




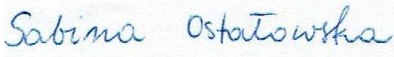

**Neilston Substation, Paisley**

***National Vegetation Classification, Peat Depth Survey  
and Ecological Constraints Survey Report***

July 2019

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**Control sheet**

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<b>Job number:</b>	BOWS17.52 Neilston Substation, Paisley	
<b>Title:</b>	National Vegetation Classification, Peat Depth Survey and Ecological Constraints Survey Report	
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<b>Date of Issue:</b>	9 <sup>th</sup> July 2019	
<b>Version:</b>	1	
<b>Revisions:</b>	2	
<b>Status:</b>	Final	
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## **Executive Summary**

Bowland Ecology Ltd was commissioned by SP Energy Network to complete a National Vegetation Classification (NVC), peat depth survey and ecological constraints survey of land adjacent to the Neilston substation, Gleniffer Road, Johnstone Castle, Renfrewshire (NS 44648 59828).

Surveys and desk study information relating to the site identified the following key issues to consider:

<b>Ecological Feature</b>	<b>Potential Impact</b>	<b>Outline Mitigation</b>
Annex 1 Habitats	Disturbance and degradation.	Mitigation measures.
Ground Water Dependent Terrestrial Ecosystems	Disturbance and degradation.	Mitigation measures/pollution prevention measures.
Deep peat	Disturbance and degradation.	Mitigation measures.
Watercourse	Potential to cause pollution (sediments, fuel, oil).	Pollution prevention measures.
Orchids	Loss, disturbance and degradation.	Works to strictly follow detailed methodology.
Nesting birds	Damage and destroy nests, kill and injure nesting birds.	Carry out work outside the nesting season (March – August inclusive) or pre-clearance nesting bird check by an ecologist required.
Amphibians and Reptiles	Injuring or killing and entrapment.	Precautionary measures.

## **1. Introduction**

- 1.1 Bowland Ecology Ltd was commissioned by SP Energy Network to complete a National Vegetation Classification (NVC), peat depth survey and ecological constraints survey of land adjacent to the Neilston substation, Gleniffer Road, Johnstone Castle, Renfrewshire (NS 44648 59828). This is in relation to proposed works including the construction of a new tower and two single CCT spans from existing tower ZN90 to the new tower, and an existing tower XB098 and the installation of two sets of downloads into the substation at the new tower and the existing tower XB098. A temporary stone track will be required to construct the new tower.
- 1.2 The site is adjacent to Neilston substation in Renfrewshire approximately 4 km south-west of Paisley. The surrounding landscape is predominantly agricultural with a mixture of grazed pasture and arable fields.
- 1.3 The purpose of the survey was to: 1) to identify and map all NVC plant communities occurring within the survey area, 2) provide an indication of peat depth within the site, 3) identify ecological constraints to the works, and 4) provide an ecological assessment, identify potential impacts and provide recommendations pertaining to the proposal.
- 1.4 This report includes an overview of the assessment methods, a description of the key ecological features relating to the area; recommendations for further surveys and/or mitigation measures where appropriate. The report is supported by a digitised NVC map illustrating plant communities; a peat depth map showing peat depth measurements for the individual sampling points; and an ecological constraints plan showing features of interest such as protected and/or notable species.

## 2. Methodology

### *Desk Study*

- 2.1 The Scotland's Soils website<sup>1</sup>, specifically 'Carbon and Peatland 2016 map' was reviewed to identify the likely presence of carbon-rich soils, deep peat and priority peatland habitat within the site. Scottish Natural Heritage (SNH) has prepared a consolidated dataset of 'carbon-rich soil, deep peat and priority peatland habitats' in Scotland resulting from existing soil and vegetation data (James Hutton Institute 1: 25,000 and 1: 250,000 scale soil data and Land Cover Scotland 1988). The carbon and peatland class is shown in the following categories:
- Class 1 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value.
  - Class 2 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential.
  - Class 3 - Dominant vegetation cover is not priority peatland habitat, but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat.
  - Class 4 - Area unlikely to be associated with peatland habitats or wet and acidic type. Area unlikely to include carbon-rich soils.
  - Class 5 - Soil information takes precedence over vegetation data. No peatland habitat recorded. May also include areas of bare soil. Soils are carbon-rich and deep peat.
  - Mineral soil - Peatland habitats are not typically found on such soils (Class 0).
  - Non-soil (e.g. loch, built up area, rock and scree) (Class -2).
  - Unknown soil type – information to be updated when new data are released (Class -1).
- 2.2 In relation to the identification of possible constraints, the online interactive mapping tool on the Scottish Natural Heritage (SNH) Sitelink<sup>2</sup> website was reviewed for information on locally, nationally and internationally designated sites of nature conservation importance on and within 1 km of the site. Information on woodlands listed on the Ancient Woodland Inventory (AWI) were sought from Scotland's environment website<sup>3</sup>.
- 2.3 Further online resources were used to identify any species recorded on or within 1 km of the site<sup>4</sup>.

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<sup>1</sup> <http://soils.environment.gov.scot/>

<sup>2</sup> <https://sitelink.nature.scot/map>

<sup>3</sup> <https://www.environment.gov.scot/>

<sup>4</sup> Records from 2000 onwards are included within the data search.

### **National Vegetation Classification**

- 2.4 The NVC survey was carried out on 4<sup>th</sup> and 28<sup>th</sup> June 2019 by Sarah Birtley MBiolSci (Hons), ACIEEM. On the 4<sup>th</sup> June the weather was mild with an average temperature of 14°C, light winds (Beaufort Scale 1) and variable precipitation of light showers to moderate rain. On the 28<sup>th</sup> June the weather was warm and sunny, with a temperature of 24°C and a mild to moderate breeze (Beaufort Scale 2-3).
- 2.5 The NVC survey method followed the approach outlined in the National Vegetation Classification (Rodwell, J.S. 1990 *et seq.*) and the NVC Users Handbook (Rodwell, J.S. 2006). Vascular plant species nomenclature follows Stace (2010) and mosses and liverworts follow Atherton *et. al.* (2010).
- 2.6 Each separate vegetation type, thought to be a visually homogeneous stand (both in terms of floristic composition and structure) was mapped onto 1:10,000 scale aerial photographs with a minimum mappable area of 0.25 ha. Each community type was given a written description and representative photographs were taken.
- 2.7 Representative quadrats of the appropriate size for the vegetation type were taken for each separate community and the locations of the quadrats mapped. For each quadrat, all species including vascular plants and bryophytes present were recorded with visual estimates of percentage cover using the Domin scale (Table 1). Where possible a minimum of five quadrats were taken in each community, although in small stands of vegetation the number of quadrats was reduced accordingly.

**Table 1: Domin scale**

<b>Domin scale:</b>	
<b>Domin</b>	<b>% cover</b>
1	< 4% - few plants
2	<4% - several plants
3	<4% - many plants
4	4-10%
5	11-25%
6	26-33%
7	34-50%
8	51-75%
9	76-90%
10	91-100%

- 2.8 The floristic data was analysed to find the most appropriate NVC community fit using dichotomous keys, comparison with the published data tables and the surveyors' interpretation.
- 2.9 Vegetation mapping at the sub-community level is not necessary unless surveyors would advise distinct management for different sub-communities (e.g. tree species choice, ground preparation technique, or unplanted area selection).

### **Peat Depth Survey**

- 2.10 Peat depth surveys across the site were conducted on 3<sup>rd</sup> June and 1<sup>st</sup> July 2019 by Sabina Ostalowska BSc, MSc GradCIEEM. On the 3<sup>rd</sup> June the weather was

mild with an average temperature of 12°C, with a light breeze (Beaufort Scale 2) and light rain. On the 1<sup>st</sup> July the weather was dry and warm (average temperature of 16°C) with light breeze (Beaufort Scale 2).

- 2.11 The survey site was sampled using a pre-defined 50 m x 50 m systematic grid. Prior to field work grid points were downloaded onto a handheld GPS unit which was used to locate sampling locations in the field. A solid steel peat depth probe was used at each sample point to establish peat depth. All occurrences of peat deposits (even if less than 50 cm) were recorded with at least a 10 cm precision. When no peat deposits were present a value of zero was entered. Where access to the exact grid point was restricted by ground conditions (e.g. steepness, existing tree cover, overhead power lines), a new sampling point was established on the ground and an accurate National Grid Reference of the probing point taken using the GPS. An additional probe within the immediate area was taken where it was suspected that the probe was hitting barriers such as roots and stones etc. A digital camera was used to take photographs at 10% of the sampling points.
- 2.12 Sampling point locations and peat depth measurements for the individual sampling points are displayed on the Peat Depth Survey Map (Appendix D).

### ***Ecological Constraints Survey***

- 2.13 The ecological constraints survey was undertaken on the same days as the peat depth survey and conditions were the same throughout the duration of the survey (paragraph 2.10).
- 2.14 The site was subject to a walkover survey to identify areas of highest sensitivity, any protected/notable species present and areas with the potential to provide suitable habitat for protected/notable species. Throughout the survey area, fence lines were walked to look for badger (*Meles meles*) hairs (e.g. on barbed wire), latrines and access points (e.g. hollows underneath the fence). Watercourses within the site were examined for signs of otter (*Lutra lutra*), including searching the banks for evidence of spraints, holts, tracks and runways through bankside vegetation. Signs of the presence of water vole (*Arvicola amphibius*) were also recorded. Trees were assessed (from ground level) for their potential to provide suitable habitat for roosting bats and nesting birds. Ponds on site were subject to a habitat suitability index (HSI) (Oldham *et al.* 2000) assessment for great crested newt<sup>5</sup>, and a check for invasive plant species subject to strict legal control was also carried out during the survey.
- 2.15 The locations of any protected/notable species field signs and/or invasive species encountered were recorded with a handheld GPS unit.

### ***Limitations***

- 2.16 Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. Therefore, the survey of the study area has not produced a complete list of plants and animals.

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<sup>5</sup> An HSI is a numerical index, between 0 and 1. Values close to 0 indicate unsuitable habitat, 1 represents optimal habitat. The HSI for the great crested newt incorporates ten suitability indices, all of which are factors known to affect this species. The HSI for great crested newts is a measure of habitat suitability - it is not a substitute for newt surveys.

- 2.17 Although the NVC surveys were undertaken within the optimum period, the results of the survey may have been affected by the time of year in which early annuals would have passed and early flowering species may, in a few cases, have been under-recorded or been difficult to identify to species level with 100% confidence. This is not, however, considered a significant constraint to the assignment of NVC communities.
- 2.18 Some difficulties may arise in assigning NVC codes, particularly to stands of vegetation where past or present management has influenced the species composition. Some stands may appear to have elements of two or more described community types, possibly due to their being in a transitional phase from one to the other. In these cases, the most relevant NVC code(s) were used where possible and additional target notes taken to describe the stand more accurately.
- 2.19 Tree roots, wood and trees buried in peat may affect the depth at which the peat probe stops. Tussocks and hummocks raise the surface level above the actual peat level, thereby underestimating the peat depth. Where this was suspected, an additional probe within the immediate area was taken. In some cases, it is likely that the peat depth may be over-estimated if the substratum underlying the peat is soft and/or saturated.
- 2.20 The list of invasive plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is extensive and these plants are found in a range of different habitats, including aquatic habitats. The ecological constraints survey checked, in particular, for the presence of Japanese knotweed (*Fallopia japonica*), giant knotweed (*F. sachalinensis*), hybrid knotweed (*F. x bohemica*), giant hogweed (*Heracleum mantegazzianum*), rhododendron (*R. ponticum*, *R. ponticum* x *R. maximum* and *R. luteum*) and Himalayan balsam (*Impatiens glandulifera*). There may be other invasive plant species present on the site which were not recorded, but it is considered that this survey is sufficient to identify any significant constraints posed by invasive plants.
- 2.21 The above limitations associated with the method used to assess the site is not considered a significant constraint and the data can be relied upon to inform the aims and objectives of the survey.

### 3. Results

#### **Desk Study**

- 3.1 The majority of the site has been classified as Class 5 (Appendix D), which is defined as “Soil information takes precedence over vegetation data - no peatland habitat recorded. May also show bare soil. All soils are carbon-rich soil and deep peat”. A small area along the south-western site boundary has been classified as Class 3 meaning “dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat”. A narrow strip adjacent to the substation and tower XB098 has been classified as non-soil (i.e. loch, built up area, rock and scree).
- 3.2 There are no statutory designated sites on or within 1 km of the site.
- 3.3 The site is located within Gleniffer Braes Country Park. Country Parks are set up by Local Authorities and managed primarily for informal recreation. As such, no further consideration is given to the Country Park within this report.
- 3.4 There are two areas of long-established woodland (of plantation origin) listed on the Ancient Woodland Inventory within 1 km of the site; the closest of which is located approximately 0.1 km north-west of the site.
- 3.5 An online search identified records of the following protected/notable species within 1 km of the site:
  - birds: reed bunting (*Emberiza schoeniclus*); and
  - butterflies: ringlet (*Aphantopus hyperantus*), meadow brown (*Maniola jurtina*), peacock (*Aglais io*), green-veined white (*Pieris napi*), green hairstreak (*Callophrys rubi*), orange-tip (*Anthocharis cardamines*) and large heath (*Coenonympha tullia*).

#### **National Vegetation Classification**

- 3.6 The NVC communities encountered are briefly summarised with relevant quadrat data provided in tables below. The NVC communities plan of the site are illustrated in Appendix B, which includes the locations of the quadrats and should be referred to in conjunction with the descriptions, photos (Appendix C) and quadrat data.

#### **M6 *Carex echinata*-*Sphagnum fallax/denticulatum* mire**

- 3.7 An extensive area of M6c *Juncus effusus* sub-community (Table 2; Q1, Q2, Q3 and Q4) was present extending eastwards from the access track. This habitat was present over flat ground and dominated by soft rush (*Juncus effusus*) and flat-topped bog-moss (*Sphagnum fallax*) with abundant other sphagnum mosses also present. Other species occurring frequently included wavy hair grass (*Deschampsia flexuosa*), common sorrel (*Rumex acetosa*) and heath bedstraw (*Galium saxatile*). Yorkshire fog (*Holcus lanatus*), fescue grass (*Festuca* sp.), black sedge (*Carex nigra*) and common haircap moss (*Polytrichum commune*) were present locally.

- 3.8 A small area of M6d *Juncus acutiflorus* sub-community (Table 2; Q5) located to the north-eastern corner was dominated by flat-topped bog-moss and wavy hair grass with abundant sharp-flowered rush (*Juncus acutiflorus*) and common sorrel. Heath bedstraw, black sedge and common haircap moss were also occasionally recorded with this community. An orchid species was noted to the east of the track (see Appendix F).

**Table 2:** Quadrat Data M6 *Carex echinata*-*Sphagnum fallax/denticulatum* mire

Species	Domin Scale				
	Q1 NS 44676 59714	Q2 NS 44666 59758	Q3 NS 44636 59811	Q4 NS 44631 59844	Q5 NS 44431 59882
<i>Sphagnum fallax</i>	8	9	9	10	8
<i>Juncus effusus</i>	7	8	9	6	0
<i>Deschampsia flexuosa</i>	7	5	0	8	8
<i>Rumex acetosa</i>	6	7	6	6	5
<i>Holcus lanatus</i>	3	0	0	0	0
<i>Galium saxatile</i>	4	7	6	4	4
<i>Festuca</i> sp.	4	0	0	0	0
<i>Polytrichum commune</i>	3	0	0	4	4
<i>Carex nigra</i>	2	0	0	0	4
<i>Juncus acutiflorus</i>	0	0	0	0	5

- 3.9 Two further areas of marshy grassland classified as M6 were present along the south-western boundary of the site (Table 3; Q6 and Q7). In contrast to the above, these areas were drier, lacked tufted hair grass and had reduced floristic diversity. The southern, most extensive area was interspersed with patches of U2 *Deschampsia flexuosa* grassland.

**Table 3:** Quadrat Data M6 *Carex echinata*-*Sphagnum fallax/denticulatum* mire

Species	Domin Scale	
	Q6 NS 44534 59674	Q7 NS 44489 59704
<i>Sphagnum fallax</i>	5	4
<i>Juncus effusus</i>	7	9
<i>Rumex acetosa</i>	7	6
<i>Galium saxatile</i>	6	4
<i>Carex nigra</i>	2	2
<i>Potentilla erecta</i>	0	2

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

- 3.10 Several areas of M23a *Juncus acutiflorus* - *Galium palustre* sub-community dominated by sharp-flowered rush with locally abundant Yorkshire fog and variable herbs in sward were scattered throughout the site (Table 4; Q8, Q9, Q10, Q11 and Q12). Occasional common spotted orchid and ragged robin (*Lychnis flos-cuculi*) were noted in these areas (outside of quadrat samples). This sub-community was almost always associated with S10 *Equisetum fluviatile* swamp, forming a transition from the wettest areas of the site into drier marshy grassland, dominated by soft rush.

**Table 4:** Quadrat Data M23a *Juncus acutiflorus* - *Galium palustre* rush-pasture

Species	Domin Scale				
	Q8 NS 44645 59886	Q9 NS 44501 59879	Q10 NS 44735 59856	Q11 NS 44622 59736	Q12 NS 44347 59823
<i>Juncus acutiflorus</i>	9	8	8	10	8
<i>Holcus lanatus</i>	9	0	8	4	5
<i>Cirsium palustre</i>	2	1	0	2	2
<i>Cardamine pratensis</i>	1	2	0	0	0
<i>Angelica sylvestris</i>	4	4	2	0	4
<i>Rumex acetosa</i>	5	0	1	4	3
<i>Equisetum fluviatile</i>	0	2	2	0	0
<i>Caltha palustris</i>	0	5	0	0	0
<i>Deschampsia cespitosa</i>	0	5	0	1	0
<i>Ranunculus acris</i>	0	1	0	0	0
<i>Galium palustre</i>	0	2	0	0	4
<i>Poa trivialis</i>	0	4	8	0	0
<i>Equisetum palustre</i>	0	0	2	0	0
<i>Valeriana officinalis</i>	0	0	5	0	0
<i>Galium saxatile</i>	0	0	4	0	0

- 3.11 The marshy grassland surrounding tower XB098, adjacent to the substation and access track, and to the south of the unnamed towers and transformers was dry and dominated by soft rush with abundant tufted hair grass (*Deschampsia cespitosa*). The marshy grassland is also abundant throughout the western section of the site. An increase in ruderal species was also noted at this location, reflecting the more disturbed ground present. To the north of the transformers and unnamed tower, the soft rush cover was reduced and replaced by sharp flowered rush; the ground was wetter with presence of species noted as transitional to S8 *Typha latifolia* swamp. At tower XB098, this habitat gradually transitioned into damper lower lying rush/meadow grassland to the west, with no clear boundaries between the communities.

3.12 This habitat had relatively low affinities with any one plant community, as such M23b *Juncus effusus* - *Galium palustre* rush-pasture was used to describe the vegetation dominated by soft rush (Table 5; Q13, Q14, Q15, Q16, Q17, Q18, Q19 and Q20).

**Table 5:** Quadrat Data M23b *Juncus effusus* - *Galium palustre* rush-pasture

Species	Domin Scale							
	Q13 NS 44741 59874	Q14 NS 44676 59921	Q15 NS 44507 59793	Q16 NS 44504 59808	Q17 NS 44767 59847	Q18 NS 44623 59697	Q19 NS 44484 59754	Q20 NS 45570 59726
<i>Juncus effusus</i>	10	9	10	8	10	8	6	8
<i>Deschampsia cespitosa</i>	6	5	4	2	0	6	8	7
<i>Cirsium palustre</i>	4	0	0	1	0	1	0	1
<i>Angelica sylvestris</i>	1	0	1	5	4	3	0	2
<i>Rumex obtusifolius</i>	1	1	0	0	0	0	0	0
<i>Rumex acetosa</i>	2	8	7	5	6	5	4	5
<i>Poa trivialis</i>	4	0	0	0	0	0	0	0
<i>Chamerion angustifolium</i>	1	2	0	0	1	0	0	0
<i>Galium palustre</i>	2	2	4	0	0	0	0	0
<i>Ranunculus repens</i>	2	0	0	0	0	0	0	0
<i>Urtica dioica</i>	0	0	0	0	1	0	0	0
<i>Dactylorhiza fuchsii</i>	0	0	0	0	0	1	0	0
<i>Holcus lanatus</i>	0	0	0	0	0	0	3	0
<i>Potentilla erecta</i>	0	0	0	0	0	0	1	0

3.13 Area of M23b *Juncus effusus* - *Galium palustre* rush-pasture sub-community between the access track and the Gleniffer Road was present over flat ground and comprised marshy and soft rush dominated grassland with abundant common valerian (*Valeriana officinalis*) and very infrequent sphagnum mosses, over acidic soils (Table 6; Q21). Other herb species occurring within M23b *Juncus effusus* - *Galium palustre* rush-pasture sub-community included angelica (*Angelica Sylvestris*), tormentil (*Potentilla erecta*), common marsh bedstraw (*Galium palustre*) and heath bedstraw.

**Table 6:** Quadrat Data  
M23b *Juncus effusus* - *Galium palustre* rush-pasture with frequent herbs

Species	Domin Scale
	Q21 NS 44675 59683
<i>Juncus effusus</i>	5
<i>Valeriana officinalis</i>	4
<i>Springy turf moss</i>	7

<i>Angelica sylvestris</i>	2
<i>Deschampsia flexuosa</i>	5
<i>Potentilla erecta</i>	5
<i>Galium palustre</i>	2
<i>Galium saxatile</i>	4
<i>Deschampsia cespitosa</i>	4
<i>Carex nigra</i>	2
<i>Eriophorum vaginatum</i>	1

H12 *Calluna vulgaris* - *Vaccinium myrtillus* heath

- 3.14 There was a small area of H12 *Calluna vulgaris* - *Vaccinium myrtillus* heath on a clearly defined band running south through dry U2 *Deschampsia flexuosa* grassland, dominated by heather (*Calluna vulgaris*). Deer grass (*Trichophorum cespitosum*) and mosses were recorded frequently with rare hare's-tail cotton grass (*Eriophorum vaginatum*) and bilberry (*Vaccinium myrtillus*) (Table 7; Q22).

**Table 7:** Quadrat Data H12 *Calluna vulgaris* - *Vaccinium myrtillus* heath

Species	Domin Scale
	Q22 NS 44727 59787
<i>Calluna vulgaris</i>	9
<i>Trichophorum cespitosum</i>	4
<i>Eriophorum vaginatum</i>	1
<i>Vaccinium myrtillus</i>	2
Mosses	7

- 3.15 An area of raised ground located to the north of tower ZN90 had a variable cover of heather, not as dense as in the main community, as such classed as H12c *Galium saxatile-Festuca ovina* sub-community (T8; Q23). Heather, bilberry, tormentil, mat grass (*Nardus stricta*), wavy hair grass and common haircap moss were recorded frequently within this sub-community. Other species recorded include sweet vernal grass (*Anthoxanthum odoratum*), common sedge, fine leaved sheep's fescue (*Festuca filiformis*), marsh lousewort (*Pedicularis palustris*) and heath grass (*Danthonia decumbens*).

**Table 8:** Quadrat Data H12c *Galium saxatile-Festuca ovina* sub-community

Species	Domin Scale
	Q23 NS 44518 59907
<i>Calluna vulgaris</i>	5
<i>Vaccinium myrtillus</i>	4
<i>Potentilla erecta</i>	4
<i>Anthoxanthum odoratum</i>	2
<i>Pedicularis palustris</i>	1

<i>Danthonia decumbens</i>	1
<i>Carex nigra</i>	2
<i>Nardus stricta</i>	4
<i>Deschampsia flexuosa</i>	4
<i>Festuca filiformis</i>	2
<i>Polytrichum commune</i>	4

- 3.16 Two areas of exposed rocks were recorded within the H12c *Galium saxatile-Festuca ovina* sub-community; the following species were recorded; wavy hair grass, fine leaved sheep's fescue, sweet vernal grass, mat grass, heath bedstraw, ferns, mosses and lichens.

*MG9 Holcus lanatus-Deschampsia cespitosa grassland*

- 3.17 Small areas of MG9 *Holcus lanatus-Deschampsia cespitosa* grassland dominated by tufted hair grass, Yorkshire fog and soft rush were present to the south and north of tower ZN90 (Table 9; Q24 and Q25).

**Table 9:** Quadrat Data MG9 *Holcus lanatus-Deschampsia cespitosa grassland*

Species	Domin Scale	
	Q24 NS 44479 59857	Q25 NS 44462 59854
<i>Deschampsia cespitosa</i>	6	7
<i>Juncus effusus</i>	4	4
<i>Holcus lanatus</i>	5	5
<i>Anthoxanthum odoratum</i>	4	4
<i>Danthonia decumbens</i>	4	2
<i>Mosses in ground layer</i>	6	5
<i>Sphagnum</i> sp.	4	3

- 3.18 Larger areas of MG9 were recorded below powerlines towards the south-eastern corner of the surveyed area, likely to be associated with previous disturbance to the ground. Other locally occurring species within this community included sweet vernal grass, heath grass, marsh thistle and scattered eared willow (Table 10; Q26, Q27, Q28 and Q29).

**Table 10:** Quadrat Data MG9 *Holcus lanatus-Deschampsia cespitosa grassland*

Species	Domin Scale			
	Q26 NS 44558 59753	Q27 NS 44596 59757	Q28 NS 44563 59806	Q29 NS 44644 59698
<i>Deschampsia cespitosa</i>	9	9	9	9
<i>Juncus effusus</i>	4	3	6	5
<i>Holcus lanatus</i>	0	2	0	0
<i>Anthoxanthum odoratum</i>	0	1	0	0

<i>Danthonia decumbens</i>	0	0	0	0
<i>Mosses in ground layer</i>	5	4	4	4
<i>Sphagnum sp.</i>	0	0	0	0
<i>Rumex acetosa</i>	6	0	0	3
<i>Cirsium palustre</i>	2	0	4	0
<i>Epilobium montanum</i>	0	0	3	0
<i>Equisetum palustre</i>	0	0	0	0
<i>Salix aurita</i>	0	2	0	0
<i>Galium uliginosum</i>	0	1	0	0

*MG6 Lolium perenne - Cynosurus cristatus grassland*

3.19 Within the south-western section of the site, several areas of short, herb-rich, dry semi-improved neutral grassland were recorded, including a large area leading from the southern access track, located west of the power line. This grassland occurs over flat and sloping ground, generally above areas of damper marshy grassland, and has affinities with both MG6 and MG9 communities (Table 11; Q30, Q31 and Q32). Occasional common spotted orchids are present within these areas.

**Table 11:** Quadrat Data MG6 *Lolium perenne - Cynosurus cristatus* grassland

Species	Domin Scale		
	Q30 NS 44449 59740	Q31 NS 44531 59724	Q32 NS 44602 59769
<i>Holcus lanatus</i>	4	5	6
<i>Plantago lanceolata</i>	5	6	2
<i>Anthoxanthum odoratum</i>	4	3	4
<i>Festuca rubra</i>	5	0	7
<i>Achillea millefolium</i>	4	4	0
<i>Agrostis stolonifera</i>	4	3	0
<i>Viola sp.</i>	2	0	0
<i>Ranunculus acris</i>	2	3	2
<i>Rytidiodelphus squarrosus</i>	6	2	0
<i>Trifolium pratense</i>	0	4	0
<i>Trifolium repens</i>	0	5	0
<i>Rumex acetosa</i>	0	4	0
<i>Deschampsia cespitosa</i>	0	3	2
<i>Cynosurus cristatus</i>	0	2	0
<i>Potentilla erecta</i>	0	0	2
<i>Ranunculus repens</i>	0	0	1
<i>Taraxacum sp.</i>	0	0	3

U2 *Deschampsia flexuosa* grassland

3.20 A dry U2 *Deschampsia flexuosa* grassland dominated by wavy hair grass with tormentil and heath bedstraw and interspersed with mossy hummocks was located in the centre of the eastern section of the site and at the south-western corner of the site (Table 12; Q33, Q234, Q35, Q36 and Q37). Scattered patches of U2 were also present within the area of M6 *Carex echinata-Sphagnum fallax/denticulatum* mire, extending along the south-west boundary of the site.

**Table 12:** Quadrat Data U2 *Deschampsia flexuosa* grassland

Species	Domin Scale				
	Q33 NS 44659 59839	Q34 NS 44721 59815	Q35 NS 44596 59620	Q36 NS 44611 59649	Q37 NS 44351 59800
<i>Deschampsia flexuosa</i>	8	10	7	8	6
<i>Polytrichum commune</i>	7	0	0	1	0
<i>Agrostis stolonifera</i>	3	3	7	2	3
<i>Potentilla erecta</i>	5	6	3	4	3
<i>Carex nigra</i>	4	0	4	0	2
<i>Vaccinium myrtillus</i>	2	4	0	1	0
<i>Luzula multiflora</i>	3	0	2	3	2
<i>Galium saxatile</i>	0	8	4	3	0
<i>Rhytidiadelphus squarrosus</i>	0	7	0	4	7
<i>Festuca rubra</i>	0	0	4	5	5
<i>Anthoxanthum odoratum</i>	0	0	0	2	2
<i>Dactylorhiza fuchsii</i>	0	0	1	0	0
<i>Danthonia decumbens</i>	0	0	0	2	0

3.21 Wavy hair-grass was also locally abundant alongside creeping bent grass (*Agrostis stolonifera*) within an area of *Sphagnum*, within the north-west corner of the site (Table 13; Q38).

**Table 13:** Quadrat Data U2 *Deschampsia flexuosa* grassland with *Sphagnum*

Species	Domin Scale
	Q38 NS 44341 59845
<i>Deschampsia flexuosa</i>	6
<i>Sphagnum fallac</i>	10
<i>Agrostis stolonifera</i>	5
<i>Galium saxatile</i>	8
<i>Rumex acetosa</i>	4
<i>Dactylorhiza fuchsii</i>	1

*U5 Nardus stricta-Galium saxatile grassland*

- 3.22 To the west of the power line and towers, an area with occasional exposed rocks was recorded, this area has affinities with U5 *Nardus stricta-Galium saxatile* grassland (Table 14; Q39).

**Table 14:** Quadrat Data U5 *Nardus stricta-Galium saxatile* grassland

Species	Domin Scale
	Q39 NS 44430 59758
<i>Deschampsia flexuosa</i>	3
<i>Fine leaved sheep's fescue</i>	0
<i>Galium saxatile</i>	4
<i>Lichens</i>	1
<i>Mosses</i>	6
<i>Ferns</i>	0
<i>Anthoxanthum odoratum</i>	3
<i>Nardus stricta</i>	2
<i>Agrostis stolonifera</i>	6
<i>Luzula multiflora</i>	3
<i>Potentilla erecta</i>	4
<i>Anthoxanthum odoratum</i>	3

*S8 Typha latifolia swamp*

- 3.23 There was a small area of S8 *Typha latifolia* swamp located in the southwestern side of the site, dominated by common bulrush (*Typha latifolia*) with abundant marsh marigold (*Caltha palustris*). Marsh bedstraw and sharp-flowered rush were occasionally recorded, whereas water horsetail (*Equisetum fluviatile*) was infrequent (Table 15; Q40). A second area of S8 *Typha latifolia* swamp was recorded close to the north-west boundary of the site (Table 15; Q41). This area was drier, and featured greater herb cover, including occasional common spotted orchid.

**Table 15:** Quadrat Data S8 *Typha latifolia* swamp

Species	Domin Scale	
	Q40 NS 44515 59818	Q41 NS 44384 59853
<i>Typha latifolia</i>	9	8
<i>Caltha palustris</i>	5	0
<i>Galium palustre</i>	4	3
<i>Equisetum fluviatile</i>	2	2
<i>Juncus acutiflorus</i>	4	0
<i>Angelica sylvestris</i>	0	5
<i>Rumex acetosa</i>	0	4

<i>Dactylorhiza fuchsii</i>	0	2
<i>Cardamine pratensis</i>	0	2
<i>Galium uliginosum</i>	0	2
<i>Cirsium palustre</i>	0	1

S10 *Equisetum fluviatile* swamp

3.24 Low lying areas throughout the site comprised swamp dominated by water horsetail, with occasional, scattered eared willow (*Salix aurita*). Other species occurring within the S10 *Equisetum fluviatile* swamp included rough bluegrass (*Poa trivialis*), Yorkshire fog, marsh marigold, marsh horsetail, fen bedstraw (*Galium uliginosum*), angelica, creeping buttercup (*Ranunculus repens*), bog stitchwort (*Stellaria alsine*) and valerian (Table 16; Q42 and Q43).

**Table 16:** Quadrat Data S10 *Equisetum fluviatile* swamp

Species	Domin Scale	
	Q42 NS 44744 59832	Q43 NS 44619 59856
<i>Equisetum fluviatile</i>	9	10
<i>Poa trivialis</i>	8	0
<i>Holcus lanatus</i>	9	0
<i>Caltha palustris</i>	1	4
<i>Equisetum palustre</i>	4	0
<i>Galium uliginosum</i>	4	3
<i>Angelica sylvestris</i>	1	2
<i>Ranunculus repens</i>	5	0
<i>Stellaria alsine</i>	4	3
<i>Valeriana officinalis</i>	0	5

S10 *Equisetum fluviatile* swamp / M23a *Juncus acutiflorus* - *Galium palustre* mosaic

3.25 Within two small areas to the east of tower ZN90, the plant communities showed a relatively equal affinity with S10 *Equisetum fluviatile* swamp and M23a *Juncus acutiflorus* - *Galium palustre* sub-community. Water horsetail, Yorkshire fog and tormentil were abundant with dominant sphagnum mosses (Table 17; Q44).

**Table 17:** Quadrat Data *Equisetum fluviatile* swamp/M23a *Juncus acutiflorus* - *Galium rush-pasture* mosaic

Species	Domin Scale
	Q44 NS 44479 59857
<i>Sphagnum sp.</i>	8
<i>Equisetum fluviatile</i>	5

<i>Holcus lanatus</i>	5
<i>Equisetum palustre</i>	4
<i>Potentilla reptans</i>	6
<i>Anthoxanthum odoratum</i>	2
<i>Rumex acetosa</i>	4
<i>Galium saxatile</i>	2

#### *Other*

- 3.26 A narrow watercourse ran south-east into the site and passed directly under tower ZN90, before dispersing into the extensive area of S10 *Equisetum fluviatile* swamp. The flow was moderate to stagnant and channel approximately 30 cm wide with no obvious banks. Surrounding vegetation included horsetails and a mixture of herbs and grasses. Spotted orchid was noted adjacent to the watercourse (see Appendix F).
- 3.27 A small area of open water (approximately 10 m<sup>2</sup>) was identified within the S10 *Equisetum fluviatile* swamp to the north-east of the unnamed tower (see Appendix F). It is likely that the feature dries annually due to its shallow nature (approximately 10 cm deep). The feature was overshadowed by willow scrub and aquatic vegetation included horsetail, common sorrel and marsh marigold.
- 3.28 Tracks and disturbed ground to the south-east of tower ZN90 comprised scattered herbs over gravel, including hawkweed (*Hieracium* sp.) and colt's foot (*Tussilago farfara*). The track to the north of the unnamed tower was very wet and comprised jointed rush (*Juncus articulatus*), Yorkshire fog, sweet vernal grass, white clover (*Trifolium repens*) and common daisy (*Bellis perennis*).

#### **Peat Depth Survey**

- 3.29 In total 39 sampling points were initially generated, of which 38 were surveyed. One peat probe location (Point 9) was not surveyed due to the presence of an overhead power line.
- 3.30 The peat depths across the site range from 0 cm (no peat) to 260 cm (Point 13). Twelve sampling points had a peat depth of greater than 50 cm (Point 4, 11, 12, 13, 20, 21, 24, 25, 34 and 37 to 39), and four sampling points had a peat depth of 50 cm (Point 8, 19, 22 and 23). The remaining sampling points were within 0 to 50 cm interval of peat depth (Point 1, 2, 3, 4, 6, 10, 14 to 18, 26 to 33, 35 and 36). The site had deeper peat (depth measurements 50 cm and over) towards the centre and Gleniffer Road, and west of tower ZN90, with shallower peat towards the north and south-west of the site.
- 3.31 Peat depth data is presented in table in Appendix D and illustrated on the map in Appendix E.

#### **Ecological Constraints Survey**

##### *Bats*

- 3.32 The site does not contain any structures that could be utilised by roosting bats as the trees are all young and contain no suitable bat roosting features. Opportunities for foraging bats within the site comprise scrub, swamp and grassland areas, however, the site has limited connectivity with the wider area.

In accordance with Collins (2016), the site is considered to provide low value foraging and commuting habitat for bats. No further consideration is given to bats.

#### *Otters and water voles*

- 3.33 No field signs of otter and no potential resting sites were found during the survey. The watercourse on site is considered too shallow and narrow with limited prey availability to be used by otter. As such, otter are not considered further within this report.
- 3.34 No signs of water vole were noted on site during the survey. The watercourse provides good foraging habitat and cover for water vole, however, the watercourse is considered to provide poor quality habitat for burrow creation due to the shallow banks. In addition, the watercourse has limited connectivity to other watercourses in the surrounding area. Given the above and a lack of water vole records within the search area, it is considered unlikely that water vole are present on site. As such, no further consideration is given to water voles in this report.

#### *Badgers*

- 3.35 No badger setts or signs of their activity (snuffle holes, hairs trapped on wires or latrines) were observed within the survey area. The site is not considered suitable for sett creation due to its predominantly flat profile and wet ground conditions. The site is also considered of relatively low value for foraging badger given its wet and un-grazed nature with longer swards; earthworm biomass is likely reduced and worms are more difficult to predate. Furthermore, more favourable foraging habitats for badger occur within the wider area, in particular within improved pastures and woodlands. As such, badger are not considered further within this report.

#### *Birds*

- 3.36 Although no nesting birds were noted at the time of the survey, the scrub scattered throughout the site provide foraging and nesting habitat for small tree and shrub nesting birds in the local area. The swamp provides foraging and nesting habitat for bird species that live in and around riparian habitat whereas the marshy grassland may provide habitat for ground-nesting birds.

#### *Reptiles*

- 3.37 No reptiles were noted on site during the survey. The varying structure and height of the vegetation on site including scrub, marshy grassland, dry grassland and exposed rocks provide some suitable basking habitats for common reptiles including slow-worm (*Anguis fragilis*) and common lizard (*Zootoca vivipara*). However, it is considered that there is no suitable refuge habitat for reptiles due to predominantly wet ground conditions on site.

#### *Amphibians*

- 3.38 Area of open water within the swamp is likely to support amphibians including common frog (*Rana temporaria*) and common toad (*Bufo bufo*); common toad was noted in the marshy grassland on site. The HSI calculation (Table 12) indicates this feature is of poor suitability for great crested newt (*Triturus*

*cristatus*). Further examination of aerial photos and Ordnance Survey maps identified no other ponds within 0.5 km of the site. As such, it is considered unlikely that great crested newt are present on site.

**Table 18.** HSI calculations

Suitability Factor	Score (0.01-1)
SI1 - Location	0.5
SI2 - Pond area	0.5
SI3 - Pond drying	0.1
SI4 - Water quality	0.67
SI5 - Shade	0.2
SI6 - Fowl	1
SI7 - Fish	1
SI8 - Ponds	0.6
SI9 - Terr'l habitat	0.67
SI10 - Macrophytes	0.4
HSI	0.37
Suitability	Poor
Pond suitability: <0.5 'poor'; 0.5 – 0.59 'below average'; 0.6 – 0.69 'average', 0.7 – 0.79 'good'; >0.8 'excellent'.	

3.39 In terms of terrestrial habitat, the swamp and marshy grassland provide potential foraging and refuge habitat common amphibians.

*Other faunal species*

3.40 No evidence of suitable habitat for any other protected fauna was identified at the time of survey.

*Invasive species*

3.41 No invasive plant species were recorded during the survey.

## 4. Evaluation Assessment of Potential Impacts

### Designated Sites

- 4.1 The desk study identified two areas of long-established woodland (of plantation origin) listed on the Ancient Woodland Inventory within 1 km of the site. These woodlands are not considered to be at risk from the proposed works due to the distance between these woodlands and the site (over 0.1 km), and the small footprint and temporary nature of the works. Therefore, they are not considered further within this report.

### Sensitive Habitats

- 4.2 Of fourteen NVC plant communities/sub-communities identified on site, two fall within the JNCC classification of Annex I habitats and are therefore considered to be of importance for conservation in Europe. Any excavations within Annex I habitats will result in the damage to these vulnerable habitats, loss of fragile seed and root bank, and potential contamination (oils, fuels) of the ground.
- 4.3 Furthermore, six communities/sub-communities identified on site may be considered potential Ground Water Dependent Terrestrial Ecosystems (GWDTE)<sup>6</sup>. GWDTE depend on a supply of ground water, identification of such habitats allows for effective protection of ground water as required by the Water Framework Directive (Directive 2000/60/EC). Construction of the temporary track, as well as any excavations at the new tower location if situated in GWDTEs, have the potential to impact upon the flow of ground water.
- 4.4 The NVC plant communities with potential to be GWDTE and/or which constitute Annex I habitats are summarised in Table 19 below. The location and extent of these sensitive habitats are provided in Appendix F.

**Table 19:** Summary of Annex I, GWDTE and NVC plant communities

NVC Community	GWDTE status <sup>7</sup>	Annex I Habitat
M6 <i>Carex echinata-Sphagnum fallax/denticulatum</i> mire	High dependency	No
M6c <i>Juncus effusus</i> sub-community		
M6d <i>Juncus acutiflorus</i> sub-community		
M23a <i>Juncus acutiflorus - Galium palustre</i> sub-community	High dependency	No
M23b <i>Juncus effusus - Galium palustre</i> rush-pasture		No
H12 <i>Calluna vulgaris - Vaccinium myrtillus</i> heath	None	European dry heaths
H12c <i>Galium saxatile-Festuca ovina</i> sub-community		
MG9 <i>Holcus lanatus-Deschampsia cespitosa</i> grassland	Moderate dependency	No

<sup>6</sup> The groundwater dependency category is only based upon the plant community characteristics and any further hydrological assessment may result in a change in the groundwater dependency category.

<sup>7</sup> Dependency categories (none, moderate and high) based upon UKTAG NVC communities and associated groundwater dependency scores (UKTAG 2008).

MG6 <i>Lolium perenne</i> - <i>Cynosurus cristatus</i> grassland	None	No
U2 <i>Deschampsia flexuosa</i> grassland	None	No
U5 <i>Nardus stricta</i> - <i>Galium saxatile</i> grassland	None	No
S8 <i>Typha latifolia</i> swamp	None	No
S10 <i>Equisetum fluviatile</i> swamp	None	No
S10 <i>Equisetum fluviatile</i> swamp/M23a <i>Juncus acutiflorus</i> - <i>Galium palustre</i> mosaic	None/High dependency	No

4.5 Areas of deep peat (50 cm and more) were identified on site. These areas of deeper peat predominantly correspond with carbon and peatland Class 5 category e.g. 'Soil information takes precedence over vegetation data. No peatland habitat recorded. May also include areas of bare soil. Soils are carbon-rich and deep peaf. Any excavations and vehicle/plant movements within areas of deeper peat will result in the damage to peat layers, drying and oxidation of peat and potential contamination of peat (oils, fuels), if unmitigated.

4.6 A small watercourse is located within the close proximity to tower ZN90. This watercourse is not considered to support any protected species. However, construction works will occur within close proximity to the watercourse. Without protection measures, the watercourse is at risk of pollution events from chemical spillages and/or sediment run-off which may negatively impact on the water environment.

### **Species**

#### *Orchids*

4.7 Spotted orchid, a species of local interest, was identified throughout the site. Any tracking machinery over areas that support spotted orchid, as well as excavations, will cause damage or loss to these species.

#### *Birds*

4.8 The site offers suitable breeding habitat for ground and shrub nesting bird species. Vegetation clearance undertaken during the bird nesting season (March – August inclusive) has the potential killing and/or injure nesting birds which would result in an offence. Considering the small footprint of works the loss of the small amount of nesting bird habitat on site is not considered to be significant given the availability of suitable habitat in the surrounding area.

#### *Reptiles*

4.9 Suitable foraging and basking habitats are present on site as such reptiles may be encountered during the works. In the event that reptiles are present within the proposed working footprint, they are likely to be deterred from the works area on arrival of contractors, and therefore provided simple precautionary measures are followed, no individuals will be harmed.

#### *Amphibians*

4.10 The open water area of the swamp (pond) is considered to be of poor suitability for great crested newt given its heavily shaded nature with limited surface

macrophytes. Great crested newts prefer unshaded ponds as those heavily shaded do not support many surface macrophytes. The greater the proportion of the pond that is covered by marginal and aquatic vegetation, the opportunities for shelter and egg laying by great crested newt increase. Furthermore, the pond is small size, shallow and likely to dry out which further reduces its suitability for great crested newts. Given this, it is considered unlikely that great crested newts would utilise the pond for breeding.

- 4.11 However, marshy grassland, swamp and scrub provide suitable terrestrial habitat as such other common amphibians such as common frog and common toad may be encountered during the works. If unmitigated, plant/vehicle movement, as well as ground works, risks causing harm or mortality to common amphibians and accidental entrapment of individuals within excavations.

## 5. Recommendations

### ***Sensitive Habitats***

- 5.1 Generic recommendations for the protection of sensitive habitats within the site should be finalised once the detailed design is complete but could include (but are not limited to):
- Wherever possible GWDTE habitats across the site will be avoided (Appendix F);
  - Floating and permeable tracks rather than 'cut' track should be constructed to minimise any loss of hydrological connectivity within potential GWDTE areas;
  - A cross-drain/culvert system will be installed across the access track in order to retain water movement across it;
  - Any excavations during wet weather will be avoided;
  - Strip turfs as large as possible and store close to source for reinstatement, and regularly monitor to avoid drying out;
  - Ensure peat layers are handled carefully to retain integrity and stored separately for reinstatement;
  - Glacial till, clays etc. to be stored separately from peat layers;
  - Best practice in relation to storage of oils and fuels as well as refuelling will be implemented at all times; and
  - All temporary construction features will be reinstated immediately upon completion of works.
- 5.2 Ground water mitigation measures to be agreed with SEPA prior to the start of works; further hydrological assessment may also be required in advance of works.
- 5.3 To avoid potential impacts resulting from pollution of watercourses and GWDTE, pollution prevention measures will be adhered to throughout the duration of the works. Recommended measures include, but may not be limited to:
- Vehicle refuelling off site or over hard standing, at least 10 m from the watercourse/GWDTE;
  - Fuel stored off site or in double bunded containers at least 10 m from watercourses/GWDTE;
  - Drip trays or plant nappies to be used when refuelling; and
  - Oil spill kit to be kept on site.

### **Species**

#### Orchids

- 5.4 The areas that support spotted orchid must be retained where possible. If impacts are unavoidable, the following measures should be implemented during the works:

- Temporary removal and replacement should be carried out to ensure orchids are not lost as a result of the works;
- Works within the area should not take place during periods of prolonged drought or heavy rain;
- Sections of turf surrounding the orchid plants will be removed including soil to a depth of approximately 30 cm to include the tubers, extensive root system and soil fungi essential for orchid survival;
- The turves will be stored safely and for as little time as possible; and
- Turfs will be replaced as soon as possible on completion of the works, tightly into pre-prepared holes with any gaps filled with soil.

### Birds

- 5.5 Any vegetation removal and works to ground-nesting bird habitat will take place outside the breeding bird season which runs from March until August inclusive, in order to prevent any impacts upon nesting birds. If works must be carried out within the bird breeding season, the vegetation will be subject to a pre-clearance bird survey, carried out by a suitably experienced ecologist. No works will be carried out within 5 m of an identified nest until the young have fledged and are no longer returning to the nest site. Works will only be undertaken once the scheme ecologist has declared the nest to be no longer in use.

### Amphibians and Reptiles

- 5.6 To avoid potential impacts to amphibians and reptiles the following precautionary working methods will be undertaken:
- Before works commence, all contractors must be made aware of the potential for amphibians and reptiles to be encountered during works;
  - If great crested newts are encountered at any time during works then all works must cease until further advice is provided by the scheme ecologist;
  - Common amphibians and reptiles encountered at any time during works should be moved to a safe location away from the works and placed within a similar habitat to which they were found; and
  - Any holes or trial pits associated with works should be covered overnight to prevent amphibians and reptiles from becoming trapped within them. If holes must be left open, a means of escape, such as egress boards should be provided.

### ***Re-survey of the Site***

- 5.7 If no works are undertaken on site within 12 months of this survey or if any changes to the proposals are made, a further ecological survey may be necessary (because of the mobility of animals and the potential for colonisation of the site).

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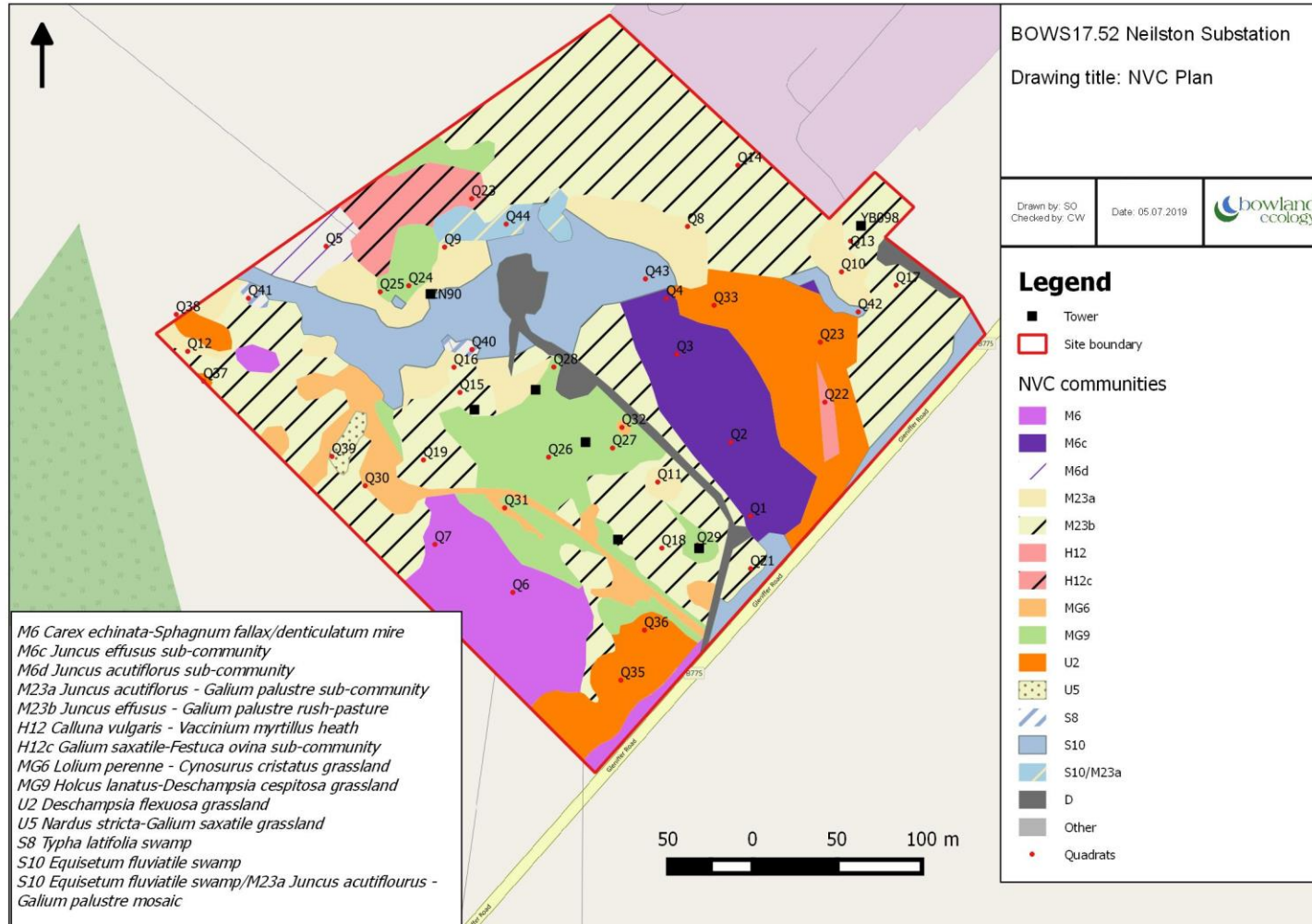
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## Appendix A – Legal Information

Species	Legislation (Scotland)	Offences	Licensing procedures and further advice (Scotland)
<p><b>Breeding birds</b></p>	<p>Wildlife and Countryside Act 1981 (as amended) S.1</p> <p>Nature Conservation (Scotland) Act 2004</p>	<ul style="list-style-type: none"> <li>• Intentionally or recklessly kill, injure or take any wild bird;</li> <li>• intentionally or recklessly take, damage or destroy the nest of any wild bird while that nest is in use or being built;</li> <li>• intentionally or recklessly obstruct or prevent any wild bird from using its nest;</li> <li>• Intentionally or recklessly take or destroy the nest or eggs of any wild bird.</li> </ul> <p><b>Schedule 1 Species</b> Special penalties are liable for these offences involving birds on Schedule 1 e.g. most birds of prey, kingfisher, barn owl, black redstart, little ringed plover:-</p> <ul style="list-style-type: none"> <li>• Intentionally or recklessly disturb a Schedule 1 species while it is building a nest or is in, on or near a nest containing eggs or young;</li> <li>• intentionally or recklessly disturb dependent young of such a species;</li> <li>• intentionally or recklessly disturbs any wild bird included in Schedule 1 which leks while it is doing so;</li> <li>• Intentionally or recklessly, at any time, takes, damages, destroys or otherwise interferes with any nest habitually used by any wild bird included in Schedule A1;</li> <li>• Intentionally or recklessly harasses any wild bird included in Schedule 1A.</li> <li>• Anyone who knowingly causes or permits to be done any act which is made unlawful by any of the foregoing provisions.</li> </ul>	<p>No licences are available to disturb any breeding birds in regard to development.</p> <p>Licences are available in certain circumstances to damage or destroy nests, but these only apply to the list of licensable activities in the Act and do not cover development.</p> <p>General licences are available in respect of 'pest species' but only for certain very specific purposes e.g. public health, public safety, air safety.</p>
<p><b>Common lizard</b> <b>Slow worm</b></p>	<p>Wildlife and Countryside Act 1981 S.9(1) (part); S.5</p> <p>Nature Conservation (Scotland) Act 2004</p>	<ul style="list-style-type: none"> <li>• Intentionally or recklessly kill or injure any common reptile species.</li> </ul>	<p>No licence is required in Scotland.</p> <p>However an assessment for the potential of a site to support reptiles should be undertaken prior to any development works which have potential to affect these animals.</p> <p><a href="http://www.snh.gov.uk/protecting-scotlands-nature/species-licensing/amphibian-reptile-licensing/">http://www.snh.gov.uk/protecting-scotlands-nature/species-licensing/amphibian-reptile-licensing/</a></p>

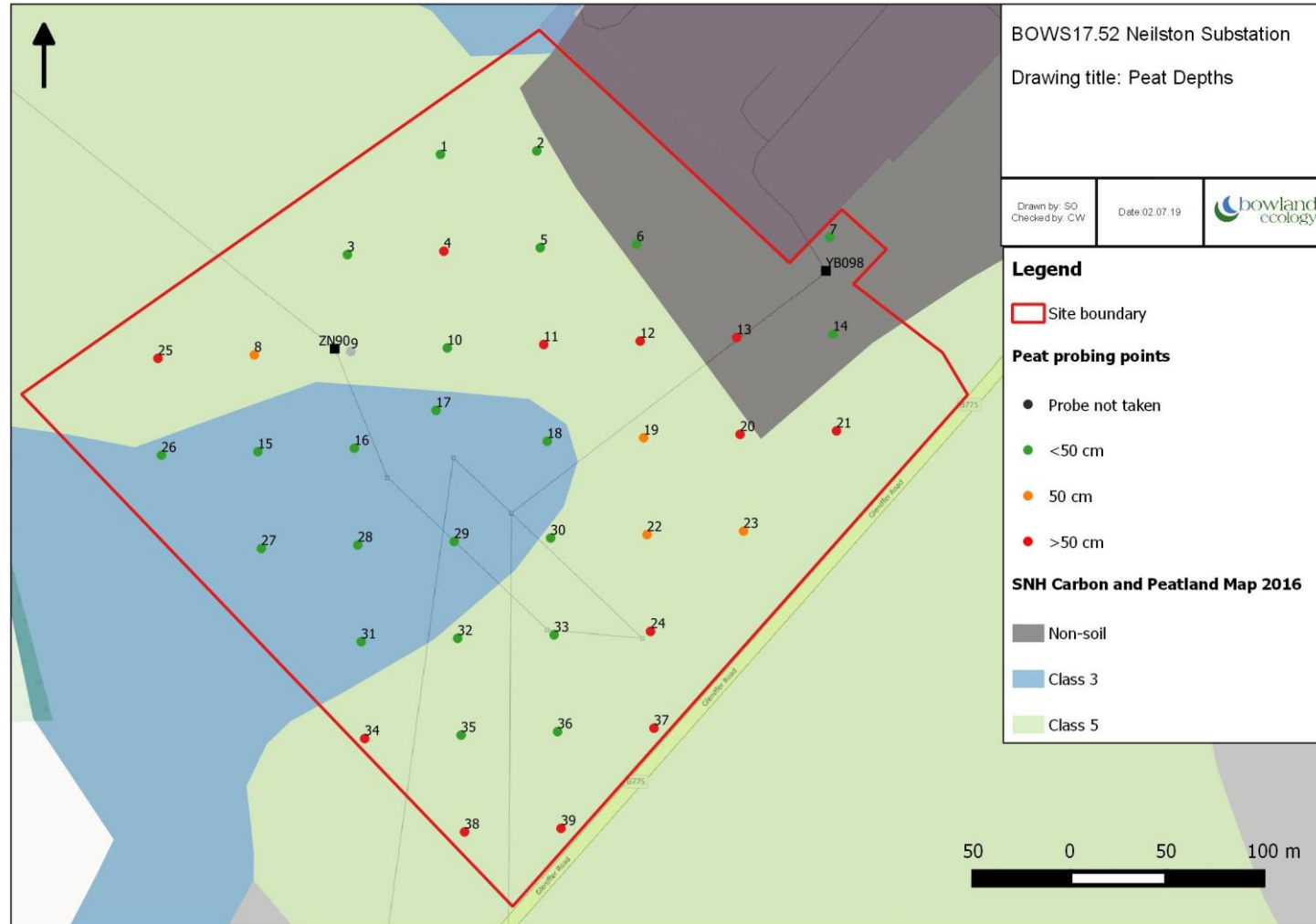
## Appendix B - NVC Survey Map




## Appendix C – NVC Photographs

		
M6c <i>Juncus effusus</i> sub-community	M23a <i>Juncus acutiflorus</i> - <i>Galium palustre</i> sub-community	M23b <i>Juncus effusus</i> - <i>Galium palustre</i> rush-pasture
		
H12 <i>Calluna vulgaris</i> - <i>Vaccinium myrtillus</i> heath	H12c <i>Galium saxatile</i> - <i>Festuca ovina</i> sub-community	MG9 <i>Holcus lanatus</i> - <i>Deschampsia cespitosa</i> grassland
		
U2 <i>Deschampsia flexuosa</i> grassland	S10 <i>Equisetum fluviatile</i> swamp	S10 <i>Equisetum fluviatile</i> swamp/M23a <i>Juncus acutiflorus</i> - <i>Galium palustre</i> mosaic
		
U2 <i>Deschampsia flexuosa</i> grassland with <i>Sphagnum</i>	MG6 <i>Lolium perenne</i> - <i>Cynosurus cristatus</i> grassland	U5 <i>Nardus stricta</i> - <i>Galium saxatile</i> grassland (rocky outcrops)


## Appendix D - Peat Depth Survey Map



## Appendix E - Peat Depth Survey Data

Sample point	National Grid System	X Easting with 6 Figure	Y Northing with 6 Figure	Recorded Peat Depth (in cm)	Photo	Comment or observation at sampling point (if appropriate, e.g. 'probe too short')
1	NS 44550 59950	244550	659950	10	No photo.	n/a
2	NS 44600 59950	244600	659950	10	No photo.	n/a
3	NS 44500 59900	244500	659900	10	 <p>Looking south-west.</p>	n/a
4	NS 44550 59900	244550	659900	90	No photo.	n/a


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Sample point	National Grid System	X Easting with 6 Figure	Y Northing with 6 Figure	Recorded Peat Depth (in cm)	Photo	Comment or observation at sampling point (if appropriate, e.g. 'probe too short')
5	NS 44600 59900	244600	659900	40	 <p style="text-align: center;">Looking north.</p>	n/a
6	NS 44650 59900	244650	659900	20	No photo.	n/a
7	NS 44753 59890	244753	659890	0	No photo.	n/a
8	NS 44450 59850	244450	659850	50	No photo.	n/a


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<b>Sample point</b>	<b>National Grid System</b>	<b>X Easting with 6 Figure</b>	<b>Y Northing with 6 Figure</b>	<b>Recorded Peat Depth (in cm)</b>	<b>Photo</b>	<b>Comment or observation at sampling point (if appropriate, e.g. 'probe too short')</b>
9	NS 44500 59850	244500	659850	Not sampled.	No photo.	Not sampled due to close proximity to tower and wet ground conditions.
10	NS 44550 59850	244550	659850	0	No photo.	n/a
11	NS 44600 59850	244600	659850	90	No photo.	n/a
12	NS 44650 59850	244650	659850	90	No photo.	n/a
13	NS 44700 59850	244700	659850	260	No photo.	n/a
14	NS 44750 59850	244750	659850	40	No photo.	n/a

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Sample point	National Grid System	X Easting with 6 Figure	Y Northing with 6 Figure	Recorded Peat Depth (in cm)	Photo	Comment or observation at sampling point (if appropriate, e.g. 'probe too short')
15	NS 44450 59800	244450	659800	40	No photo.	n/a
16	<b>NS 44500 59800</b>	<b>244500</b>	<b>659800</b>	<b>20</b>	 <p>Looking north-west.</p>	n/a
17	NS 44543 59818	244543	659818	0	No photo.	Moved due to overhead line.

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Sample point	National Grid System	X Easting with 6 Figure	Y Northing with 6 Figure	Recorded Peat Depth (in cm)	Photo	Comment or observation at sampling point (if appropriate, e.g. 'probe too short')
18	NS 44600 59800	244600	659800	40	 <p>Looking south-east.</p>	n/a
19	NS 44650 59800	244650	659800	50	No photo.	n/a

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Sample point	National Grid System	X Easting with 6 Figure	Y Northing with 6 Figure	Recorded Peat Depth (in cm)	Photo	Comment or observation at sampling point (if appropriate, e.g. 'probe too short')
20	NS 44700 59800	244700	659800	170	 <p align="center">Looking north.</p>	n/a
21	NS 44750 59800	244750	659800	130	No photo.	n/a
22	NS 44650 59750	244650	659750	50	No photo.	n/a
23	NS 44700 59750	244700	659750	50	No photo.	n/a

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<b>Sample point</b>	<b>National Grid System</b>	<b>X Easting with 6 Figure</b>	<b>Y Northing with 6 Figure</b>	<b>Recorded Peat Depth (in cm)</b>	<b>Photo</b>	<b>Comment or observation at sampling point (if appropriate, e.g. 'probe too short')</b>
24	NS 44650 59700	244650	659700	90	No photo.	n/a
25	NS 44400 59850	244400	659850	170	No photo.	n/a
26	NS 44400 59800	244400	659800	0	No photo.	n/a
27	NS 44450 59750	244450	659750	0	No photo.	n/a
28	NS 44500 59750	244500	659750	30	No photo.	n/a
29	NS 44550 59750	244550	659750	10	No photo.	n/a

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Sample point	National Grid System	X Easting with 6 Figure	Y Northing with 6 Figure	Recorded Peat Depth (in cm)	Photo	Comment or observation at sampling point (if appropriate, e.g. 'probe too short')
30	NS 44600 59750	244600	659750	30	 <p style="text-align: center;">Looking north-east.</p>	n/a
31	NS 44500 59700	244500	659700	40	No photo.	n/a
32	NS 44550 59700	244550	659700	0	No photo.	n/a

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and Ecological Constraints Survey Report**

Sample point	National Grid System	X Easting with 6 Figure	Y Northing with 6 Figure	Recorded Peat Depth (in cm)	Photo	Comment or observation at sampling point (if appropriate, e.g. 'probe too short')
33	NS 44600 59700	244600	659700	10	No photo.	n/a
34	NS 44500 59650	244500	659650	60	No photo.	n/a
35	NS 44550 59650	244550	659650	40	No photo.	n/a
36	NS 44600 59650	244600	659650	40	 <p style="text-align: center;">Looking north-east.</p>	

<b>Sample point</b>	<b>National Grid System</b>	<b>X Easting with 6 Figure</b>	<b>Y Northing with 6 Figure</b>	<b>Recorded Peat Depth (in cm)</b>	<b>Photo</b>	<b>Comment or observation at sampling point (if appropriate, e.g. 'probe too short')</b>
37	NS 44650 59650	244650	659650	100	No photo.	
38	NS 44550 59600	244550	659600	100	No photo.	
39	NS 44600 59600	244600	659600	200	No photo.	

## Appendix F - Ecological Constraints Plan

