

# **Netherton Hub**

## **Environmental Impact Assessment Report**

### **Volume 4**

#### **Technical Appendix 9.1 – Habitats Baseline**

**September 2024**



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## EXECUTIVE SUMMARY

Scottish and Southern Electricity Networks Transmission (hereafter referred to as 'SSEN Transmission'), operating under licence as Scottish Hydro Electric Transmission plc, is proposing the construction of a new strategic transmission hub (hereafter the 'Proposed Development'). This would be located on land (hereafter the 'Site') south of Flushing, Peterhead; National Grid Reference at centre NK 052 460.

To inform an Environmental Impact Assessment of the Proposed Development, the following has been undertaken in relation to habitats within the Site and surrounding area: a UK Habitat Classification (UKHab) survey (December 2022), Japanese knotweed survey (June 2023), and a National Vegetation Classification (NVC) survey (January 2024).

Generally, the Site comprised modified grassland and cropland, with built features/developed land associated with Netherton Farm and Inverveddie Farm. Minor areas of broadleaved woodland were mapped by Inverveddie Farm and near Longleys. Species-poor, rush-dominated neutral grassland was mapped from low lying areas in the centre, southeast and west. These rush habitats aligned to NVC community MG10, a community likely to be moderately groundwater dependent, depending on the hydrogeological setting. There were areas dominated by coarse neutral grasses, mainly across land outside of the Site but within the 250 m surrounding area. The Burn of Faichfield (north) and Burn of Ludquharn (west), and ditches extend through the Site. Other linear habitat features that were recorded include hedgerows and lines of trees, as well as scrub along field boundaries.

No EU Habitats Directive Annex 1 habitat types, important peat-forming habitats, or irreplaceable habitats were identified. Habitats considered a priority at the Site were limited to hedgerows and lines of trees, providing connectivity across the open landscape. Hedgerows at the Site align to the Scottish Biodiversity List definition and are recognised by the North East Scotland Biodiversity Partnership as an important habitat.

## 1. INTRODUCTION

### 1.1 Proposed Development

1.1.1 Scottish and Southern Electricity Networks Transmission (hereafter referred to as 'SSEN Transmission'), operating under licence as Scottish Hydro Electric Transmission plc, is proposing the construction of a new strategic transmission hub (hereafter the 'Proposed Development'). This would be located on land (hereafter the 'Site') south of Flushing, Peterhead; National Grid Reference at centre NK 052 460. The location of the Site is shown on **Volume 3, Figure 1.1: Location Plan** and the layout of the Proposed Development is shown on **Volume 3, Figure 3.1: Proposed Development**; both included in **Volume 3** of the Environmental Impact Assessment (EIA) Report. For full details of the Proposed Development, please refer to **Volume 2, Chapter 3: Description of the Proposed Development** of the EIA Report.

### 1.2 Scope of Report

1.2.1 WSP UK Ltd. (WSP) was commissioned to undertake ecological studies to identify the baseline of the Site and surrounding area, which would be used to inform **Volume 2, Chapter 9: Ecology, Nature Conservation and Ornithology** of the EIA Report.

1.2.2 This report presents methods and baseline findings of studies relating to the habitats present within and surrounding the Site. This included UK Habitat Classification (UKHab) and National Vegetation Classification (NVC) surveys. The objectives of the surveys were to:

- Spatially map and describe the primary habitats present within the Site using UKHab methods.
- Identify primary habitats of elevated importance with reference to national and local biodiversity priority lists.
- Identify NVC communities within and surrounding the Site which could represent Groundwater Dependent Terrestrial Ecosystems (GWDTE), subject to further assessment.

1.2.3 The report is linked to **Volume 4, Technical Appendix 9.4: Biodiversity Net Gain Assessment** of the EIA Report which considers the condition, distinctiveness and spatial extent of habitats at the Site and demonstrates how positive effects for biodiversity will be achieved through habitat creation.

## 2. METHODS

### 2.1 UK Habitat Classification

- 2.1.1 An initial UKHab survey was undertaken during the detailed site selection stage between 6-9 December 2022. This was led by an ecologist who is experienced at a ‘capable’<sup>1</sup> level of surveying similar habitat types encountered in the geographical region and land-use setting. Another survey to review the UKHab mapping and extend the coverage across the Site<sup>2</sup> was undertaken between 11-12 January 2024 by an ‘accomplished’<sup>1</sup> surveyor accredited with the Botanical Society of Britain and Ireland (BSBI) Field Identification Skills Certificate (FISC) Level 3.
- 2.1.2 Habitat types have been recorded using the UKHab system<sup>3,4</sup>. UKHab mapping covered the full extent of the Site.
- 2.1.3 The UKHab system classifies habitats according to their vegetation types and structure, following a principal hierarchy of ‘Primary Habitats’. Primary Habitats include ecosystems (level 1), broad habitat types (level 2 and 3); defined habitats, including UK Biodiversity Action Plan Priority Habitats<sup>5</sup> (level 4); and further defined habitats, including EU Habitats Directive Annex 1 habitats (level 5). Each Primary Habitat has an alpha-numeric code, unique to UKHab (i.e., different to other habitat survey methods such as Phase 1 and NVC).
- 2.1.4 A non-hierarchical system of numeric codes (‘Secondary Codes’) can then be used to provide more information on a habitat.
- 2.1.5 A Primary Habitat and any relevant Secondary Codes were assigned to each area-based polygon, point or linear feature mapped from the Site. Habitats were marked on a handheld mapping device using Geographical Information System (GIS) software. The smallest area to be mapped was 0.01 ha, which was selected as a suitable scale to sample the range of different vegetation types present.
- 2.1.6 Text descriptions to qualify habitat assignment, including plant species, were also recorded. The scientific names for plant species follow those in New Flora of the British Isles<sup>6</sup> and Mosses and Liverworts of the British Isles<sup>7</sup>.
- 2.1.7 Additional data on habitat condition for area-based habitats and linear features were also recorded during the UKHab surveys using the system presented in Natural England Biodiversity Metric V3.1<sup>8</sup>. This has been used to inform a separate Biodiversity Net Gain assessment (**Volume 4, Technical Appendix 9.4: Biodiversity Net Gain Assessment** of the EIA Report).

### 2.2 Invasive and Non-Native Species

- 2.2.1 A specific survey to map the invasive and non-native species<sup>9</sup> (INNS) Japanese knotweed *Reynoutria japonica* was undertaken by ERM Ltd. between 6-7 June 2023. The full survey was commissioned following identification of Japanese knotweed at the Site ahead of ground investigation works.

### 2.3 National Vegetation Classification

- 2.3.1 The UKHab data were reviewed to identify areas with potential to be Groundwater Dependent Terrestrial Ecosystems (GWDTE), peatland, or other habitats of elevated importance (e.g., EU Habitats Directive Annex 1 habitats). Any areas with potential to represent this were subject to additional botanical assessment via NVC

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<sup>1</sup> CIEEM (2021). Competency Framework. Available at: <https://cieem.net/resource/competency-framework/>

<sup>2</sup> The Site boundary was extended in two areas after the first UKHab survey: to the north and west.

<sup>3</sup> UKHab Ltd. (2020). UK Habitat Classification, Version 1.1. Available at: <https://www.ukhab.org>.

<sup>4</sup> It is acknowledged that a more recent Version 2.0 is available however, Version 1.1 was current at the time of survey.

<sup>5</sup> Where UK Biodiversity Action Plan Priority Habitats have been identified, these have been assessed against the relevance within the Scottish Biodiversity List.

<sup>6</sup> Stace C. A. (2019). New Flora of the British Isles. Fourth Edition. C&M Floristics, Suffolk.

<sup>7</sup> Atherton, I., Bosanquet, S., Lawley, M. eds. (2010). Mosses and Liverworts of the British Isles: a field guide. British Bryological Society.

<sup>8</sup> Natural England (2023). Biodiversity Metric 3.1 (JP039). Technical Annex 1 - Condition Assessment Sheets and Methodology. Available at: <https://publications.naturalengland.org.uk/publication/5850908674228224>.

<sup>9</sup> Considered any plant located in the wild at a location outside its native range.

survey. The data review and NVC survey were undertaken by an ecologist who is ‘accomplished’<sup>11</sup> in habitat assessment with 10 years of experience.

- 2.3.2 Areas of rush dominated grassland (UKHab code g3c8 *Holcus-Juncus* grassland) were identified within the Site which could comprise NVC communities indicative of GWDTE<sup>10</sup>. The remainder of the Site comprised modified cattle- and sheep-grazed grasslands, crops, developed land, and small dry coppices, tree lines, and hedgerows; none of which would align to an NVC community indicative of GWDTE.
- 2.3.3 No peat-based or Annex 1 habitat types were identified within the Site requiring additional assessment.
- 2.3.4 A targeted NVC survey was undertaken in the field on 11-12 January 2024 to assess and assign NVC communities to areas of potential GWDTE. The survey covered habitats within the Site and was extended to search up to 250 m beyond the Site to identify additional potential GWDTE within the Proposed Development's potential zone of influence relevant to GWDTE impacts<sup>10</sup>.
- 2.3.5 The field survey classification methods followed industry standard guidelines<sup>11</sup>. At the targeted areas, homogenous stands and mosaics of vegetation were mapped as polygons on field survey maps. These polygons were surveyed quantitatively with dominant and constant species, sub-dominant species and other species present across homogenous stands and mosaics. Vegetative data gathered within each stand in the field were analysed against published floristic tables<sup>12</sup> using surveyor experience to determine NVC communities. Wherever possible, communities were classified to sub-community level, although in some cases a sub-community level classification was not possible due to species-richness not being sufficient to allow meaningful sub-community determination.

## 2.4 Priority Habitat Identification

- 2.4.1 The UKHab system allows for identification of priority habitats by aligning certain Primary Habitat definitions to the UK Biodiversity Action Plan (UKBAP), which can be applied to the Scottish Biodiversity List<sup>13</sup> (SBL) with consideration of geographical relevance. It also considers EU Habitats Directive Annex 1 habitat types<sup>14</sup>.
- 2.4.2 A review of the North East Scotland Biodiversity Partnership (NESBiP) statements on Important Habitats for Biodiversity<sup>15</sup> has also been reviewed to help identify priority habitats.

## 2.5 Limitations

- 2.5.1 The UKHab and NVC surveys were undertaken over winter months when species identification can be difficult because it relies upon vegetative parts of a plant. However, with reference to the objectives of the surveys and the prevailing land use (grazing and crops), this has not limited the overall spatial mapping and classification of the UKHab Primary Habitats at the Site and review of their conservation importance. Equally, it was still possible to reliably assign NVC communities to areas potentially representing GWDTE within the Site based on their structure, the remnant vegetative plant material, setting, and professional experience.
- 2.5.2 Access to the central parts of the Site was restricted due to free roaming cattle posing a safety risk, during both UKHab and NVC surveys. Habitats within the centre of the Site were viewed using binoculars and assumptions were made on their composition and condition, based on closer inspection of habitats that were accessible with a similar structural appearance, land use and locality. Where assumptions have been made, this is highlighted in the report and associated mapping. Given the homogeneity of habitats at the Site and surrounding area,

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<sup>10</sup> Scottish Environment Protection Agency (2017). Land Use Planning System Guidance Note 31: Guidance on assessing the impacts of development proposals on groundwater abstractions and groundwater dependent terrestrial ecosystems. Available: <https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions.pdf>.

<sup>11</sup> Rodwell, J. S. (2006). NVC Users' Handbook.

<sup>12</sup> Rodwell, J. S. (Ed), et al. (1991 – 2000). British Plant Communities (5 volumes).

<sup>13</sup> Scottish Ministers (2012). Scottish Biodiversity List. Available: <https://www.nature.scot/doc/scottish-biodiversity-list>.

<sup>14</sup> Annex 1 habitat types which occur in the UK are listed here: <https://sac.jncc.gov.uk/habitat/>.

<sup>15</sup> NESBiP (online). Important Habitats for Biodiversity. Available: <https://www.nesbiodiversity.org.uk/biodiversity-information-for-developers/important-habitats-for-biodiversity-in-the-north-east-of-scotland/>.

same broad land use, and relatively low biodiversity value of these grasslands, the habitat mapping in the centre of the Site is still considered valid for the purposes for subsequent assessments.

### 3. RESULTS

#### 3.1 UK Habitat Classification

- 3.1.1 The spatial extents of the UKHab Primary Habitats at the Site are shown on **Figure 9.1.1 (Annex A)**, a species list is provided in **Annex B** and photos in **Annex C**. A description of each Primary Habitat is listed in **Table 1**, including identification of priority habitats.
- 3.1.2 No Annex 1 habitat types, important peat-forming habitats, or irreplaceable habitats were identified. Habitats considered a priority at the Site were limited to hedgerows and lines of trees, providing connectivity across the open landscape.

Table 1: UKHab Primary Habitats within the Site

Primary Habitat	Description	Area (ha) / length (m)
c1 – arable and horticulture c1c5 – winter stubble c1d – non-cereal crops	Portions of the north and south of the Site were used for arable purposes at the time of survey. This included fields mapped as winter stubble (c1c5), and non-cereal crops (c1d).  These are actively managed habitats which are common and widespread in the northeast landscape. These do not qualify as SBL priority habitats.	90.67 ha
g3c – other neutral grassland	A relatively minor area in the north of the Site was mapped as other neutral grassland, in an area set-aside from crops, roadside of the A950. This comprised coarse grass species, and soft rush <i>Juncus effusus</i> .  Coarse grasses also dominated the banksides of the Burn of Ludquharn in the west.  These areas were included in the NVC survey and more detailed botanical assessment is recorded in <b>Section 3.2</b> below.  These grasslands do not qualify as SBL priority habitats or match examples of the species-rich neutral grasslands described as being most valuable in the region <sup>16</sup> .	0.31 ha
g3c8 – <i>Holcus-Juncus</i> neutral grassland	Three distinct areas within the Site, in the centre, west and southeast, comprised of dense soft rush with Yorkshire-fog <i>Holcus lanatus</i> and a few herbaceous species. Generally, these areas were species-poor and damp or with localised flooding.  These areas have been subject to NVC survey and more detailed botanical assessment is recorded in <b>Section 3.2</b> below.  These grasslands do not qualify as SBL priority habitats or match examples of the species-rich neutral grasslands described as being most valuable in the region <sup>16</sup> .	8.76 ha
g4 – modified grassland	The majority of the Site comprises modified grassland. This habitat was dominated by perennial rye-grass <i>Lolium perenne</i> and grazed by cattle and sheep. There were occasional to frequent tufts of soft rush. Species diversity was relatively poor, with less than nine species per square metre and predominantly grasses providing the cover. Other species	123.24 ha

<sup>16</sup> NESBiP (online). Important Habitats for Biodiversity – Grasslands. Available: <https://www.nesbiodiversity.org.uk/wp-content/uploads/2019/10/Grasslandsv1.pdf>.



Primary Habitat	Description	Area (ha) / length (m)
	<p>included meadow-grass <i>Poa</i> species, bent <i>Agrostis</i> species, Yorkshire-fog, white clover <i>Trifolium repens</i>, broadleaved dock <i>Rumex obtusifolius</i>, common nettle <i>Urtica dioica</i>, ribwort plantain <i>Plantago lanceolata</i>, creeping buttercup <i>Ranunculus repens</i>, creeping thistle <i>Cirsium arvense</i>.</p> <p>This is a modified habitat of relatively low species diversity, which is common and widespread in the northeast landscape. This does not qualify as an SBL priority habitat and NESBiP acknowledges that improved grasslands are the least botanically rich<sup>16</sup>.</p>	
h2a – priority hedgerows	<p>Hedgerows were recorded to the south of the Site and were dominated by hawthorn <i>Crataegus monogyna</i>. A neutral grassland formed the understory. Irrespective of their condition or management, these hedgerows have been considered priority features because they comprise predominantly of at least one woody UK native species<sup>17</sup>. NESBiP also acknowledges hedgerows as highly valuable features for biodiversity<sup>18</sup>.</p>	3,236 m
h3e – gorse scrub	<p>Gorse <i>Ulex europaeus</i> scrub was mapped along a few field boundaries at the Site.</p> <p>Gorse scrub is not an SBL priority habitat. Whilst NESBiP acknowledges that the biodiversity value of scrub is often underappreciated<sup>18</sup>, that it can provide cover for species in open spaces, the relatively minor extent and function of gorse scrub at the Site is not considered sufficient to elevate its importance to priority status.</p>	0.16 ha
u1b5 – buildings u1b6 – other developed land u1c – artificial unvegetated unsealed surface u1d – suburban mosaic of developed/ natural surfaces u1e – built linear features	<p>Buildings and other developed land were mapped from the south of the Site at Inverveddie Farm and Netherton Farm, and to the east associated with Netherton Farm.</p> <p>A disused quarry in the east of the Site was classed as an artificial unvegetated unsealed surface as a best-fit description of this feature. Standing water was pooled in the centre of the quarry following heavy rainfall at the time of survey. The quarry mounds comprised spoil which was partially vegetated. Debris remained at the quarry.</p> <p>The private properties by Inverveddie Farm in the south of the Site have been mapped as a suburban mosaic of developed/natural surface, to reflect the developed land alongside landscaped gardens.</p> <p>Built linear features recorded at the Site consisted of farm tracks, minor roads, and the A950 road.</p> <p>These areas of urban habitats and developed land do not qualify as priority habitats.</p>	2.83 ha
w1g – other woodland, broadleaved	<p>A stand of semi-mature beech trees <i>Fagus sylvatica</i>, ash <i>Fraxinus excelsior</i>, and sycamore <i>Acer pseudoplatanus</i> was mapped in the northeast of the Site by Longleys. The</p>	0.85 ha

<sup>17</sup> This accords with the UKHab and UK Biodiversity Action Plan definitions, carried forward to the SBL.

<sup>18</sup> NESBiP (online). Important Habitats for Biodiversity – Woodlands. Available: <https://www.nesbiodiversity.org.uk/wp-content/uploads/2019/10/Woodlandsv1-1.pdf>.

Primary Habitat	Description	Area (ha) / length (m)
	<p>woodland was mapped in the corner of crop fields, relatively isolated in open space. There was no structured understory. Similar relatively small groups of broadleaved trees were recorded by the roadside near Flushing, in the north of the Site. The field layers were neutral, short-sward.</p> <p>Other broadleaved semi-natural woodland was recorded by Inverveddie Farm in the south of the Site, which continues into a landscaped garden.</p> <p>Finally, an area of young planted broadleaved trees with tree guards was mapped by the Burn of Ludquharn on the south side of a tributary ditch. Species included birch <i>Betula</i>, ash, oak <i>Quercus</i>, and hawthorn. The field layer was a damp, neutral grassland with coarse grass species.</p> <p>Each of these woodlands would not represent SBL priority habitat or important habitats described by NESBiP<sup>18</sup>.</p>	
w1g6 – line of trees	<p>Lines of trees were mapped alongside the Burn of Faichfield (beech, ash, hawthorn), the Burn of Ludquharn (willow <i>Salix</i> species), and along field boundaries (predominantly hawthorn).</p> <p>Lines of trees are not listed in the SBL as a priority feature or specifically referenced by NESBiP<sup>18</sup>. However, lines of trees can serve a similar function to hedgerows in terms of connecting the landscape and some instances of tree lines along field boundaries at the Site appear to have derived from overgrown hedgerows (specifically including the main line from the centre towards Flushing). It is therefore proposed that lines of trees at the Site be considered as a priority habitat akin to hedgerows at the Site. Additionally, lines of trees along the Burn of Ludquharn and Burn of Faichfield may be considered to form a riparian corridor which is acknowledged by NESBiP as an important habitat<sup>18</sup>.</p>	4,534 m
r2b – other rivers and streams	<p>Burn of Faichfield is located in the north of the Site and had a relatively slow flow at the time of survey, from east to west. The Burn of Faichfield has a public right of way extending along the northern bank, a line of trees along the southern bank of the burn. Within the northern section of the Site the channel was approximately 2 m wide and had banksides of approximately 2 m in height at a 60-degree angle. Localised flooding was evident in the fields to the south and sediment was present in the channel at the time of survey.</p> <p>Burn of Ludquharn is located in the west of the Site and flows in a northern direction. A confluence with tributary ditch is also located there. There was evidence of erosion and flattened vegetation along the banksides indicating variable water levels from preceding rainfall. At the time of survey, the water was relatively fast flowing, and the channel had an approximate width of 2 m and water depth of 0.3-0.6 m.</p> <p>From Ordinance Survey (OS) mapping and observations on Site, it would appear these burns have been modified in places for agricultural drainage (e.g., some sections straightened).</p>	4,904 m

Primary Habitat	Description	Area (ha) / length (m)
	<p>There are also drainage ditches located within the Site, including one which extends from the centre towards Flushing to the north. This ditch is located between crop and grazing fields, with an overgrown hawthorn hedge/tree line alongside the ditch. Another ditch located southwest of the site, east of the Burn of Ludquharn, flows from the south in a northerly direction. This ditch had steep, vegetated banks dominated by grasses, rushes species and gorse. The ditch showed evidence of recent high-water levels.</p> <p>There were no watercourses recorded within the Site that would qualify as SBL priority features. NESBiP acknowledges that straightened watercourses for agricultural drainage, such as the ditches and burns at the Site, have impacted ecology<sup>19</sup>.</p>	

### 3.2 National Vegetation Classification

3.2.1 Vegetation within the Site mapped under the UKHab Primary Habitat g3c other neutral grassland and g3c8 *Holcus-Juncus* grassland aligned to two distinct NVC communities, described below. These communities were also present in the surrounding 250 m area. **Figure 9.1.2 (Annex A)** shows the spatial extent of targeted NVC mapping prepared to help identify potential GWDTE.

#### *MG10 Holcus lanatus-Juncus effusus rush-pasture*

3.2.2 This is the most common community identified from areas of rush-dominated vegetation occurring across low-lying land at the Site and surrounding area. The areas of MG10 in the southeast, southwest and north of the Site were assessed on the ground. These areas were very wet under foot at the time of survey with surface water visible. The survey was preceded by heavy rainfall and there was also localised flooding visible in nearby areas of short, grazed grassland. These examples of MG10 had consistently dominant soft rush, abundant chickweed *Stellaria media*, and occasional to frequent Yorkshire-fog. Other species included cuckooflower *Cardamine pratensis*, creeping buttercup, broadleaved dock, perennial rye-grass and thistle species. These examples were species-poor and the rushes stood tall and dense, over the grasses and forbs. They aligned to the MG10a typical sub-community.

3.2.3 Areas of rush-dominated vegetation located centrally within the Site (mapped under UKHab Primary Habitat g3c8) have been assumed to comprise the same MG10 community. These areas were viewed from a distance during the NVC survey because cattle were grazing at the same area and there was no means of safe access to ground-truth the species composition and frequency. For clarity, these communities have been marked as MG10\* on **Figure 9.1.2 (Annex A)**. The setting of the habitat was equivalent to other areas ground-truthed, being located in a low-lying area with free roaming cattle and sheep. Through binoculars, the tall tussocks of soft rush were visibly dominant.

3.2.4 The MG10 community is listed as likely to be moderately groundwater dependent, depending on the hydrogeological setting<sup>10</sup> (i.e., a potential GWDTE).

#### *MG9 Holcus lanatus-Deschampsia cespitosa grassland*

3.2.5 In the north of the Site, an area of modified grassland mapped as such due to poor species diversity within any given 1 m by 1 m square, was found to align with the MG9 NVC community to some extent. Tufted-hair grass *Deschampsia cespitosa* was locally abundant to near dominant alongside Yorkshire-fog. Other species included frequent creeping buttercup, broadleaved dock, creeping thistle, and more occasional spear thistle *Cirsium*

<sup>19</sup>NESBiP (online). Important Habitats for Biodiversity – Freshwater Habitats. Available: <https://www.nesbiodiversity.org.uk/wp-content/uploads/2019/10/FreshwaterHabitatsv1.pdf>.

*vulgare*, and violet *Viola* species. Localised flooding from recent heavy rainfall extended across adjacent fields by the Burn of Faichfield. This was an area of low-lying grazing pasture and cropland.

- 3.2.6 The MG9 community is listed as likely to be moderately groundwater dependent, depending on the hydrogeological setting<sup>10</sup> (i.e., a potential GWDTE).

#### *Other neutral grassland*

- 3.2.7 Other neutral grassland (UKHab Primary Habitat g3c) has been mapped from along the Burn of Ludquharn and connecting ditch in the west of the Site. Coarse grasses were dominant along the banksides which appeared to be occasionally inundated at high-water levels (flattened vegetation along the slopes of the banksides). Dead stems and leaves appeared to resemble false oat grass *Arrhenatherum elatius* and reed canary-grass *Phalaris arundinacea* but this did not appear to form a swamp-like community. Other species included cock's-foot, creeping buttercup, broadleaved dock, occasional umbellifers and scattered broom scrub. There was a group of broadleaved trees planted across a section of the coarse grassland. It was not possible to assign a meaningful NVC community to this bankside habitat, however the setting and some floristic species align to the MG1 *Arrhenatherum elatius* grassland community. These areas have been mapped on **Figure 9.1.2 (Annex A)** as 'MG'.
- 3.2.8 North of the Burn of Faichfield (outside the Site), there was a relatively extensive area of low-lying ground dominated by similar coarse grasses. There was localised flooding at the lowest elevations and patches of MG10. Again, it was not possible to assign a meaningful NVC community to the dominant vegetation, therefore this area has been mapped as 'MG'. It is proposed that this habitat type may be derived from the modifications to the surrounding landscape and lowland agricultural setting, as an unmanaged grassland, and is most likely to represent MG1.
- 3.2.9 Minor patches of MG next to the roadside were also mapped in mosaic with more distinct areas of MG10. Again, these would be similar to the MG1 community in terms of setting and some of the floristic makeup.
- 3.2.10 Whilst an NVC community has not been assigned to the areas of 'MG', for the purposes of informing GWDTE assessment, the MG1 community is not listed as likely to be groundwater dependent and nor are fens or swamps dominated exclusively of reed canary-grass (e.g., S28 *Phalaris arundinacea* tall-herb fen).

### 3.3 Invasive and non-native species

- 3.3.1 Japanese knotweed was recorded at three locations in the southern half of the Site. One stand was identified along a field margin by the road in the southeast corner of the Site, and the other stands were identified near Inverveddie Farm and Netherton Farm. These locations are shown on **Figure 9.1.1 (Annex A)**.
- 3.3.2 No other INNS plants had been recorded on the Site.

## 4. CONCLUSION

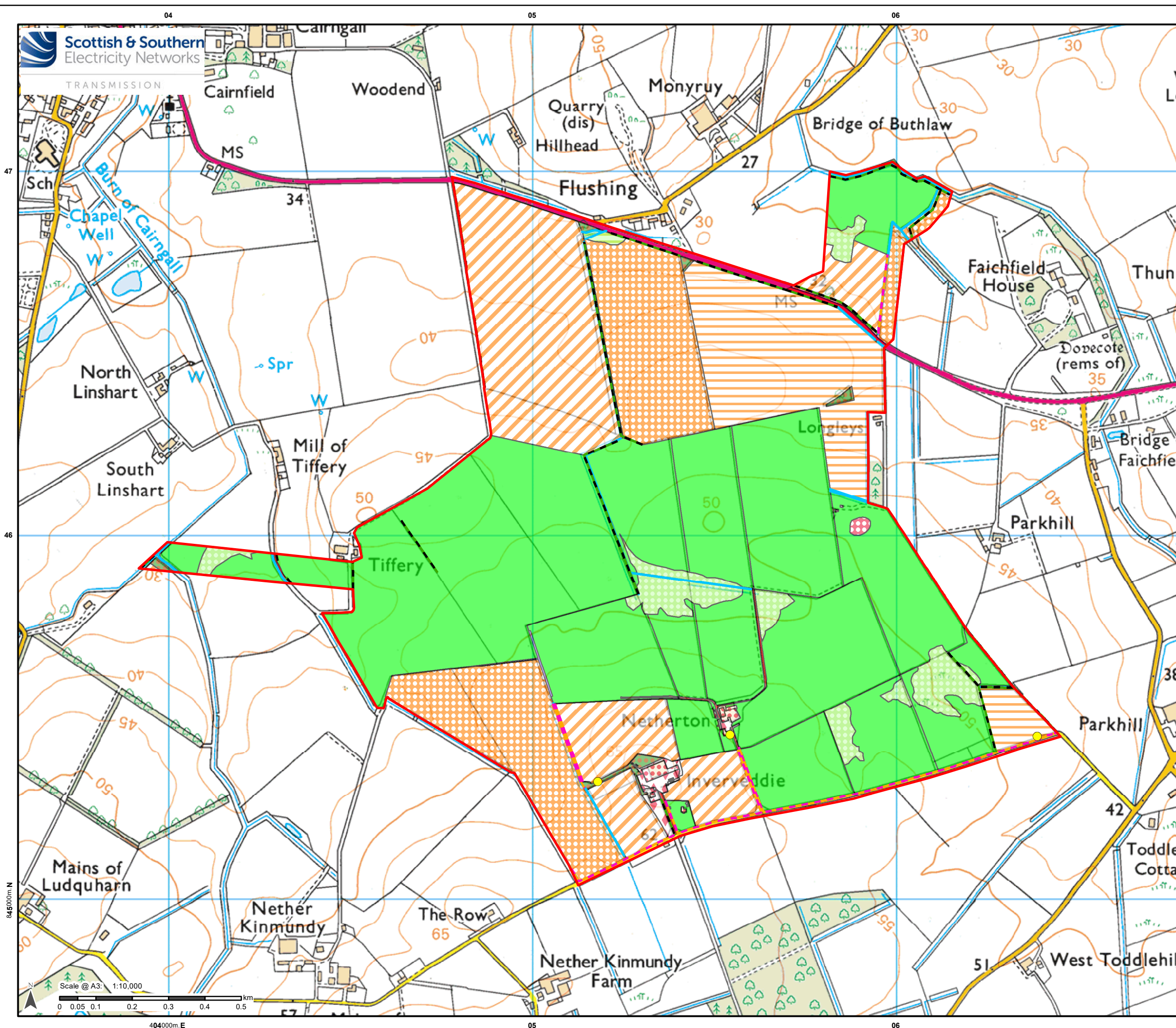
- 4.1.1 UKHab and NVC surveys have been undertaken of the Site and surrounding area. Generally, the Site comprised modified grassland and cropland, with built features/developed land associated with Netherton Farm and Inverveddie Farm. Minor areas of broadleaved woodland were mapped by Inverveddie Farm and near Longleys. Species-poor, rush-dominated neutral grassland was mapped from low lying areas in the centre, southeast and west. These rush habitats aligned to NVC community MG10, a community likely to be moderately groundwater dependent, depending on the hydrogeological setting. There were areas dominated by coarse neutral grasses, mainly across land outside of the Site but within the 250 m surrounding area. The Burn of Faichfield (north) and Burn of Ludquharn (west), and ditches extend through the Site. Other linear habitat features that were recorded include hedgerows and lines of trees, as well as scrub along field boundaries.
- 4.1.2 No Annex 1 habitat types, important peat-forming habitats, or irreplaceable habitats were identified. Habitats considered a priority at the Site were limited to hedgerows and lines of trees, providing connectivity across the open landscape.
- 4.1.3 Japanese knotweed, an INNS, was identified by Netherton Farm, Inverveddie Farm and in southeast area of the Proposed Development near to an unclassified road.



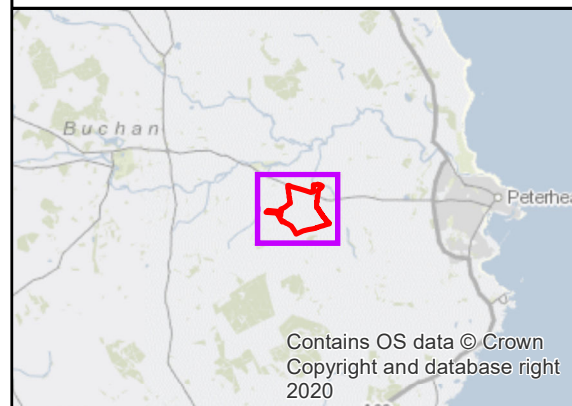
## ANNEX A: FIGURES

Figure 9.1.1: UK Habitat Classification

Figure 9.1.2: National Vegetation Classification



- ### Legend
- Site Boundary
  - Japanese knotweed
- #### UKHab Linear Habitat
- h2a - priority hedgerow
  - r2b - other rivers and streams
  - w1g6 - line of trees
- #### UKHab Area Habitat
- c1 - arable and horticulture
  - c1c5 - winter stubble
  - c1d - non-cereal crops
  - g3c - other neutral grassland
  - g3c8 - Holcus-Juncus neutral grassland
  - g4 - modified grassland
  - h3e - gorse scrub
  - u1b5 - buildings
  - u1b6 - other developed land
  - u1c - artificial unvegetated unsealed surface
  - u1d - suburban mosaic of developed/natural surfaces
  - u1e - built linear features
  - w1g - other woodland, broadleaved



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Project No: LT000052

Project: Netherton Hub




Title: Figure 9.1.1: UK Habitat Classification

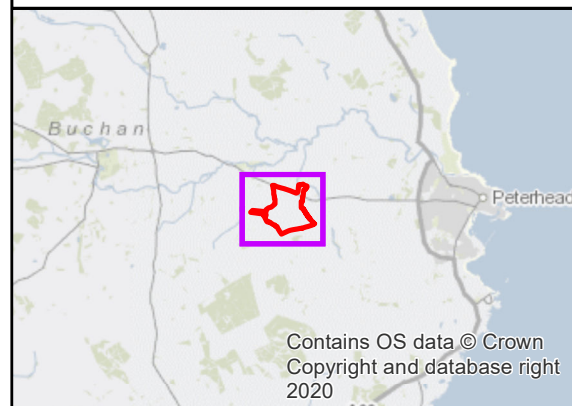
Drawn by: JD Date: 12/02/2024

Drawing: LT000052\_WSP\_035



**Legend**

-  Site Boundary
-  250 m Survey
-  NVC community (\*assumed)



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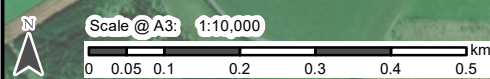
Project: Netherpton Hub

Title:  
Figure 9.1.2: National Vegetation Classification

Drawn by: JD Date: 23/07/2024

Drawing: LT000052\_WSP\_036

845000m N



404000m E



## ANNEX B: SPECIES LIST

Common name	Scientific name
Hawthorn	<i>Crataegus monogyna</i>
Reed canary-grass	<i>Phalaris arundinacea</i>
Soft rush	<i>Juncus effusus</i>
Yorkshire-fog	<i>Holcus lanatus</i>
Perennial rye-grass	<i>Lolium perenne</i>
Meadow-grass	<i>Poa species</i>
Bent grass	<i>Agrostis species</i>
Broadleaved dock	<i>Rumex obtusifolius</i>
Common nettle	<i>Urtica dioica</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Creeping buttercup	<i>Ranunculus repens</i>
Sycamore	<i>Acer pseudoplatanus</i>
Beech	<i>Fagus sylvatica</i>
Chickweed	<i>Stellaria media</i>
Cuckooflower	<i>Cardamine pratensis</i>
Spear thistle	<i>Cirsium vulgare</i>
Japanese knotweed	<i>Reynoutria japonica</i>
Birch	<i>Betula species</i>
Willow	<i>Salix species</i>
Creeping thistle	<i>Cirsium arvense</i>
White clover	<i>Trifolium repens</i>
Gorse	<i>Ulex europaeus</i>
Oak	<i>Quercus species</i>
Tufted hair-grass	<i>Deschampsia cespitosa</i>
Violet	<i>Viola species</i>

## ANNEX C: SITE PHOTOS



Photo 1 – quarry in east of Site (u1c)



Photo 2 – modified grassland in west (g4)



Photo 3 – hawthorn hedgerow along roadside at boundary of Site (h2a)



Photo 4 – hawthorn hedgerow in north (h2a)



Photo 5 - southeast rush-dominated area (g3c8 / MG10a)



Photo 6 - southeast rush-dominated area (g3c8 / MG10a)



Photo 7 - central area of rush dominated grassland (g3c8 / MG10\*)



Photo 8 – line of trees in east (w1g6)



Photo 9 - coarse grasses along Burn of Ludquharn (g3c / MG)



Photo 10 - coarse grass dominated vegetation by Burn of Ludquharn (g3c / MG)



Photo 10 – coarse grass dominated vegetation north of Burn of Faichfield with localised flooding (MG)



Photo 11 – unmanaged coarse grassland in contrast to adjacent crop fields, north of Burn of Faichfield (MG)



Photo 12 - Burn of Faichfield



Photo 13 – ditch west of Tiffery



Photo 14 – Burn of Faichfield