalgamated Habitat types and proportion of the Study Area of EG Route

Phase 1 Habitat type	Amalgamated Phase 1 Habitats	Area within Study Area (Ha)	Proportion of Study Area (%)
Grassland	• Neutral grassland semi-improved (B2.2) • Improved grassland (B4) • Marsh/Marshy grassland (B5)	25.09	64.60
Miscellaneous	• Hard standing (J5) • Buildings (J3.6) • Bare ground (J4) • Survey not required (J5)	3.45	8.88
Open water	• Running water (G2)	1.32	3.39
Tall herb and fern	• Bracken continuous (C1.1), scattered (C1.2) • Tall ruderal (C3.1) • Non-ruderal (C3.2)	2.46	6.33
Woodland and scrub	• Broadleaved woodland semi-natural (A1.1.1), scattered (A3.1) • Coniferous woodland plantation (A1.2.2) • Mixed woodland semi-natural (A1.3.1) • Scrub (A2) scattered (A2.2), dense/continuous (A2.1)	6.52	16.80
Total		38.84	100

GWDTE

10.2.93 Ostensibly, the Study Area's marshy grassland components could reflect a degree of groundwater dependency, however field studies identified that these features are predominantly small stands of *Juncus* and *Molinia* in low-lying areas of improved or semi-improved grassland features. The marshy grasslands have developed as a consequence of surface water flow and topography and are unlikely to be groundwater dependent.

Ancillary Infrastructure

10.2.94 There is no ancillary infrastructure to be considered for this Study Area.

BG Deviation

Study Area Overview

10.2.95 BG Deviation Study Area accounts for the smallest area of land mass and habitat across the KTR Study Area; 1.63%. Woodland and scrub vegetation accounts for nearly 40% of the total habitat in this Study Area. The land running to the north, north-west is dominated by bracken and semi improved grasslands. The gentle slope of the ground sees water culminating downslope and the habitat becomes increasingly marshier to the south of the Study Area.

Detailed Habitat Descriptions

A1 Woodland

10.2.96 Semi-natural broadleaved woodland within the Study Area extends to Black Bank Wood, an Ancient Woodland to the south west of Glenlee substation. Despite its ancient woodland status, at the time of survey, the woodland had been felled (it had presumably been a mature forestry coup) and replanted with a mix of broadleaved species including oak, ash and rowan. The trees were immature and still in protective tubes. Scattered trees, primarily birch and sycamore, were also recorded over marshy grassland and semi-improved grassland.

A2 Scrub- dense/Continuous or scattered

10.2.97 Scrub vegetation dominated by native shrubs, was recorded across the Study Area and usually in mosaic with other habitats. In particular, at the south of the Study Area, scrub comprised dense and scattered areas of gorse over marshy grasslands.

B2.2 Semi-improved Neutral Grassland

10.2.98 Neutral grassland covers a wide range of communities typically comprising enclosed areas with an element of management occurring, or having occurred in the recent past.

10.2.99 The field immediately behind the existing substation consists of semi-improved neutral grassland. The dominant species being tufted hair-grass *Deschampsia cespitosa,* abundant false oat-grass *Arrhenatherum elatius,* and frequent Cock's-foot grass *Dactylis glomerata*. Similar enclosures were identified to the south, in mosaic with marshy grassland.

B5 Marshy Grassland

10.2.100 Marshy grassland is a diverse set of habitats including those dominated by rushes, sedges, and tall herbs where water is close the surface but not obviously visible like swamp.

10.2.101 Marshy grassland was identified in close association with semi-improved neutral grassland. It comprised stands of *Juncus* and *Molinia* in low lying areas of fields and on sloping ground, where surface water slowed or pooled.

C1.1 Continuous Bracken

10.2.102 Extensive areas of bracken-dominated vegetation were identified in association with agricultural grasslands, on the east-facing slope of Glenlee Hill.

J5 Other Habitat

10.2.103 A proportion of the land within the Study Area consisted of other habitat. This included areas of hard-standing, the Substation compound, buildings, car parks and private domestic dwellings/gardens.

I2.1 Quarry

10.2.104 A small disused quarry was recorded on the southern edge of the Study Area. Limited pockets of pioneer vegetation, primarily rosebay-willowherb, colt's-foot and birch, were recorded.

10.2.105 Table 8 sets out the total area of each habitat within the Study Area, along with their relative proportion of the Study Area.

Table 8: Amalgamated Habitat types and proportion of the Study Area of BG Deviation

Phase 1 Habitat Group	Amalgamated Phase 1 Habitats	Area within Study Area (Ha)	Proportion of Study Area (%)
Woodland and scrub	• Broadleaved woodland semi-natural (A1.1.1), plantation (A1.1.2), scattered (A3.1) • Scrub (A2) scattered (A2.2), dense/continuous (A2.1)	10.01	37.83
Grassland	• Neutral grassland semi-improved (B2.2) • Acid grassland semi-improved (B1.2) • Marsh/Marshy grassland (B5)	9.42	35.60
Tall herb and fern	• Bracken continuous (C1.1), scattered (C1.2)	6.64	25.10
Miscellaneous	• Buildings (J3.6) • Survey not required (J5)	0.32	1.21
Rock exposure	• Quarry (I2.1)	0.07	0.26
Total		26.46	100

GWDTE

10.2.106 Ostensibly, the Study Area's marshy grassland components could reflect a degree of groundwater dependency, however field studies identified that these features are predominantly small stands of *Juncus* and *Molinea* in low-lying areas of improved or semi-improved grassland features. The marshy grasslands have developed as a consequence of surface water flow and topography and are unlikely to be groundwater dependent.

Ancillary Infrastructure

10.2.107 There is no ancillary infrastructure to be considered for this Study Area.

Glenlee to Tongland Including Removal of R Route (South)

Study Area Overview

10.2.108 As the Study Areas for the G-T Connection and R Route (south) are geographically distinct for the most part, each is discussed separately below.

GT Connection

10.2.109 G-T Study Area accounts for 47.64% of all habitats recorded within the KTR Study Area.

10.2.110 The north of the Study Area is dominated by agricultural grasslands, which have been previously improved for grazing livestock. Gently rolling hills to the west of the Study Area direct natural drainage to the Study Area, accounting for marshier and wetter areas within the agricultural landscape.

10.2.111 However, woodland and scrub is the most dominant habitat feature of this Study Area, the commercial forest blocks of Bennan and Laurieston being the largest areas of habitat recorded. Smaller areas of further woodland and forest are present along the G-T Study Area.

10.2.112 Areas of heath and mire are found throughout the Study Area with a higher percentage of mire habitats found south of Laurieston forest block, from tower 74 to 85 near Bargatton Loch.

10.2.113 The southern section from tower 92-120, of the Study Area is predominantly composed of improved grassland used for grazing livestock, in mosaic with small areas of other types of grassland and scrub.

R Route (south)

10.2.114 R Route (south) accounts for 31.11% of the habitats in the KTR Study Area.

10.2.115 Habitats along the R Route are characterised by their agricultural context. Improved grassland, predominantly grazing land, is dominant. Occasionally, species diversity increases, allowing the characterisation of grassland as semi-improved neutral grassland.

10.2.116 In lower lying areas grassland becomes water-logged, giving rise to marshy grassland habitats. Broadleaved woodland is present, normally in riparian form, while occasional stands of commercial coniferous plantation were also recorded, including felled areas. heath and mire habitats are recorded minimally across this route and generally were in poor condition due to pressures from agriculture or forestry.

Detailed Habitat Descriptions

A1. Woodland

10.2.117 With the exception of Black bank wood which has been recently replanted with broadleaved trees, broadleaved woodland coverage is largely riparian along Knocknaling burn, the River Dee, Black Water of Dee and small tributaries. The woodlands are largely linear and well-structured semi- mature – mature and dense. The woodland canopy is a typical mix of beech, ash, oak and sycamore. Alder, lime and birch are frequent to common. Shrub layers vary but are generally self-sown canopy species. In some places, disturbance has hindered new growth and the higher levels of disturbance is evident in the bracken and bramble ground and field layers.

10.2.118 Coniferous woodland plantation accounts for the largest volume if woodland cover. This commercial plantation is primarily sitka spruce but occasionally this is punctuated by larch stands, with a broad range of age structures present, often over very degraded peatland habitats.

A2.1 Dense/Continuous Scrub

10.2.119 Various stands of scrub are present in the Study Area. Often scrub is in disturbed areas or where enclosures have been encroached. Gorse or broom stands and scattered hawthorn or birch were occasionally recoded.

B1-5: Grassland and marsh

10.2.120 Improved grassland was extensive across the Study Area, comprising heavily managed pasture with a typical species assemblage, often in mosaic with marshy grassland, where hollows or depressions allow *Juncus* and rank grasses to develop.

10.2.121 Neutral grassland was present frequently in semi-improved stands, often within the wider agricultural landscape. Typically enclosed areas of rank ungrazed grassland were present with corresponding diversity. Dominated by improved species such as: *Holcus lanatus, Lolium perenne, Festuca rubra,* but additionally alongside these were *molinia caeulea, Deschampsia cespitosa* and *Dactylis glomerata.* Herbs typical of agricultural context were present: *Ranunculus acris, Plantago* spp*., Tussilago farfara* etc. Umbellifers and *Filipendula ulmaria* in wetter areas. *Cirsium spp.* and *Digitalis purpurea* were present in drier patches.

10.2.122 Acid grassland was generally found in small patches and most commonly within mosaics in dry heathland where grazing pressure has resulted in a loss of ericoids, encouraging the domination of grass species, particularly *Dechampsia flexuosa* and *Molinia caerulea*. Open areas in plantation forests are also occasionally classified as acid grassland in mosaic with bracken and heath species. There are few areas where *Nardus stricta* is dominant but this is restricted to areas around Stroan hill within the mix of crested dog's tail *Cynosurus cristatus* yellow rattle *Rhinanthus minor* and some orchids.

10.2.123 Marshy grassland is extensive and generally accounts for areas of rush, purple-moor grass, or tufted hair grass associations with improved conditions – Yorkshire fog *Holcus lanatus*, perennial rye grass *Lolium perenne*, cock's-foot *Dactylis glomerata* etc. In some locations it is in mosaic with scrub, often gorse. Less commonly marshy grassland is association with modified bog, a common feature of forestry rides and fire breaks.

C1-3 Tall Herb and fern

10.2.124 Extensive stands of bracken *Pteridium aquilinum* were recorded in disturbed areas. Commonly noted in forest breaks and in association with heaths, seen on the lower slopes of moor habitat. Occasionally bracken was noted in mosaic with scattered birch *Betula* spp. and rowan *Sorbus aucuparia*.

D1, 2, 5, 6 Heathland

10.2.125 Heathland mosaics were restricted to open area within the forest estate. Heath was generally dominated by *Calluna vulgaris* shrubs in either open or closed canopy. Purple moor grass *Molinia caerulea* and *Deschampsia cespitosa* were abundant to frequent. Heath habitat was often in the mosaic with scattered trees, primarily birch *Betula* spp. Ericoid species were present but subordinate to *Calluna*. Bryophytes were generally limited but *Hypnum* mosses were recorded.

E1.7–E1.8 Mire

10.2.126 Much like the heath described above, this habitat was largely defined by open areas in forest coups. The habitat was generally dominated by *Calluna vulgaris* but there was often no distinctive community due to the habitat being so impoverished. *Molinia caerulea* and *Deschampsia flexuosa* were recorded in abundance while *Eriophorum* species were occasionally present, no clear NVC community was present. Wet and dry modified bog habitat comprises of bog vegetation with little or no sphagnum moss. Both wet and dry modified bogs were recorded in small areas scattered across the Study Area, generally in isolated patches of flatter ground.

F1- F2 Swamp and marginal inundation vegetation

10.2.127 Swamp habitat was recorded minimally across the route and within the R route Study Area. The habitat was found in areas of marshy grassland within deeper hollows of the ground which have allowed swamp habitat to form with a typical species assemblage of *Phragmites australis*, *Typha*, *Phalaris arundinacea* etc.

G1-2 Standing and running Water

10.2.128 Standing water was recorded in the form of small pools and ponds; this was particularly common in the southern section of the existing R route. Other standing water bodies included the southern edge

of Bargatton Loch and in small pools formed by the Water of Ken tributaries. Running water was evident across the entire Study Area in the form of numerous burns, drainage ditches, river tributaries of the many Loch's adjacent to the route.

I2.1 Quarry

10.2.129 Quarry was recorded minimally across the site within the existing Breedon Tongland, Craigwhelan, Hind craig and Wills hill quarries.

J5 Other Habitat

10.2.130 A small percent of the route was classified as other habitat. This included areas of hard-standing, the Substation compound, buildings, car parks and private domestic dwellings/gardens.

10.2.131 Table 9 provides a brief summary of the habitat composition of the Study Area.

Table 9: Amalgamated Habitat types and proportion of the Study Area of G-T including the Existing R Route:

Phase 1 Habitat type	Amalgamated Phase 1 Habitats	Area within Study Area (Ha)	Proportion of Study Area (%)
Grassland	• Acid grassland (unimproved/ semi-improved) (B1.1/B1.2) • Neutral grassland (unimproved and semi-improved) (B2.1/ B2.2) • Improved and poor semi-improved grassland (B4) • Marsh/Marshy grassland (B5) • Poor semi-improved Grassland (B6)	610.69	48.91
Heathland	• Dry dwarf shrub heath (D1) • Wet dwarf shrub heath (D2) • Dry heath/acid grassland (D5) • Wet heath/acid grassland (D6)	32.33	2.59
Mire	• Fen –basin mire (E3.2) • Fen- flood plain mire (E3.3) • Acid flush (E2.1) • Wet modified bog (E1.7) • Dry modified bog (E1.8)	21.34	1.71
Miscellaneous	• Arable (J1.1) • Ornamental planting (J5) • Hard standing (J5) • Buildings (J3.6) • Amenity grassland (J1.2) • Bare ground (J4) • Other habitat (J5) • Survey not required (J5)	49.40	3.96
Open water	• Standing water (G1) • Running water (G2)	5.62	0.45
Rock exposure	• Acid/neutral rock (I1.4.1) • Basic rock (I1.4.2) • Quarry (I2.1)	6.91	0.55
Swamp, marginal inundation	• Swamp (F1) • Marginal and Inundation vegetation (F2.2)	2.03	0.16
Tall herb and fern	• Bracken Continuous/ scattered (C1.1/ C1.2) • Tall ruderal (C3.1) • Non-ruderal (C3.2)	70.02	5.61
Woodland and scrub	• Broadleaved woodland natural (A1), plantation (A1.1.2), semi-natural (A1.1.1), scattered (A3.1) • Coniferous woodland (natural (A1), plantation (A1.2.2), semi-natural (A1.2.1), scattered (A3.2)) • Mixed woodland (natural (A1), plantation (A1.3.2), semi-natural (A1.3.1), scattered (A3.3) • Scrub (A2) (scattered (A2.2), dense/continuous (A2.1)) • Recently felled (A4)	450.17	36.06
Total		1,248.51	100

GWDTE

10.2.132 The Study Area's many areas of marshy grassland suggest some level of groundwater dependency; however visual observations noted that topographical factors were key in influencing these vegetation communities.

10.2.133 Modified bog habitats are ostensibly groundwater dependent. However, where these are present within the Study Area, they generally correlate with areas of deep peat (over 1m deep) on level of gently sloping ground, suggesting ombrogenous systems highly dependent on rain water. No bog systems with the Study Area are considered to be groundwater dependent.

10.2.134 Like many other Study Areas, the G-T route supports many small areas of marshy grassland. However, the majority of these are small pockets of *Juncus* in depressions or low-lying areas within heavily improved grassland. Their species composition is a function of topography and surface water flow and do not suggest a groundwater dependency.

10.2.135 However, two areas of marshy grassland that accords with NVC M23 *Juncus effusus/acutiflorus - Galium palustre* rush-pasture, a mire community, were identified in the north of the Study Area, in the north of the route, near Maggot Plantation, towers 6-8 (refer to Figure 3). According to best practice[ii], M23 is considered to be potentially highly groundwater dependent.

10.2.136 These communities were much more species diverse than other marshy grasslands in the Study Area. While still dominated by *Molinia* and *juncus effusus,* the habitat also supported a wide range of neutral grasses, including *Anthoxanthum odoratum.* Acidic and mire conditions were represented by the presence of sphagnum, although rare, tormentil, deer grass *Trichophorum cespitosum* and butterwort *Pinguicula vulgaris.* Bog myrtle was abundant throughout these communities.

10.2.137 Topographically, the communities are located downhill of an ombrogenous bog system, with a number of small watercourses flowing to a small loch to the north-east. While it is likely that these communities, therefore, rely on surface water flows to some degree, it is not possible to entirely rule out a level of groundwater dependency. While M23 communities can be considered highly groundwater dependent, at these locations they are considered to have a dependency no greater than moderate.

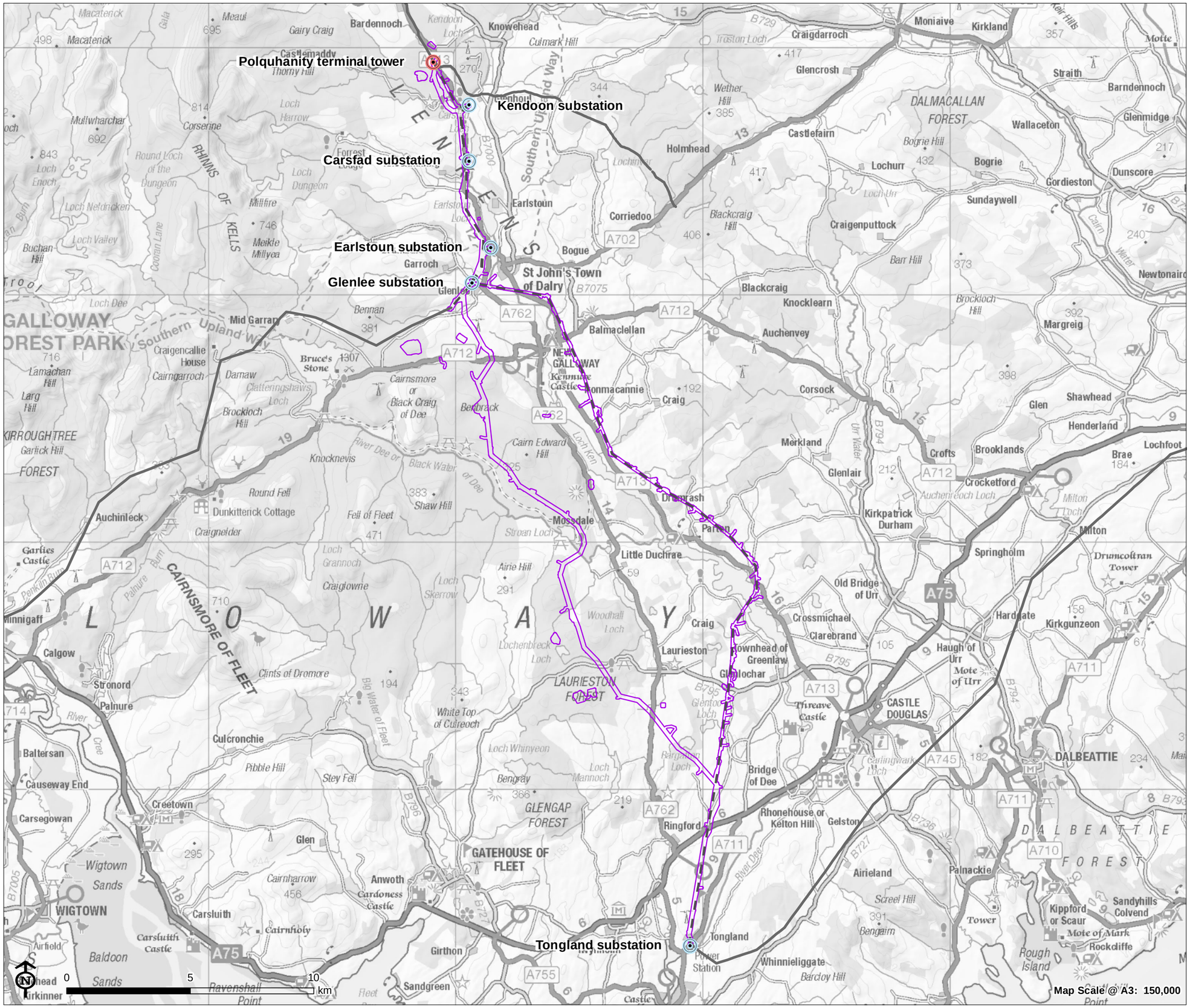
Ancillary Infrastructure

10.2.138 G-T Study Area has ancillary infrastructure associated with the Connection. As mentioned above, for calculation purposes, these have been included to represent the associated habitats. Table 10 below provides more detail on these areas.

Table 10: Ancillary infrastructure associated with G-T and R Route Removal

Additional Working Area	Description: habitat assessment
Gallows Knowe Quarry	• Newly planted woodland • There is an existing small quarry here
Will's Hill Quarry	• Coniferous woodland plantation/ areas of clear-fell • There is an existing small quarry here
Hind Craig Quarry	• Primarily composed of coniferous woodland plantation and grasslands • There is an existing small quarry here
Construction compound 3	• Coniferous woodland plantation and areas of felled forest
Construction compound 4	• Coniferous woodland on heavily Modified bog
Construction compound 5	• Existing quarry and surrounded by woodland and bracken
Construction compound 6	• No data due to Access issues
Craigelwhan Quarry and Craigelwhan West Quarry	• Craigelwhan Quarry has been recently felled conifer plantation • Craigelwhan West Quarry mature conifer plantation
Lochenbreck Quarry	• Primarily coniferous woodland plantation with small areas of dry dwarf shrub heath with a scattering of self-seeded conifers and some bracken.

Annex 1
Figures



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Technical Appendix 10.2: Habitat and NVC Survey

Figure 1: Study Area

- Polquhanity sealing end and terminal tower
- Substation and hydro electricity generating station
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network
- Study area for habitat survey

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.1: Phase 1 Habitats

Overhead line infrastructure
- Polquhanity to Glenlee via Kendoon (steel lattice tower)
- Carsfad to Kendoon (wood pole)
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to proposed towers
- Existing access
- New access
- Timber extraction spur

Access to towers for removal
- New access
- Working area
- Construction compound
- Potential quarry working area

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.5 Wall
- TL Tree line

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.2.1 Coniferous woodland (semi-natural)
- A1.2.1 Coniferous woodland (semi-natural)/B5 Marshy grassland
- A1.2.1 Coniferous woodland (semi-natural)/E1.7 Wet modified bog
- A1.2.2 Coniferous woodland (plantation)
- A1.3.1 Mixed woodland (semi-natural)
- A1.3.1 Mixed woodland (semi-natural)/A2.2 Scrub (scattered)/C1.2 Bracken (scattered)
- A1.3.2 Mixed woodland (plantation)
- A2.1 Scrub (dense/continuous)/A3.3 Mixed scattered trees
- A2.2 Scrub (scattered)
- A3.3 Mixed scattered trees
- A4.2 Coniferous woodland (recently felled)
- A4.2 Coniferous woodland (recently felled)/B5 Marshy grassland
- A4.2 Coniferous woodland (recently felled)/B5 Marshy grassland/E1.7 Wet modified bog
- B2.2 Neutral grassland (semi-improved)
- B4 Improved grassland
- B4 Improved grassland/A2.2 Scrub (scattered)
- B5 Marshy grassland
- B5 Marshy grassland/A3.3 Mixed scattered trees
- B5 Marshy grassland/D6 Wet heath/acid grassland
- C1.1 Bracken (continuous)
- C1.1 Bracken (continuous)/A2.2 Scrub (scattered)
- C3.1 Other tall herb and fern (ruderal)
- C3.1 Other tall herb and fern (ruderal)/A2.2 Scrub (scattered)
- C3.1 Other tall herb and fern (ruderal)/A3.3 Mixed scattered trees
- E1.7 Wet modified bog
- E1.8 Dry modified bog
- G1 Standing water
- G2 Running water
- J1.2 Amenity grassland/A2.2 Scrub
- Survey Not Required

Polquhanity terminal tower

DE102R

Q1

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Map Scale @ A3: 10,000

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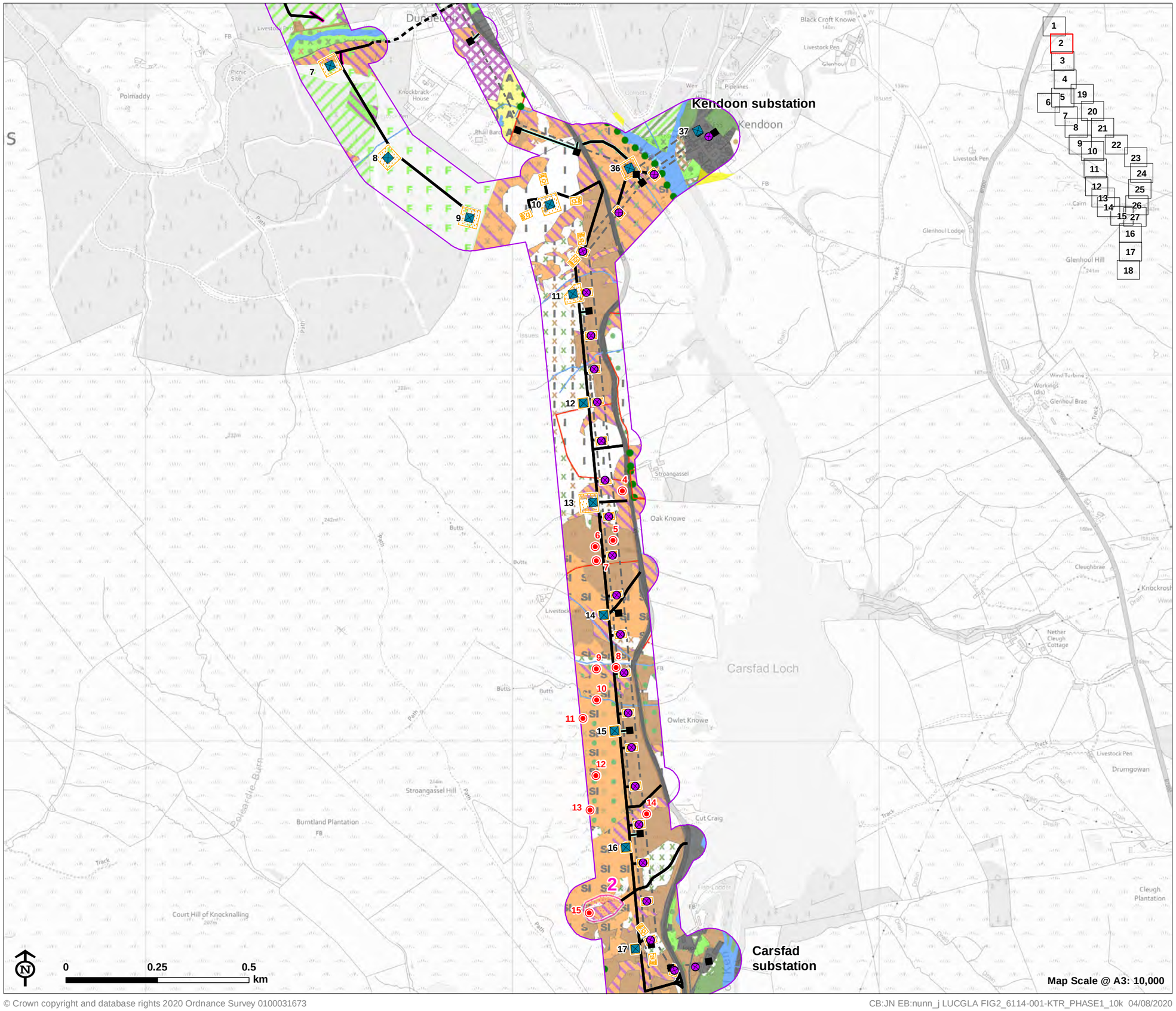

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.2: Phase 1 Habitats

Overhead line infrastructure
- Polquhanity to Glenlee via Kendoon (steel lattice tower)
- Carsfad to Kendoon (wood pole)
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)

Access to proposed towers
- Existing access
- New access
- Timber extraction spur

Access to towers for removal
- New access
- Working area
- Construction compound

Phase 1 Habitat Survey
- Study area
- Target note
- Invasive species area

Phase 1 Habitat Linear Features
- J2.5 Wall
- TL Tree line

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.2.1 Coniferous woodland (semi-natural)/B5 Marshy grassland
- A1.2.1 Coniferous woodland (semi-natural)/E1.7 Wet modified bog
- A1.2.2 Coniferous woodland (plantation)
- A1.3.1 Mixed woodland (semi-natural)
- A1.3.1 Mixed woodland (semi-natural)/A2.2 Scrub (scattered)/C1.2 Bracken (scattered)
- A1.3.2 Mixed woodland (plantation)
- A1.3.2 Mixed woodland (plantation)/A2.2 Scrub (scattered)
- A2.1 Scrub (dense/continuous)
- A2.1 Scrub (dense/continuous)/C3.1 Other tall herb and fern (ruderal)
- A2.2 Scrub (scattered)
- A2.2 Scrub (scattered)/C1.2 Bracken (scattered)/A3.1 Broadleaved scattered trees
- A3.1 Broadleaved scattered trees
- A3.1 Broadleaved scattered trees/C1.2 Bracken (scattered)
- A4.2 Coniferous woodland (recently felled)
- A4.2 Coniferous woodland (recently felled)/B5 Marshy grassland
- B2.2 Neutral grassland (semi-improved)
- B2.2 Neutral grassland (semi-improved)/A3.1 Broadleaved scattered trees/C1.2 Bracken (scattered)
- B2.2 Neutral grassland (semi-improved)/C1.2 Bracken (scattered)
- B4 Improved grassland
- B4 Improved grassland/A2.2 Scrub (scattered)
- B4 Improved grassland/A3.1 Broadleaved scattered trees
- B4 Improved grassland/C1.2 Bracken (scattered)
- B4 Improved grassland/C1.2 Bracken (scattered)/A2.2 Scrub (scattered)
- B5 Marshy grassland
- B5 Marshy grassland/A3.1 Broadleaved scattered trees
- B5 Marshy grassland/C1.1 Bracken (continuous)
- B5 Marshy grassland/C1.2 Bracken (scattered)
- B5 Marshy grassland/C1.2 Bracken (scattered)/A2.2 Scrub (scattered)
- B5 Marshy grassland/E1.7 Wet modified bog
- C1.1 Bracken (continuous)
- C1.1 Bracken (continuous)/A2.2 Scrub (scattered)
- C1.1 Bracken (continuous)/A3.1 Broadleaved scattered trees
- C1.1 Bracken (continuous)/A3.3 Mixed scattered trees
- C1.2 Bracken (scattered)
- C1.2 Bracken (scattered)/C3.2 Other tall herb and fern (non ruderal)
- E1.7 Wet modified bog
- G1 Standing water
- G2 Running water
- G2 Running water/F2.2 Marginal and inundation - inundation vegetation
- I2.1 Quarry
- J1.2 Amenity grassland/A2.2 Scrub
- Survey Not Required

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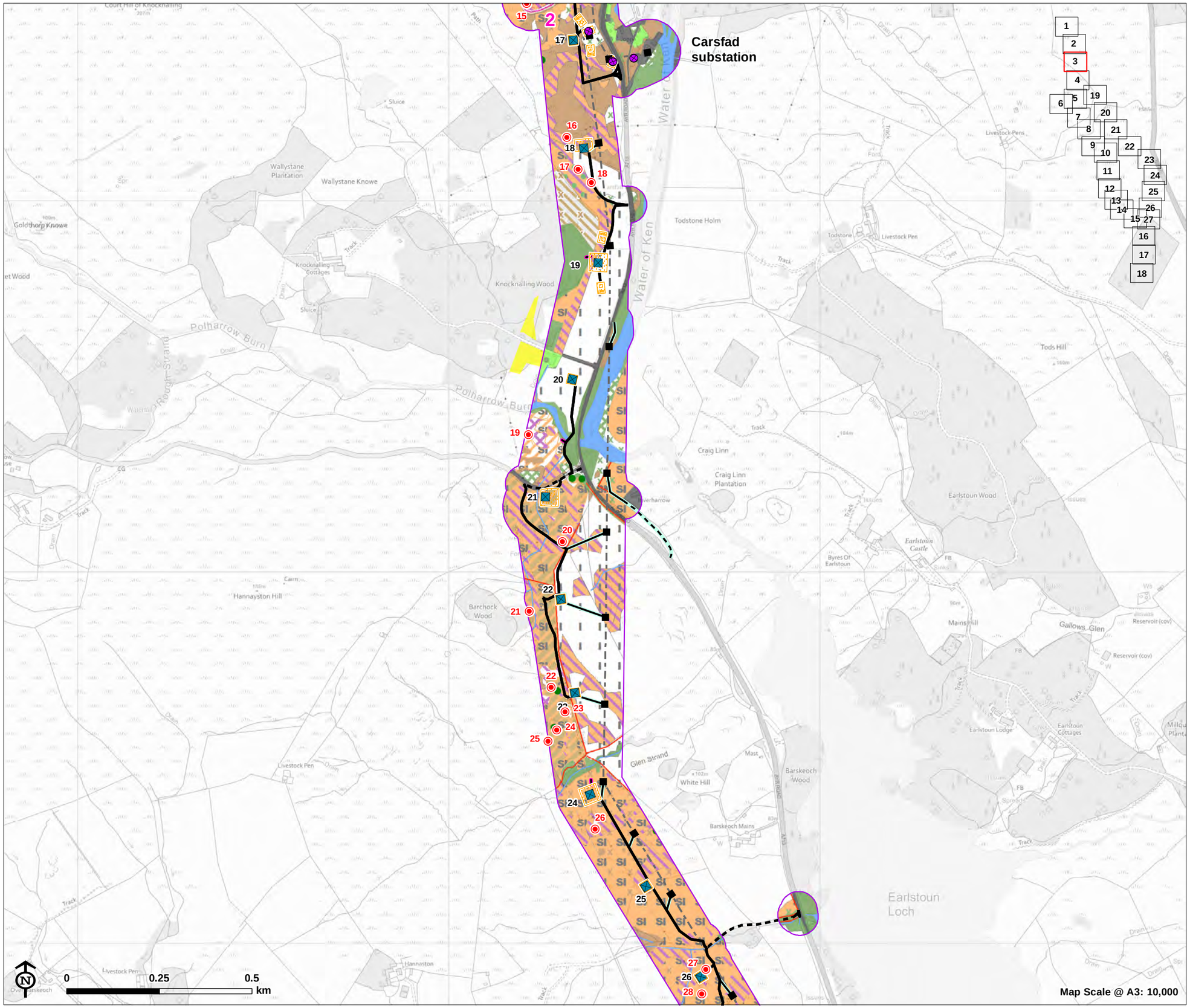

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.3: Phase 1 Habitats

Overhead line infrastructure

- Polquhanity to Glenlee via Kendoon (steel lattice tower)
- Carsfad to Kendoon (wood pole)
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)

Access to proposed towers

- Existing access
- New access
- Timber extraction spur

Access to towers for removal

- Existing access
- New access
- Working area
- Construction compound

Phase 1 Habitat Survey

- Study area
- Target note
- Invasive species area

Phase 1 Habitat Linear Features

- J2.5 Wall
- TL Tree line

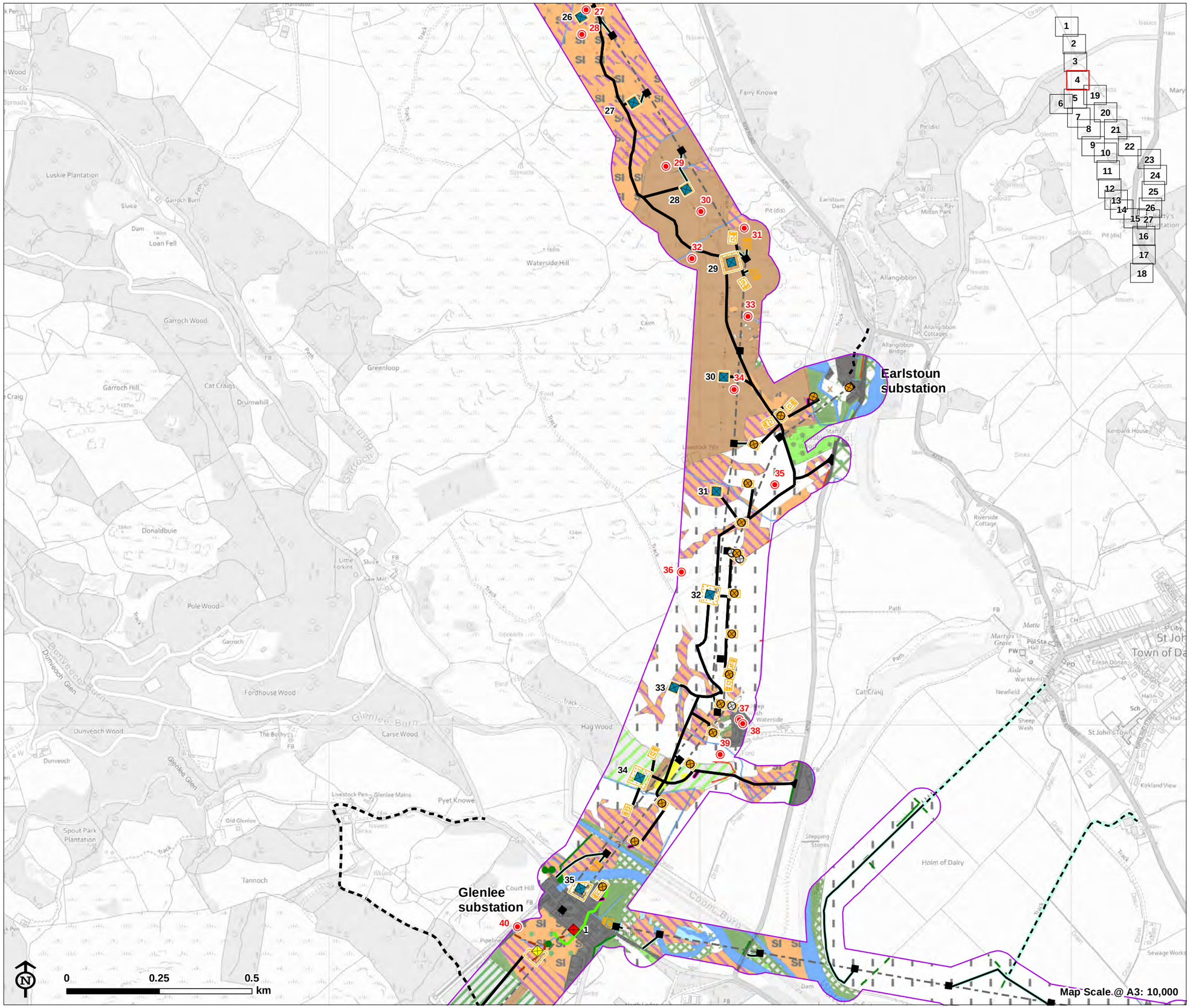
Phase 1 Habitat Areas

- A1.1.1 Broadleaved woodland (semi-natural)
- A1.3.1 Mixed woodland (semi-natural)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)
- B1.2 Acid grassland (semi-
- B1.2 Acid grassland (semi-improved)/C1.2 Bracken
- B2.2 Neutral grassland (semi-improved)
- B2.2 Neutral grassland (semi-improved)/A2.2 Scrub (scattered)
- B2.2 Neutral grassland (semi-improved)/C1.2 Bracken (scattered)
- B4 Improved grassland
- B4 Improved grassland/B5 Marshy grassland
- B5 Marshy grassland
- B5 Marshy grassland/A3.1 Broadleaved scattered trees
- B6 Poor grassland (semi-improved)
- C1.1 Bracken (continuous)
- C1.1 Bracken (continuous)/A2.2 Scrub (scattered)
- C1.1 Bracken (continuous)/A3.3 Mixed scattered trees
- C1.1 Bracken (continuous)/B1.2 Acid grassland (semi-
- C1.2 Bracken (scattered)
- C1.2 Bracken (scattered)/A2.2 Scrub (scattered)
- C1.2 Bracken (scattered)/B2.2 Neutral grassland (semi-improved)
- C3.1 Other tall herb and fern (ruderal)
- C3.1 Other tall herb and fern (ruderal)/C1.2 Bracken (scattered)
- E1.7 Wet modified bog
- E1.8 Dry modified bog
- G2 Running water
- I2.1 Quarry
- Survey Not Required

LUC

SP ENERGY NETWORKS

CB:JN EB:nunn_j LUCGLA FIG2_6114-001-KTR_PHASE1_10k 04/08/2020



KTR Project
EIA Report

Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.4: Phase 1 Habitats

Overhead line infrastructure

- Polquhanity to Glenlee via Kendoon (steel lattice tower)
- Earlstoun to Glenlee (wood pole)
- Earlstoun to Glenlee (temporary wood pole)
- Glenlee to Tongland (steel lattice tower)
- BG route deviation (steel lattice tower)
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Underground cable

Access to proposed towers

- Existing access
- New access
- Timber extraction spur

Access to towers for removal

- Existing access
- New access
- Working area

Phase 1 Habitat Survey

- Study area
- Target note
- Invasive species area

Phase 1 Habitat Linear Features

- J2.1.2 Intact hedge (species-poor)
- J2.2.2 Defunct hedge (species-poor)
- J2.4 Fence
- J2.5 Wall
- J2.6 Dry ditch
- TL Tree line

Phase 1 Habitat Areas

- A1.1.1 Broadleaved woodland (semi-natural)
- A1.1.2 Broadleaved woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)
- A1.3.1 Mixed woodland (semi-natural)
- A2.1 Scrub (dense/continuous)
- A2.1 Scrub (dense/continuous)/A3.1 Broadleaved scattered trees
- A2.2 Scrub (scattered)
- A2.2 Scrub (scattered)/C1.2 Bracken (scattered)
- A3.1 Broadleaved scattered trees
- A3.1 Broadleaved scattered trees/A2.1 Scrub (dense/continuous)
- B2.2 Neutral grassland (semi-improved)
- B2.2 Neutral grassland (semi-improved)/A2.2 Scrub (scattered)
- B2.2 Neutral grassland (semi-improved)/A3.1 Broadleaved scattered trees
- B2.2 Neutral grassland (semi-improved)/C1.2 Bracken (scattered)
- 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)
- F1 Swamp
- G2 Running water
- J1.1
- J4 Bare ground
- Survey Not Required

LUC

SP ENERGY NETWORKS

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KTR Project
EIA Report

Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.5: Phase 1 Habitats

Overhead line infrastructure

- Polquhanity to Glenlee via Kendoon (steel lattice tower)
- Earlstoun to Glenlee (wood pole)
- Glenlee to Tongland (steel lattice tower)
- BG route deviation (steel lattice tower)
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to proposed towers

- Existing access
- New access
- Timber extraction spur

Access to towers for removal

- Existing access
- New access
- Working area
- Potential quarry working area

Phase 1 Habitat Survey

- Study area
- Target note

Phase 1 Habitat Linear Features

- J2.1.2 Intact hedge (species-poor)
- J2.2.2 Defunct hedge (species-poor)
- J2.6 Dry ditch

Phase 1 Habitat Areas

- A1.1.1 Broadleaved woodland (semi-natural)
- A1.1.2 Broadleaved woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)/A1.1.2 Broadleaved woodland (plantation)
- A2.1 Scrub (dense/continuous)
- A2.1 Scrub (dense/continuous)/A3.1 Broadleaved scattered trees
- A2.2 Scrub (scattered)
- A2.2 Scrub (scattered)/B2.2 Neutral grassland (semi-improved)
- A4.2 Coniferous woodland (recently felled)
- B1.2 Acid grassland (semi-
- B2.1 Neutral grassland (unimproved)
- B2.2 Neutral grassland (semi-improved)
- B2.2 Neutral grassland (semi-improved)/A3.1 Broadleaved scattered trees
- B2.2 Neutral grassland (semi-improved)/C1.2 Bracken (scattered)
- B4 Improved grassland
- B5 Marshy grassland
- B5 Marshy grassland/A2.2 Scrub (scattered)
- B5 Marshy grassland/C1.2 Bracken (scattered)
- B5 Marshy grassland/C1.2 Bracken (scattered)/A2.2 Scrub (scattered)
- C1.1 Bracken (continuous)
- C1.1 Bracken (continuous)/A2.2 Scrub (scattered)
- C1.1 Bracken (continuous)/A3.1 Broadleaved scattered trees
- C1.2 Bracken (scattered)/B5 Marshy grassland/A2.2 Scrub (scattered)
- E1.8 Dry modified bog
- G1 Standing water
- G2 Running water
- I2.1 Quarry
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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KTR Project
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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.6: Phase 1 Habitats

Overhead line infrastructure

- BG route deviation (steel lattice tower)
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to proposed towers

- Existing access
- New access
- Working area
- Potential quarry working area

Phase 1 Habitat Survey

- Study area

Phase 1 Habitat Linear Features

- J2.5 Wall

Phase 1 Habitat Areas

- A1.1.1 Broadleaved woodland (semi-natural)
- A1.2.1 Coniferous woodland (semi-natural)
- A1.2.2 Coniferous woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)/A4.2 Coniferous woodland (recently felled)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)
- B5 Marshy grassland
- B5 Marshy grassland/A2.2 Scrub (scattered)
- B5 Marshy grassland/C1.2 Bracken (scattered)
- C1.1 Bracken (continuous)/A2.2 Scrub (scattered)
- C1.2 Bracken (scattered)/B5 Marshy grassland/A2.2 Scrub (scattered)
- I2.1 Quarry
- Survey Not Required

Q3

0 0.25 0.5 km

Map Scale @ A3: 10,000

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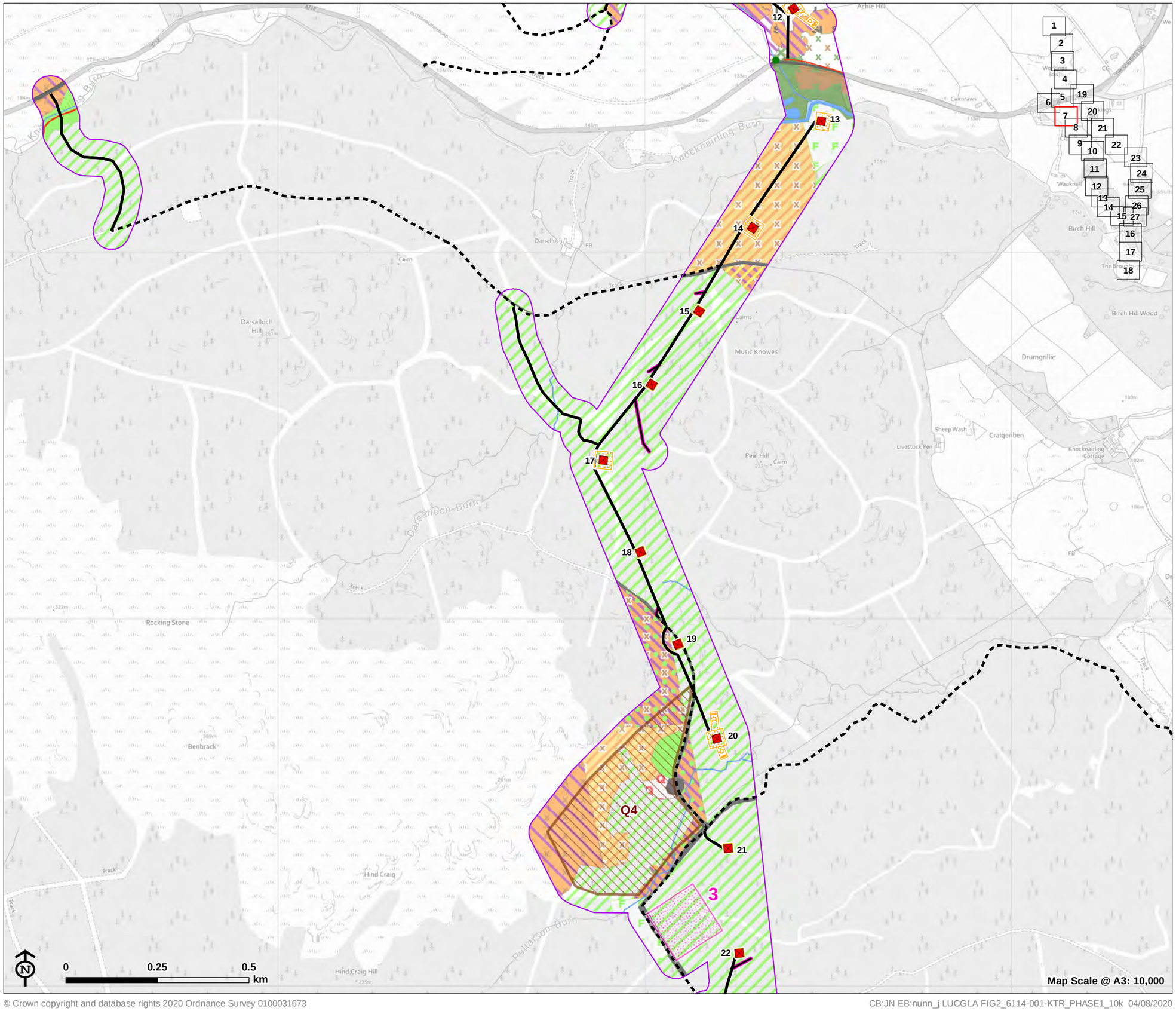
Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.7: Phase 1 Habitats



Overhead line infrastructure
- Glenlee to Tongland (steel lattice tower)
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to proposed towers
- Existing access
- New access
- Timber extraction spur
- Working area
- Construction compound
- Potential quarry working area

Phase 1 Habitat Survey
- Study area

Phase 1 Habitat Linear Features
- J2.5 Wall
- TL Tree line

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.2.1 Coniferous woodland (semi-natural)
- A1.2.2 Coniferous woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)/A1.1.2 Broadleaved woodland (plantation)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)
- A2.2 Scrub (scattered)/C1.2 Bracken (scattered)
- A4.2 Coniferous woodland (recently felled)
- B2.2 Neutral grassland (semi-improved)
- B4 Improved grassland
- B5 Marshy grassland
- B5 Marshy grassland/A3.2 Coniferous scattered trees
- B5 Marshy grassland/A3.2 Coniferous scattered trees/C1.2 Bracken (scattered)
- B5 Marshy grassland/A3.3 Mixed scattered trees
- B5 Marshy grassland/C1.2 Bracken (scattered)
- B5 Marshy grassland/C1.2 Bracken (scattered)/A3.2 Coniferous scattered trees
- C1.1 Bracken (continuous)/A2.2 Scrub (scattered)
- C1.2 Bracken (scattered)/B5 Marshy grassland
- D5 Dry heath/acid grassland/B5 Marshy grassland/C1.2 Bracken (scattered)
- D5 Dry heath/acid grassland/C1.2 Bracken (scattered)
- E1.8 Dry modified bog
- G2 Running water
- I2.1 Quarry
- Survey Not Required

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.8: Phase 1 Habitats

Overhead line infrastructure

- Glenlee to Tongland (steel lattice tower)
- Existing 132kV overhead line to be removed (following construction of the KTR Project)

Access to proposed towers

- Existing access
- New access
- Timber extraction spur
- Working area
- Construction compound
- Potential quarry working area

Phase 1 Habitat Survey

- Study area

Phase 1 Habitat Areas

- A1.1.1 Broadleaved woodland (semi-natural)
- A1.2.1 Coniferous woodland (semi-natural)
- A1.2.2 Coniferous woodland (plantation)
- A1.3.2 Mixed woodland (plantation)
- A4.2 Coniferous woodland (recently felled)
- B1.2 Acid grassland (semi-
- B5 Marshy grassland/A3.2 Coniferous scattered trees
- B5 Marshy grassland/A3.2 Coniferous scattered trees/C1.2 Bracken (scattered)
- B5 Marshy grassland/A3.3 Mixed scattered trees
- B5 Marshy grassland/C1.2 Bracken (scattered)/A3.2 Coniferous scattered trees
- B5 Marshy grassland/C1.2 Bracken (scattered)/A3.3 Mixed scattered trees
- B5 Marshy grassland/C3.1 Other tall herb and fern (ruderal)/A3.2 Coniferous scattered trees
- C1.1 Bracken (continuous)
- C1.1 Bracken (continuous)/A3.2 Coniferous scattered trees
- C1.1 Bracken (continuous)/A3.3 Mixed scattered trees
- C1.2 Bracken (scattered)/B5 Marshy grassland
- D5 Dry heath/acid grassland
- D5 Dry heath/acid grassland/A3.2 Coniferous scattered trees
- D5 Dry heath/acid grassland/C1.2 Bracken (scattered)
- D5 Dry heath/acid grassland/C1.2 Bracken (scattered)/A3.2 Coniferous scattered trees
- I2.1 Quarry
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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KTR Project
EIA Report

Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.9: Phase 1 Habitats

Overhead line infrastructure

- Glenlee to Tongland (steel lattice tower)
- Existing 132kV overhead line to be removed (following construction of the KTR Project)

Access to proposed towers

- Existing access
- New access
- Timber extraction spur
- Working area
- Construction compound

Phase 1 Habitat Survey

- Study area
- Target note

Phase 1 Habitat Areas

- A1.1.1 Broadleaved woodland (semi-natural)
- A1.2.1 Coniferous woodland (semi-natural)
- A1.2.1 Coniferous woodland (semi-natural)/B5 Marshy grassland/C1.2 Bracken (scattered)
- A1.2.1 Coniferous woodland (semi-natural)/E1.7 Wet modified bog
- A1.2.2 Coniferous woodland (plantation)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)
- A3.2 Coniferous scattered trees/E1.7 Wet modified bog
- A4.2 Coniferous woodland (recently felled)
- B5 Marshy grassland
- B5 Marshy grassland/A3.1 Broadleaved scattered trees
- B5 Marshy grassland/A3.2 Coniferous scattered trees
- B5 Marshy grassland/A3.3 Mixed scattered trees
- B5 Marshy grassland/C1.2 Bracken (scattered)/A3.3 Mixed scattered trees
- C1.1 Bracken (continuous)
- C1.1 Bracken (continuous)/A3.2 Coniferous scattered trees
- C1.2 Bracken (scattered)
- D1 Dry dwarf shrub heath/A2.2 Scrub (scattered)
- D5 Dry heath/acid grassland/A3.1 Broadleaved scattered trees
- D5 Dry heath/acid grassland/A3.2 Coniferous scattered trees
- D5 Dry heath/acid grassland/C1.2 Bracken (scattered)/A3.2 Coniferous scattered trees
- E1.7 Wet modified bog
- E1.7 Wet modified bog/A3.3 Mixed scattered trees
- E1.7 Wet modified bog/B5 Marshy grassland/A3.3 Mixed scattered trees
- E1.7 Wet modified bog/C1.2 Bracken (scattered)/A3.1 Broadleaved scattered trees
- G1 Standing water
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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KTR Project
EIA Report

Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.10: Phase 1 Habitats

Overhead line infrastructure

- Glenlee to Tongland (steel lattice tower)
- Existing 132kV overhead line to be removed (following construction of the KTR Project)

Access to proposed towers

- Existing access
- New access
- Timber extraction spur
- Working area
- Construction compound

Phase 1 Habitat Survey

- Study area

Phase 1 Habitat Areas

- A1.1.1 Broadleaved woodland (semi-natural)
- A1.1.2 Broadleaved woodland (plantation)
- A1.2.1 Coniferous woodland (semi-natural)
- A1.2.1 Coniferous woodland (semi-natural)/B5 Marshy grassland/C1.2 Bracken (scattered)
- A1.2.1 Coniferous woodland (semi-natural)/E1.7 Wet modified bog
- A1.2.2 Coniferous woodland (plantation)
- A1.3.1 Mixed woodland (semi-natural)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)
- A3.1 Broadleaved scattered trees
- A3.2 Coniferous scattered trees/E1.7 Wet modified bog
- A3.3 Mixed scattered trees
- A4.2 Coniferous woodland (recently felled)
- A4.2 Coniferous woodland (recently felled)/C3.1 Other tall herb and fern (ruderal)
- B1.2 Acid grassland (semi-improved)/D1 Dry dwarf shrub
- B5 Marshy grassland
- B5 Marshy grassland/A3.1 Broadleaved scattered trees
- B5 Marshy grassland/A3.3 Mixed scattered trees
- C1.1 Bracken (continuous)
- C1.1 Bracken (continuous)/A2.2 Scrub (scattered)
- C1.2 Bracken (scattered)
- C1.2 Bracken (scattered)/D1 Dry dwarf shrub heath
- D1 Dry dwarf shrub heath/A2.2 Scrub (scattered)
- D1 Dry dwarf shrub heath/A3.2 Coniferous scattered trees
- D5 Dry heath/acid grassland/A3.1 Broadleaved scattered trees
- E1.7 Wet modified bog
- E1.7 Wet modified bog/A3.3 Mixed scattered trees
- E1.7 Wet modified bog/B5 Marshy grassland/A3.3 Mixed scattered trees
- E1.7 Wet modified bog/C1.2 Bracken (scattered)/A3.1 Broadleaved scattered trees
- G1 Standing water
- I2.1 Quarry
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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KTR Project
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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.11: Phase 1 Habitats

Overhead line infrastructure
- Glenlee to Tongland (steel lattice tower)
- Existing 132kV overhead line to be removed (following construction of the KTR Project)

Access to proposed towers
- Existing access
- New access
- Timber extraction spur
- Working area

Phase 1 Habitat Survey
- Study area
- Target note
- Invasive species area

Phase 1 Habitat Linear Features
- J2.5 Wall

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.2.2 Coniferous woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)/A4.2 Coniferous woodland (recently felled)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)
- A3.2 Coniferous scattered trees/E1.7 Wet modified bog
- A4.2 Coniferous woodland (recently felled)
- B1.2 Acid grassland (semi-
- B5 Marshy grassland
- B5 Marshy grassland/E1.7 Wet modified bog
- C1.1 Bracken (continuous)
- C1.1 Bracken (continuous)/A2.2 Scrub (scattered)
- D5 Dry heath/acid grassland
- E1.7 Wet modified bog
- E1.7 Wet modified bog/A3.2 Coniferous scattered trees
- E1.7 Wet modified bog/C1.2 Bracken (scattered)
- G2 Running water
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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KTR Project
EIA Report

Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.12: Phase 1 Habitats

Overhead line infrastructure
- Glenlee to Tongland (steel lattice tower)
- Existing 132kV overhead line to be removed (following construction of the KTR Project)

Access to proposed towers
- Existing access
- New access
- Timber extraction spur
- Working area
- Potential quarry working area

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.5 Wall
- J2.6 Dry ditch
- TL Tree line

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.2.2 Coniferous woodland (plantation)
- A1.3.1 Mixed woodland (semi-natural)
- A1.3.2 Mixed woodland (plantation)
- A2.2 Scrub (scattered)
- A3.1 Broadleaved scattered trees
- A3.2 Coniferous scattered trees
- A4.2 Coniferous woodland (recently felled)
- B1.2 Acid grassland (semi-improved)/C1.2 Bracken
- B2.2 Neutral grassland (semi-improved)/C1.2 Bracken (scattered)
- B5 Marshy grassland
- B5 Marshy grassland/D1 Dry dwarf shrub heath
- C1.1 Bracken (continuous)
- C1.1 Bracken (continuous)/A3.1 Broadleaved scattered trees
- C1.2 Bracken (scattered)/A2.2 Scrub (scattered)
- D1 Dry dwarf shrub heath
- D1 Dry dwarf shrub heath/A3.2 Coniferous scattered trees
- D5 Dry heath/acid grassland
- E1.8 Dry modified bog
- G2 Running water
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 1:10,000

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KTR Project
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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.13: Phase 1 Habitats

Overhead line infrastructure

- Glenlee to Tongland (steel lattice tower)
- Existing 132kV overhead line to be removed (following construction of the KTR Project)

Access to proposed towers

- Existing access
- New access
- Timber extraction spur
- Working area
- Potential quarry working area

Phase 1 Habitat Survey

- Study area
- Target note

Phase 1 Habitat Linear Features

- J2.4 Fence
- J2.5 Wall
- J2.6 Dry ditch
- TL Tree line

Phase 1 Habitat Areas

- A1.1.1 Broadleaved woodland (semi-natural)
- A1.2.1 Coniferous woodland (semi-natural)
- A1.2.1 Coniferous woodland (semi-natural)/C1.2 Bracken (scattered)
- A1.2.2 Coniferous woodland (plantation)
- A1.3.1 Mixed woodland (semi-natural)
- A2.2 Scrub (scattered)
- A3.2 Coniferous scattered trees
- A4.2 Coniferous woodland (recently felled)
- A4.2 Coniferous woodland (recently felled)/A3.2 Coniferous scattered trees
- B1.2 Acid grassland (semi-
- B2.2 Neutral grassland (semi-improved)
- 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
- C1.2 Bracken (scattered)
- C1.2 Bracken (scattered)/B5 Marshy grassland
- D1 Dry dwarf shrub heath
- D5 Dry heath/acid grassland
- E1.8 Dry modified bog
- G1 Standing water
- G2 Running water
- I2.1 Quarry
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

CB:JN EB:nunn_j LUCGLA FIG2_6114-001-KTR_PHASE1_10k 04/08/2020

KTR Project
EIA Report

Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.14: Phase 1 Habitats

Overhead line infrastructure
- Glenlee to Tongland (steel lattice tower)
- Existing 132kV overhead line to be removed (following construction of the KTR Project)

Access to proposed towers
- Existing access
- New access
- Timber extraction spur
- Working area
- Construction compound
- Potential quarry working area

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.4 Fence
- J2.5 Wall

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.2.1 Coniferous woodland (semi-natural)
- A1.2.2 Coniferous woodland (plantation)
- A2.2 Scrub (scattered)
- A3.2 Coniferous scattered trees
- A4.2 Coniferous woodland (recently felled)
- B1.1 Acid grassland
- B1.2 Acid grassland (semi-
- B2.2 Neutral grassland (semi-improved)
- B4 Improved grassland
- B5 Marshy grassland
- C1.1 Bracken (continuous)
- C1.2 Bracken (scattered)
- C1.2 Bracken (scattered)/B5 Marshy grassland
- E1.7 Wet modified bog
- E1.8 Dry modified bog
- F1 Swamp
- G1 Standing water
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

CB:JN EB:nunn_j LUCGLA FIG2_6114-001-KTR_PHASE1_10k 04/08/2020

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.15: Phase 1 Habitats

Overhead line infrastructure
- Glenlee to Tongland (steel lattice tower)
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to proposed towers
- Existing access
- New access
- Timber extraction spur
- Working area
- Construction compound

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.4 Fence
- J2.5 Wall

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.1.2 Broadleaved woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)
- A4.2 Coniferous woodland (recently felled)
- A4.2 Coniferous woodland (recently felled)/A1.2.2 Coniferous woodland (plantation)
- B1.1 Acid grassland
- B1.2 Acid grassland (semi-improved)/B2.2 Neutral grassland (semi-improved)
- B2.2 Neutral grassland (semi-improved)
- B4 Improved grassland
- B5 Marshy grassland
- B5 Marshy grassland/J5 Other habitat
- C1.1 Bracken (continuous)
- C1.2 Bracken (scattered)
- C1.2 Bracken (scattered)/B2.2 Neutral grassland (semi-improved)
- D1 Dry dwarf shrub heath
- D2 Wet dwarf shrub heath
- E1.7 Wet modified bog
- E1.8 Dry modified bog
- F1 Swamp
- G1 Standing water
- J5 Other habitat
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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KTR Project
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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.16: Phase 1 Habitats

Overhead line infrastructure
- Glenlee to Tongland (steel lattice tower)
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to proposed towers
- Existing access
- New access

Access to towers for removal
- New access
- Working area

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.1.2 Intact hedge (species-poor)
- J2.2.1 Defunct hedge (native species-rich)
- J2.2.2 Defunct hedge (species-poor)
- J2.3.2 Hedge with trees (species-poor)
- J2.4 Fence
- J2.5 Wall

Phase 1 Habitat Areas
- A1.1.2 Broadleaved woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)
- A2.2 Scrub (scattered)/C1.2 Bracken (scattered)
- A3.3 Mixed scattered trees
- B1.2 Acid grassland (semi-improved)/B2.2 Neutral grassland (semi-improved)
- B4 Improved grassland
- B5 Marshy grassland
- B5 Marshy grassland/A3.1 Broadleaved scattered trees
- B6 Poor grassland (semi-improved)
- C1.1 Bracken (continuous)
- C1.2 Bracken (scattered)
- C1.2 Bracken (scattered)/B2.2 Neutral grassland (semi-improved)
- C1.2 Bracken (scattered)/B6 Poor semi-improved grassland
- E1.7 Wet modified bog
- G1 Standing water
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.17: Phase 1 Habitats

Overhead line infrastructure
- Glenlee to Tongland (steel lattice tower)
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to proposed towers
- Existing access
- New access
- Timber extraction spur

Access to towers for removal
- New access
- Working area

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.1.2 Intact hedge (species-poor)
- J2.2.2 Defunct hedge (species-poor)
- J2.3.2 Hedge with trees (species-poor)
- J2.4 Fence
- J2.5 Wall
- TL Tree line

Phase 1 Habitat Areas
- A1.1.2 Broadleaved woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)
- B4 Improved grassland
- B5 Marshy grassland
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.18: Phase 1 Habitats

Overhead line infrastructure
- Glenlee to Tongland (steel lattice tower)
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to proposed towers
- Existing access
- New access

Access to towers for removal
- New access
- Working area

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.1.2 Intact hedge (species-poor)
- J2.2.2 Defunct hedge (species-poor)
- J2.4 Fence
- J2.5 Wall

Phase 1 Habitat Areas
- A1.1.2 Broadleaved woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)
- A2.2 Scrub (scattered)/A3.3 Mixed scattered trees
- A3.1 Broadleaved scattered trees/B4 Improved grassland
- B2.2 Neutral grassland (semi-improved)/A2.2 Scrub (scattered)
- B4 Improved grassland
- B6 Poor grassland (semi-improved)
- I2.1 Quarry
- Survey Not Required

Tongland substation

0 0.25 0.5 km

Map Scale @ A3: 10,000

KTR Project
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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.19: Phase 1 Habitats

Overhead line infrastructure
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)

Access to towers for removal
- Existing access
- New access

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.1.2 Intact hedge (species-poor)
- J2.2.2 Defunct hedge (species-poor)
- J2.3.2 Hedge with trees (species-poor)
- J2.4 Fence
- J2.5 Wall
- J2.6 Dry ditch
- TL Tree line

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.1.1 Broadleaved woodland (semi-natural)/A2.1 Scrub (dense/continuous)
- A1.1.2 Broadleaved woodland (plantation)
- A1.1.2 Broadleaved woodland (plantation)/A2.2 Scrub (scattered)
- A1.2.2 Coniferous woodland (plantation)
- A2.1 Scrub (dense/continuous)
- A2.1 Scrub (dense/continuous)/C3.1 Other tall herb and fern (ruderal)
- A2.2 Scrub (scattered)
- A2.2 Scrub (scattered)/A3.1 Broadleaved scattered trees
- A2.2 Scrub (scattered)/C1.2 Bracken (scattered)
- A3.1 Broadleaved scattered trees
- B2.1 Neutral grassland (unimproved)
- B2.1 Neutral grassland (unimproved)/A1.1.1 Broadleaved woodland (semi-natural)
- B2.2 Neutral grassland (semi-improved)
- B4 Improved grassland
- B4 Improved grassland/B5 Marshy grassland
- B5 Marshy grassland
- B5 Marshy grassland/A2.2 Scrub (scattered)
- C1.1 Bracken (continuous)
- C1.2 Bracken (scattered)
- C1.2 Bracken (scattered)/B2.2 Neutral grassland (semi-improved)
- C3.1 Other tall herb and fern (ruderal)
- C3.1 Other tall herb and fern (ruderal)/A3.1 Broadleaved scattered trees
- F1 Swamp
- F2.2 Marginal and inundation - inundation vegetation
- J1.1
- J1.2 Amenity
- J4 Bare ground
- J5 Other habitat
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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SP ENERGY NETWORKS

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KTR Project
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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.20: Phase 1 Habitats

Overhead line infrastructure

- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)

Access to towers for removal

- Existing access
- New access

Phase 1 Habitat Survey

- Study area
- Target note

Phase 1 Habitat Linear Features

- J2.2.2 Defunct hedge (species-poor)
- J2.4 Fence
- J2.5 Wall
- TL Tree line

Phase 1 Habitat Areas

- A1.1.1 Broadleaved woodland (semi-natural)
- A1.1.2 Broadleaved woodland (plantation)
- A1.2.1 Coniferous woodland (semi-natural)
- A2.1 Scrub (dense/continuous)
- A2.1 Scrub (dense/continuous)/C3.1 Other tall herb and fern (ruderal)
- A2.2 Scrub (scattered)
- A2.2 Scrub (scattered)/A3.1 Broadleaved scattered trees
- A2.2 Scrub (scattered)/C1.2 Bracken (scattered)
- A3.1 Broadleaved scattered trees
- B2.2 Neutral grassland (semi-improved)
- B4 Improved grassland
- B4 Improved grassland/A2.2 Scrub (scattered)
- B4 Improved grassland/B5 Marshy grassland
- B5 Marshy grassland
- C1.1 Bracken (continuous)
- C3.1 Other tall herb and fern (ruderal)
- C3.1 Other tall herb and fern (ruderal)/A3.1 Broadleaved scattered trees
- J4 Bare ground
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.21: Phase 1 Habitats

Overhead line infrastructure
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)

Access to towers for removal
- Existing access
- New access

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.3.2 Hedge with trees (species-poor)
- J2.5 Wall
- TL Tree line

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.1.1 Broadleaved woodland (semi-natural)/A1.1.2 Broadleaved woodland (plantation)
- A1.2.1 Coniferous woodland (semi-natural)
- A2.1 Scrub (dense/continuous)
- A2.1 Scrub (dense/continuous)/A3.1 Broadleaved scattered trees
- A2.1 Scrub (dense/continuous)/C1.2 Bracken (scattered)
- A2.2 Scrub (scattered)
- A2.2 Scrub (scattered)/A3.1 Broadleaved scattered trees
- A2.2 Scrub (scattered)/C1.2 Bracken (scattered)
- A3.1 Broadleaved scattered trees
- A3.1 Broadleaved scattered trees/C1.2 Bracken (scattered)
- B1.2 Acid grassland (semi-
- B1.2 Acid grassland (semi-improved)/A2.2 Scrub
- B1.2 Acid grassland (semi-improved)/C1.2 Bracken
- B1.2 Acid grassland (semi-improved)/D6 Wet heath/acid
- B2.2 Neutral grassland (semi-improved)
- B2.2 Neutral grassland (semi-improved)/A2.2 Scrub (scattered)
- B4 Improved grassland
- B4 Improved grassland/A2.2 Scrub (scattered)
- B4 Improved grassland/C1.2 Bracken (scattered)
- B5 Marshy grassland
- B5 Marshy grassland/A2.2 Scrub (scattered)
- B5 Marshy grassland/A3.1 Broadleaved scattered trees
- B5 Marshy grassland/D6 Wet heath/acid grassland
- C1.1 Bracken (continuous)
- C1.2 Bracken (scattered)
- C1.2 Bracken (scattered)/B1.2 Acid grassland (semi-
- C3.1 Other tall herb and fern (ruderal)
- C3.2 Other tall herb and fern (non ruderal)
- D6 Wet heath/acid grassland/A2.2 Scrub (scattered)
- D6 Wet heath/acid grassland/C1.2 Bracken (scattered)
- D6 Wet heath/acid grassland/C1.2 Bracken (scattered)/A3.1 Broadleaved scattered trees
- E1.7 Wet modified bog
- E3.2 Fen - basin mire/D6 Wet heath/acid grassland
- G1 Standing water
- J1.2 Amenity
- J5 Other habitat
- J5 Other habitat/A3.1 Broadleaved scattered trees
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.22: Phase 1 Habitats

Overhead line infrastructure
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to towers for removal
- Existing access
- New access

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.5 Wall
- TL Tree line

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.1.2 Broadleaved woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)
- B1.2 Acid grassland (semi-
- B2.1 Neutral grassland (unimproved)
- B2.2 Neutral grassland (semi-improved)
- B2.2 Neutral grassland (semi-improved)/A2.2 Scrub (scattered)
- B2.2 Neutral grassland (semi-improved)/C1.2 Bracken (scattered)
- B4 Improved grassland
- B4 Improved grassland/C1.2 Bracken (scattered)
- B5 Marshy grassland
- C1.1 Bracken (continuous)
- C1.1 Bracken (continuous)/A2.2 Scrub (scattered)
- C1.1 Bracken (continuous)/A3.1 Broadleaved scattered trees
- C1.1 Bracken (continuous)/B4 Improved grassland
- C1.1 Bracken (continuous)/A2.2 Scrub (scattered)
- C1.1 Bracken (continuous)/C3.1 Other tall herb and fern (ruderal)
- C1.2 Bracken (scattered)
- C1.2 Bracken (scattered)/D1 Dry dwarf shrub heath/A3.1 Broadleaved scattered trees
- C3.1 Other tall herb and fern (ruderal)
- D5 Dry heath/acid grassland
- E1.7 Wet modified bog
- E2.1 Acid
- I1.4.1 Acid/neutral
- J1.2 Amenity
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.23: Phase 1 Habitats

Overhead line infrastructure
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to towers for removal
- Existing access
- New access

Phase 1 Habitat Survey
- Study area
- Target note

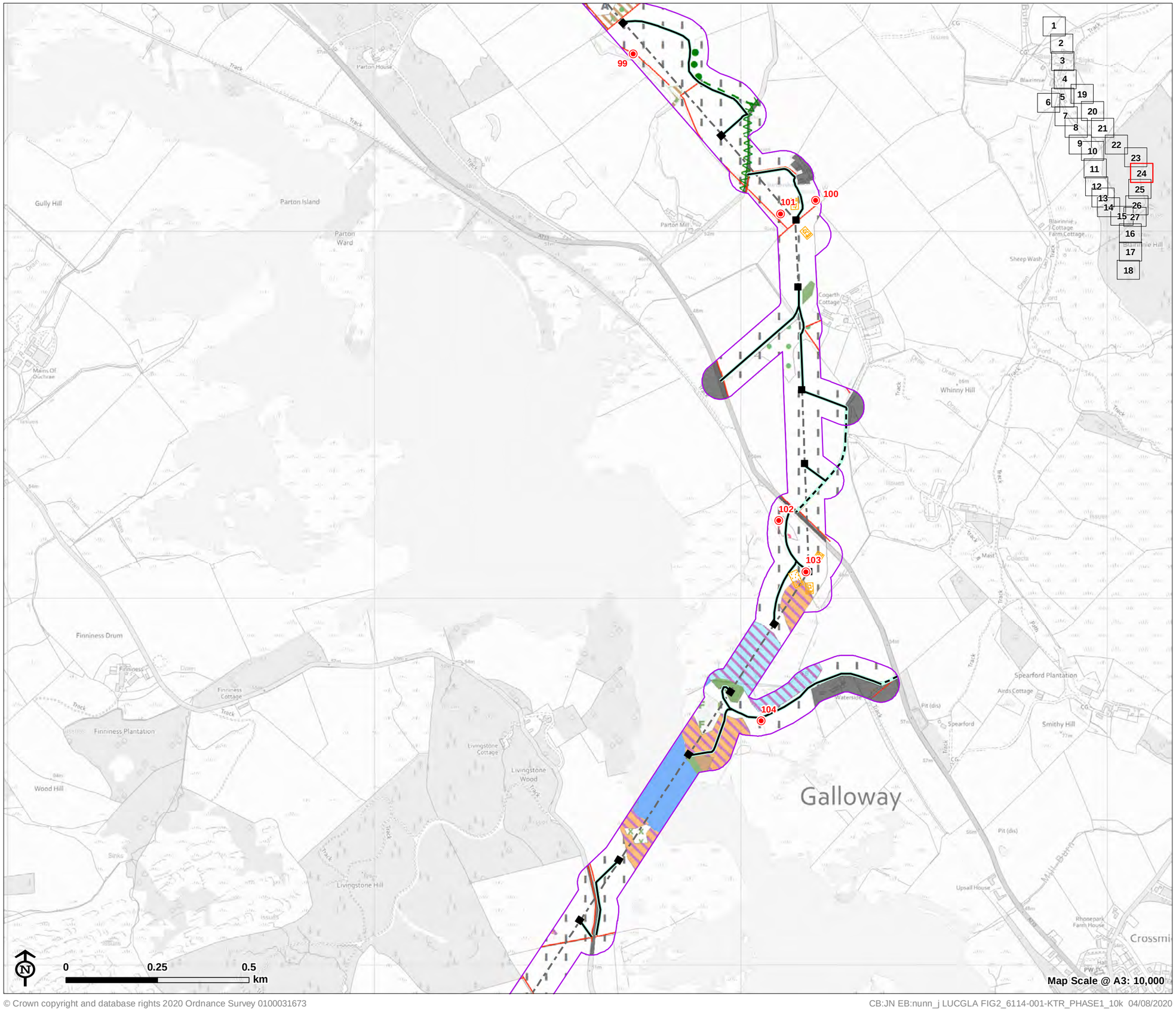
Phase 1 Habitat Linear Features
- J2.1.1 Intact hedge (native species-rich)
- J2.2.2 Defunct hedge (species-poor)
- J2.5 Wall
- TL Tree line

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.2.2 Coniferous woodland (plantation)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)/A3.1 Broadleaved scattered trees
- A4.2 Coniferous woodland (recently felled)
- B2.1 Neutral grassland (unimproved)
- B2.2 Neutral grassland (semi-improved)
- B4 Improved grassland
- B5 Marshy grassland
- C1.1 Bracken (continuous)
- C1.1 Bracken (continuous)/A2.2 Scrub (scattered)
- C1.1 Bracken (continuous)/A3.1 Broadleaved scattered trees
- C3.1 Other tall herb and fern (ruderal)
- C3.1 Other tall herb and fern (ruderal)/A3.1 Broadleaved scattered trees
- C3.1 Other tall herb and fern (ruderal)/A3.1 Broadleaved scattered trees/A2.2 Scrub (scattered)
- G1 Standing water
- J1.1
- J1.2 Amenity
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

CB:JN EB:nunn_j LUCGLA FIG2_6114-001-KTR_PHASE1_10k 04/08/2020



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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.24: Phase 1 Habitats

Overhead line infrastructure
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to towers for removal
- Existing access
- New access

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.1.1 Intact hedge (native species-rich)
- J2.2.2 Defunct hedge (species-poor)
- J2.5 Wall
- TL Tree line

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A2.2 Scrub (scattered)
- A4.1 Broadleaved woodland (recently felled)
- B4 Improved grassland
- B4 Improved grassland/A3.1 Broadleaved scattered trees
- B5 Marshy grassland
- B5 Marshy grassland/F1 Swamp
- C1.1 Bracken (continuous)
- C3.1 Other tall herb and fern (ruderal)/A3.1 Broadleaved scattered trees
- C3.1 Other tall herb and fern (ruderal)/A3.1 Broadleaved scattered trees/A2.2 Scrub (scattered)
- G1 Standing water
- I2.1 Quarry
- J1.1
- Survey Not Required

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CB:JN EB:nunn_j LUCGLA FIG2_6114-001-KTR_PHASE1_10k 04/08/2020

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.25: Phase 1 Habitats

Overhead line infrastructure

- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to towers for removal

- Existing access
- New access

Phase 1 Habitat Survey

- Study area

Phase 1 Habitat Linear Features

- J2.2.2 Defunct hedge (species-poor)
- J2.5 Wall
- TL Tree line

Phase 1 Habitat Areas

- A1.1.2 Broadleaved woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)
- A1.3.2 Mixed woodland (plantation)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)
- A4.2 Coniferous woodland (recently felled)/B5 Marshy grassland
- B4 Improved grassland
- B4 Improved grassland/C3.1 Other tall herb and fern (ruderal)
- B5 Marshy grassland
- E3.3 Fen - flood plain mire
- G1 Standing water
- I2.1 Quarry
- J1.1
- J1.2 Amenity
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.26: Phase 1 Habitats

Overhead line infrastructure
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to proposed towers
- New access

Access to towers for removal
- Existing access
- New access

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.3.2 Hedge with trees (species-poor)
- J2.4 Fence
- J2.5 Wall

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.1.2 Broadleaved woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)
- A2.1 Scrub (dense/continuous)
- A2.1 Scrub (dense/continuous)/B5 Marshy grassland
- A2.2 Scrub (scattered)
- B2.2 Neutral grassland (semi-improved)
- B4 Improved grassland
- B4 Improved grassland/A2.2 Scrub (scattered)
- B5 Marshy grassland
- B5 Marshy grassland/B1.2 Acid grassland (semi-
- G1 Standing water
- J1.1
- J1.2 Amenity
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

CB:JN EB:nunn_j LUCGLA FIG2_6114-001-KTR_PHASE1_10k 04/08/2020

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Technical Appendix 10.2: Habitat and NVC Survey
Figure 2.27: Phase 1 Habitats

Overhead line infrastructure
- Glenlee to Tongland (steel lattice tower)
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to proposed towers
- New access
- Timber extraction spur

Access to towers for removal
- Existing access
- New access
- Working area

Phase 1 Habitat Survey
- Study area
- Target note

Phase 1 Habitat Linear Features
- J2.2.2 Defunct hedge (species-poor)
- J2.3.2 Hedge with trees (species-poor)
- J2.4 Fence
- J2.5 Wall
- TL Tree line

Phase 1 Habitat Areas
- A1.1.1 Broadleaved woodland (semi-natural)
- A1.1.2 Broadleaved woodland (plantation)
- A1.2.2 Coniferous woodland (plantation)
- A2.1 Scrub (dense/continuous)
- A2.2 Scrub (scattered)
- A2.2 Scrub (scattered)/C1.2 Bracken (scattered)
- A4.2 Coniferous woodland (recently felled)
- A4.2 Coniferous woodland (recently felled)/A1.2.2 Coniferous woodland (plantation)
- B1.2 Acid grassland (semi-improved)/B2.2 Neutral grassland (semi-improved)
- B4 Improved grassland
- B5 Marshy grassland
- B5 Marshy grassland/B1.2 Acid grassland (semi-
- B5 Marshy grassland/G1 Standing water
- B6 Poor grassland (semi-improved)
- C1.1 Bracken (continuous)
- C1.2 Bracken (scattered)
- C1.2 Bracken (scattered)/B2.2 Neutral grassland (semi-improved)
- C1.2 Bracken (scattered)/B6 Poor semi-improved grassland
- D1 Dry dwarf shrub heath
- E1.7 Wet modified bog
- E3.3 Fen - flood plain mire
- G1 Standing water
- I1.4.2 Basic rock
- J1.2 Amenity
- Survey Not Required

0 0.25 0.5 km

Map Scale @ A3: 10,000

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Technical Appendix 10.2: Habitat and NVC Survey

Figure 3: Groundwater Dependant Terrestrial Ecosystems (GWDTE) and National Vegetation Classification (NVC) Survey Results

Overhead line infrastructure

- Polquhanity to Glenlee via Kendoon (steel lattice tower)
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to proposed towers

- Existing access
- New access
- Timber extraction spur

Access to towers for removal

- New access
- Working area

Phase 1 Habitat Survey

- Study area

GWDTE (High potential)

- M23 Juncus effusus/acutiflorus-Galium palustre rush-pasture

Polquhanity terminal tower

DE102R

2

3

4

5

6

7

Craigcrocket

Craig Lingal

Barlae Hill

Craigwhar

Sinking Craig

Knockbuie

Dalshangan Wood

Dalshangan House

Dalshangan Plantation

Carminnows Lodge

High Carminnows

Polquhanity Burn

Water of Deugh

Dunbannoch

Devil's Barn Door

Dundeugh Hill

Kamak

Gordon Knowe

Dundeugh

Dundeugh Castle (remains of)

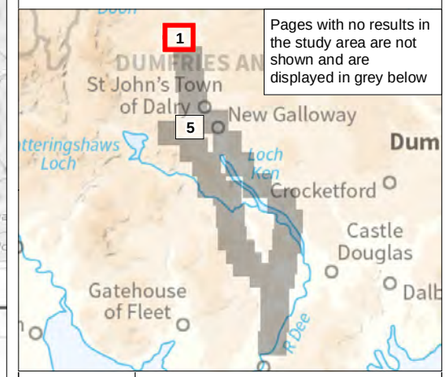
Carse of Dundeugh

Knockbrack

0 0.25 0.5 km

Map Scale @ A3: 10,000

Pages with no results in the study area are not shown and are displayed in grey below



CB:JN EB:nunn_j LUCGLA FIG3_6114-001-KTR_GWDTE 04/08/2020

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EIA Report

Technical Appendix 10.2: Habitat and NVC Survey

Figure 3: Groundwater Dependant Terrestrial Ecosystems (GWDTE) and National Vegetation Classification (NVC) Survey Results

Overhead line infrastructure

- Glenlee to Tongland (steel lattice tower)
- BG route deviation (steel lattice tower)
- Existing tower for removal
- Existing 132kV overhead line to be removed (following construction of the KTR Project)
- Existing network

Access to proposed towers

- Existing access
- New access
- Timber extraction spur

Access to towers for removal

- Existing access
- New access
- Working area

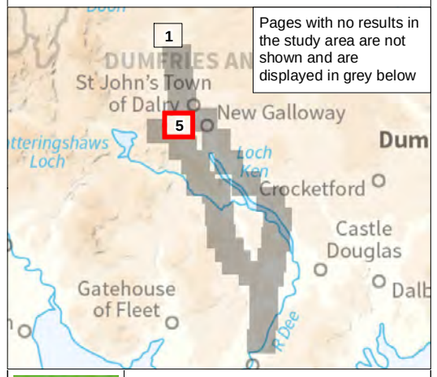
Phase 1 Habitat Survey

- Study area

GWDTE (High potential)

- M23 Juncus effusus/acutiflorus-Galium palustre rush-pasture

Pages with no results in the study area are not shown and are displayed in grey below



0 0.25 0.5 km

Map Scale @ A3: 10,000

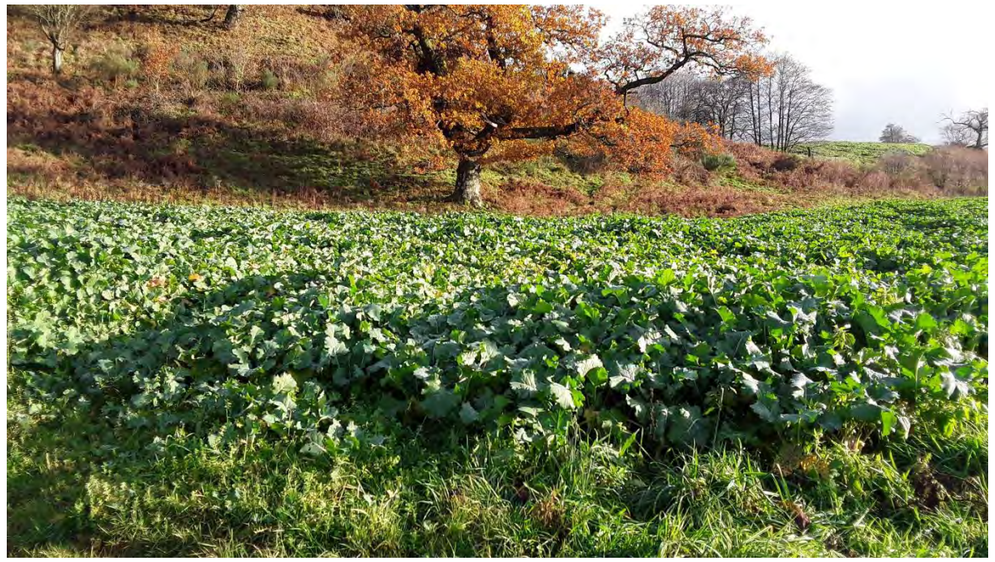
CB:JN EB:nunn_j LUCGLA FIG3_6114-001-KTR_GWDTE 04/08/2020

Annex 2
Site Photography

Photograph 1: Improved Grassland (B4)

Photograph 2: Marshy Grassland (B5)

Photograph 3: Neutral Grassland (Semi-Improved) (B2.2)



Photograph 4: Arable (J1.1)

Photograph 5: Flood Plain Mire (E3.3)

Photograph 6: Swamp (F1)

Photograph 7: Inundation Vegetation (F2.2)

Photograph 8: Bracken (Continuous) (C1.1)

Photograph 9: Broadleaf (Scattered) (A3.1)

Photograph 10: Broadleaf (Plantation) (A1.1.2)

Photograph 11: Broadleaf (Semi-Natural) (A1.1.1)

Photograph 12: Conifer (Planation) (A1.2.2)

Photograph 13: Conifer (Semi-Natural) (A1.2.1)

Photograph 14: Quarry (I2.1)

Annex 3
Target Notes

Target notes are presented for an Extended Phase 1 Habitat Survey of the KTR Project between 2017 and 2019. Data was collected by LUC field ecologists and should be used to provide further context to the Phase 1 Habitat Map provided in Annex 1.

Target Note Number	Date Recorded	Habitat	Comment/Detail
1	27/06/17	Marshy grassland	Orchids recorded in small, wet stand. Suggests slightly more diverse sward than standard agricultural marshy grassland
2	27/06/17	Marshy grassland	Orchids recorded in small, wet stand. Suggests slightly more diverse sward than standard agricultural marshy grassland
3	08/11/17	Coniferous woodland (plantation)	Extensive area of windthrow. Not safe to enter for survey purposes
4	28/06/17	Broadleaved scattered trees	Scattered mature oak over a species poor marshy grassland
5	28/06/17	Continuous bracken	Orchids recorded amongst dense bracken, suggesting a more species diverse seedbank
6	28/06/17	Continuous bracken	Mature birch over bracken
7	28/06/17	Continuous bracken	Hawthorn over bracken
8	28/06/17	Marshy grassland	Limited scrub, mostly hawthorn, on banks of small stream
9	28/06/17	Marshy grassland	Orchids recorded in small, wet stand. Suggests slightly more diverse sward than standard agricultural marshy grassland
10	28/06/17	Marshy grassland	Extensive area of soft rush associated with small water course that drains directly to Carsfad Loch
11	28/06/17	Neutral grassland/scattered trees	Ash over species-restricted grazing pasture
12	28/06/17	Neutral grassland/scattered trees	Ash over species-restricted grazing pasture, gorse and hawthorn also present
13	28/06/17	Neutral grassland/scattered trees	Ash over species-restricted grazing pasture, gorse and hawthorn also present. Denser than TN12
14	28/06/17	Marshy grassland	Expanse of soft rush amongst bracken field, adjacent to small drainage ditch
15	28/06/17	Quarry	Exposed rock in disused quarry area. Marshy grassland dominated quarry floor
16	28/06/17	Marshy grassland	Orchids recorded in small, wet stand. Suggests slightly more diverse sward than standard agricultural marshy grassland
17	29/06/17	Marshy grassland/scattered trees	Willow and hawthorn over soft-rush dominated grassland. Gorse makes up a scrub layer
18	29/06/17	Marshy grassland/scattered trees	Willow and hawthorn over soft-rush dominated grassland. Marks a delineation with improved grassland
19	04/07/17	Acid grassland	Small area of heath-spotted orchid in an area of highly modified mire and acid grassland. Encroachment by bracken noted
20	05/07/17	Marshy grassland	Orchids recorded in small, wet stand. Suggests slightly more diverse sward than standard agricultural marshy grassland
21	05/07/17	Scattered scrub	Hawthorn scrub over standard marshy grassland
22	05/07/17	Broadleaved scattered trees	Birch over bracken and acid grassland mosaic
23	05/07/17	Broadleaved scattered trees	Birch over bracken and acid grassland mosaic. More mature than TN22 but no bat roost potential (BRP) recorded
24	05/07/17	Broadleaved scattered trees	Granny oak recorded. No BRP identified
25	05/07/17	Scattered scrub	Hawthorn scrub on edge of marshy grassland area
26	05/07/17	Marshy grassland	Very small area of orchid in otherwise impoverished marshy grassland
27	14/07/17	Broadleaved Scattered trees	Mature oak, no BRP identified.
28	14/07/17	Scattered scrub	Hawthorn scrub over semi-improved neutral pasture
29	14/07/17	Scattered scrub	Hawthorn scrub over extensive bracken
30	14/07/17	Scattered scrub	Hawthorn scrub over extensive bracken
31	14/07/17	Scattered scrub	Hawthorn scrub over extensive bracken
32	14/07/17	Scattered scrub	Hawthorn scrub over extensive bracken
33	14/07/17	Scattered scrub	Hawthorn scrub on banks of small water course
34	14/07/17	Scattered scrub	Gorse and elder over extensive bracken
35	13/07/17	Broadleaved Scattered trees	Mature oak, no BRP identified.
36	13/07/17	Broadleaved Scattered trees	Mature oak, no BRP identified.
37	13/07/17	Broadleaved Scattered trees	Mature oak, no BRP identified.
38	13/07/17	Scattered scrub	Scattered hawthorn adjacent to agricultural buildings
39	13/07/17	Broadleaved Scattered trees	Mature alder in improved pasture, no BRP identified.
40	13/07/17	Broadleaved Scattered trees	Scattered mature lime and birch

Target Note Number	Date Recorded	Habitat	Comment/Detail
41	13/11/18	Broadleaves scattered trees	Stand of rowan, adjacent to recently re-planted Black Bank Wood
42	25/10/18	Coniferous forest (plantation)	Recently felled area of pine
43	23/10/18	Marshy grassland	Small area of soft rush dominated grassland
44	23/10/18	Coniferous woodland (plantation)	Extensive sitka spruce
45	17/10/18	Standing water	Flooded area, arising from adjacent watercourse. Dominated by *Typa* and *Carex* species
46	02/05/17	Scattered scrub	Hawthorn scrub along watercourse
47	20/04/17	Scattered scrub	Hawthorn scrub in opening in extensive bracken
48	20/04/17	Dense scrub	Dense willow carr in flooded area of watercourse
49	20/04/17	Marshy grassland	Wet strip supporting soft rush and jointed rush
50	19/04/17	Mire	Extensive *Calluna* with some *Carex* and *Juncus* spp.
51	19/04/17	Mire	Rare sundew on degraded mire system
52	19/04/17	Mire	Slightly more diverse part of mire system. *Carex* assemblage slightly more diverse
53	26/04/17	Marshy grassland	Wet depression supporting soft rush and jointed rush
54	08/11/17	Broadleaved scattered trees	Single mature hawthorn over a complex mosaic of bracken, semi-improved acid grassland and neutral grassland. Highly modified
55	08/11/17	Bracken	Large stand of bracken over semi-improved acid grassland
56	08/11/17	-	Fox den
57	16/10/18	Boulder	Rocky outcrop with potential for reptile hibernation
58	18/04/17	Broadleaved scattered trees	Scattered mature sycamore
59	18/04/17	Standing water	Small are of standing water in a field depression
60	12/04/17	Marshy grassland	Stand of soft rush dominated vegetation at side of road
61	12/04/17	Broadleaved scattered trees	Sycamore along roadside
62	12/04/17	Hedge with trees (species poor)	Standing dead wood in hedgerow
63	12/04/17	Marshy grassland	Stand of soft rush dominated vegetation in otherwise improved grassland
64	11/04/17	Scattered scrub	Scattered hawthorn on edge of improved grassland and mixed plantation
65	10/04/17	Broadleaved scattered trees	Semi-mature ash with immature ivy coverage
66	19/07/17	-	Very wet area – could not be accessed by detailed survey
67	19/07/17	Marshy grassland	Very small are of soft rush, in depression, in otherwise improved pasture grassland
68	19/10/18	Broadleaved scattered trees	Mature oak in improved grassland
69	09/10/18	Marshy grassland	Very small are of soft rush, in low-lying area, in otherwise improved pasture grassland
70	09/10/18	Broadleaved scattered trees	Mature birch along access track
71	10/10/18	Semi-improved neutral grassland	Slightly more diverse area of pasture, including cock's-foot, sweet vernal-grass and crested dog's-tail
72	19/10/18	Broadleaved scattered trees	Isolated hawthorn
73	10/10/18	Broadleaved scattered trees	Mature birch in pasture
74	12/10/18	Broadleaved scattered trees	Large, mature oak, standing proud of woodland
75	11/10/18	Broadleaved scattered trees	Scattered oak and hawthorn
76	11/10/18	-	Fish hatchery
77	12/11/18	Standing water	Flooded area recorded
78	12/11/18	Boulders	Area of exposed bedrock with suitability for reptiles
79	01/11/18	Boulders	Area of exposed bedrock with suitability for reptiles
80	02/11/18	Mire	Extensive bog myrtle in otherwise impoverished mire
81	25/10/18	Broadleaved scattered trees	Small are of willow scrub
82	25/10/18	Heath/Acid Grassland	Bog myrtle in very small area of heath/grassland

Target Note Number	Date Recorded	Habitat	Comment/Detail
83	25/10/18	Broadleaved scattered trees	One mature oak and one semi-mature ash
84	25/10/18	Marshy grassland	Fairly typical agricultural marshy grassland. Dominated by soft rush with *Molinea* also present.
85	25/10/18	Standing water	Small flooded area
86	25/10/18	Dense scrub	Continuous gorse over marshy grassland
87	10/08/17	Marshy grassland	Area of soft rush over neutral pasture
88	25/10/18	Heath	Dense area of *Calluna* in mosaic of bracken and scattered scrub
89	24/10/18	Boulders	Rocky outcrop in pasture
90	24/10/18	Other	Road access
91	24/10/18	Boulders	Rocky outcrop in pasture
92	24/10/18	Broadleaved scattered trees	Thin line of alder on forest edge
93	24/10/18	Mire	Small area of sphagnum, *Molinea* and soft rush
94	24/10/18	Bracken	Continuous bracken on both sides of access track
95	24/10/18	Scattered scrub	Areas of gorse adjacent to access track
96	24/10/18	Marshy grassland	Small area of rush in improved pasture
97	24/10/18	Standing water	Small pond, very acidic
98	24/10/18	Coniferous scattered trees	Small area of scattered sitka spruce
99	23/10/18	Marshy grassland	Small area of soft rush dominated grassland
100	27/04/17	Marshy grassland	Small area of soft rush dominated grassland
101	23/10/18	Marshy grassland	Fan-shaped are of soft rush, created by small watercourse in pasture
102	23/10/18	Scattered scrub	Hawthorn scrub adjacent to borrow pit
103	23/10/18	Scattered scrub	Hawthorn scrub
104	23/10/18	Scattered scrub	Hawthorn scrub in improved pasture
105	17/10/18	Scattered scrub	Localised stand of dense bramble

References

[i] JNCC (2010). Handbook for Phase 1 Habitat Survey – a technique for environmental audit. JNCC, Peterborough

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