

PEN MARCH WIND FARM

Habitat Survey Report

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1.0 Introduction

1.1 Background

RWE Renewables UK Ltd (RWE) (formerly Innogy Renewables UK Ltd) is proposing the development of a wind farm at Pen March, north-east of Merthyr Tydfil in Mid Glamorgan (approximate centre site Grid Reference: SO 08654 10182).

SLR Consulting Ltd (SLR) was originally commissioned by Innogy Renewables UK in March 2019 to undertake a range of ecological surveys at the site, including a Phase 1 habitat survey covering the area with potential to be affected by the proposed development. The initial Phase 1 habitat survey was conducted in July 2019 and was subsequently updated in August 2020 and May 2021 to include additional areas, in response to changes in scheme design.

A National Vegetation Classification (NVC) survey of the areas with potential to be directly affected by the proposed development was first commissioned and undertaken in June 2021, and was updated in August 2022, to include additional areas in response to changes to scheme design. The NVC survey was undertaken to enable more detailed classification of the habitats present. The August 2022 survey also checked that the previous Phase 1 survey data was still valid and made updates to the previous survey data as appropriate.

This updated report presents the findings of the Phase 1 habitat surveys and NVC surveys completed to date, focussing on the areas likely to be directly affected by the proposed development.

1.2 Site Description

The Site is located approximately 1km north-east of the suburb of Dowlais Top on the north-eastern fringe of Merthyr Tydfil and 2km north-west of Rhymney town centre. The southern boundary lies alongside the A465 Heads of the Valleys Road, and rises from approximately 370m above sea level at the southern boundary up to approximately 530m in the north. It supports a range of unenclosed upland habitat types, is subject to extensive grazing by ponies and sheep (much of the site is common land), and parts have been burned in the past.

The Site is broadly south facing, but tiered such that progressing from south to north (or vice versa) a series of rockier areas with thinner soils are encountered, with areas of deeper soils and peat between. Purple moor grass *Molinia caerulea* is the dominant species across the majority of the area, where it forms part of a number of communities including modified bog, wet heath, marshy grassland, flush and acid grassland. In addition to these habitat types, scrub, mire, exposed rock, dry heath, standing open water and running water are also present.

The wider landscape around the Site is typified by grazed moorland habitats, with frequent scattered areas of industrial and residential development to the south, south-east and south-west of the survey area and the Bannau Brycheiniog National Park lying to the north.

1.3 Scope of Study

This report presents the findings of the habitat surveys. The report seeks to establish baseline conditions and identify habitats that are important ecological features (irrespective of animal species they may support). The assessment of impacts resulting from the proposed development and the development of mitigation measures, if required, are beyond the scope of this report and are covered within the Ecology Chapter of the Environmental Statement (ES).

2.0 Methodology

2.1 Survey Area

The Phase 1 habitat survey was undertaken across the entire ‘developable area’ (i.e., the maximum area within which development infrastructure could potentially be located) as defined at the time of the 2019-2021 surveys, plus a 100m buffer. The 2022 check of previous Phase 1 habitat survey data covered this same area.

The NVC survey was more targeted, and was undertaken at the proposed infrastructure locations, including micro-siting allowances, plus (except in one instance) land within 100m radius of these areas.

The Site and Survey Area boundaries and proposed infrastructure locations are shown in Figures 7.2.1. There are two locations within the Site boundary that have not been subject to survey, plus a number of areas where survey has not included a full 100m buffer around the Site boundary. This is due to changes to the Site boundary since the completion of the 2019-2021 surveys. All proposed infrastructure locations have been surveyed, however. Please refer to Section 2.3 (Limitations) for more details.

2.2 Survey Methodology

2.2.1 Desk Study

An ecological data search was requested from South East Wales Biodiversity Records Centre (SEWBRC) on 18th June 2019 to provide records of protected and otherwise notable plant species for the survey area and land within a 2km radius of it.

Natural Resources Wales (NRW) online Phase 1 Habitat Survey data¹ and upland NVC data² were also reviewed to provide further context to the study. NRW NVC data, which cover much of the site, are reproduced in Figures 7.2.8-7.2.14.

2.2.2 Phase 1 Habitat Survey

The Phase 1 habitat survey was initially completed by Robert Williams BSc MSc ACIEEM on three separate visits: 10th - 11th July 2019; 12th - 14th August 2020; and 5th May 2021. It was subsequently updated by Jess Colebrook BSc MCIEEM CEnv to incorporate the findings of a confirmatory walkover survey on 18th – 19th August 2022 and to reflect more detailed peat depth survey data which were not available at the time of the initial surveys. Weather conditions during the survey visit in 2019 were warm (>20°C), without rain, with sunny spells and broken cloud. Weather conditions for the survey visit in 2020 were similarly warm and sunny for the day of the 12th, with the 13th and 14th being overcast with heavy rain showers. Weather conditions during the survey visit in 2021 were bright and warm (>18°C) with broken cloud and no rain. Weather conditions during the 2022 visits were warm (>15°C), dry and overcast. Robert is an experienced ecologist with over nine years professional experience in botanical survey and has previously worked on a number of different wind farm developments. Jess is a Principal Ecologist at SLR with over 21 years’ experience in habitat survey and ecological consultancy. Jess has previously completed Phase 1 habitat and NVC surveys for a wide range of development schemes including upland wind farms.

Initial identification of areas of similar habitat (i.e. habitat polygons) via interpretation of aerial imagery was undertaken prior to attending site. The aerial images used in this process were the most recent freely available aerial imagery at 12.5cm and 25cm resolutions at the time of survey. Each of the polygons identified from aerial interpretation was visited, and where necessary, remapped. Each was then classified in accordance with the

¹ <https://lle.gov.wales/catalogue/item/TerrestrialPhase1HabitatSurvey/?lang=en>

² <https://lle.gov.wales/catalogue/item/Phase2UplandSurveysOfWales/?lang=en>

Phase standard JNCC methodology³. Target notes were made to describe the habitats present and dominant components of the flora within each habitat. Any rare or notable plant species (including non-native invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), such as Japanese knotweed *Fallopia japonica* and Himalayan balsam *Impatiens glandulifera*) were recorded where seen and highlighted within the individual target note.

Botanical nomenclature in this report follows that of Stace (2010⁴) for vascular plants.

During the initial Phase 1 Habitat Survey, in order to assist with the identification of peatland habitat types, a basic assessment of peat depth was made using a probing stick pushed through the substratum until a hard layer was reached. The depth of peat was then measured off the stick and classified as either greater or less than 50cm peat depth⁵. In each location where this was completed, a minimum of three sample readings were taken and then averaged to ensure a representative result.

A more comprehensive and detailed peat depth assessment was undertaken by RSK after the initial Phase 1 Survey had been completed⁶. This has therefore been used to more accurately determine the extent of peatland habitats in preference to the more limited peat depth information gathered during the initial Phase 1 survey.

2.2.3 National Vegetation Classification (NVC) Survey

The NVC Survey was completed by Jess Colebrook on 21st and 22nd June 2021, and updated on 18th and 19th August 2022, to reflect changes to the proposed layout since the June 2021 survey. Weather conditions during both site visits were warm (>15°C), dry and overcast.

The NVC survey comprised making descriptive notes of vegetation present, particularly at locations where a stand of reasonably homogenous vegetation occurred, such that dominant, characteristic or community indicator species were identified. The NVC survey focused on noting and recording wetter habitats, thus detailed notes were not made for acid grassland, rock outcrops or dry heath which were already well described by the Phase 1 Habitat survey. Quadrat information was not gathered during the NVC survey, instead reference was made to the habitat keys within An Illustrated Guide to British Upland Vegetation (2004)⁷ and / or National Vegetation Classification: Field Guide to Mires and Heaths (2001)⁸.

NVC communities were not mapped as it was considered that the value of NVC mapping was limited, particularly given the limited extent of the NVC survey area. Instead, the mapping of Phase 1 habitat types, which are broader in scope and more reliable to discern, is considered to provide a better representation of the spatial distribution of habitats across the Site (Figures 7.2.1-7.2.7). Other reasons for not mapping NVC communities include:

- The acid grassland, marshy grassland, wet heath, modified wet bog and flush habitats occur in intimate mixture;
- Where homogenous areas are present, these are typically at a scale that is too small to map across the area concerned; and

³ Joint Nature Conservation Committee (JNCC). (2010). *Handbook for Phase 1 Habitat Survey. A technique for environmental audit*. Revised re-print. JNCC, Peterborough.

⁴ Stace C. (2010) *Field Flora of the British Isles*. Cambridge University Press.

⁵ 50cm was used as the assessment depth for the peat layer as the classification of certain habitats within the Handbook for Phase 1 Habitat Survey (JNCC, 2010) depends on whether the peat depth is greater or less than 50cm.

⁶ Pen March Draft ES Volume 4, Chapter 6, Technical Appendix 6.2 – Outline Peat Management Plan

⁷ A. Averis, B. Averis, J. Birks, D. Horsefield, D. Thompson and M. Yeo (2004). *An Illustrated Guide to British Upland Vegetation*, Joint Nature Conservation Committee, Peterborough.

⁸ T. Elington, N. Dayton, D. L. Jackson and I. M Strachan (2001). *National Vegetation Classification: Field Guide to Mires and Heaths*, Joint Nature Conservation Committee, Peterborough.

- Mapping at a larger scale would result in most of the site being mapped as a mosaic of different communities (as is the case for Phase 1 survey in Figures 7.2.1-7.2.7 and the previous NRW NVC Survey at Figures 7.2.8-7.2.14).

2.3 Limitations

Desk study data is unlikely to be exhaustive, especially in respect of species, and is intended mainly to set a context for the study. It is therefore possible that protected and notable plant species not identified during the data search do in fact occur within the vicinity of the survey area.

The survey area is dominated by grassland and moorland habitats typical of south Wales including marshy grassland, acid grassland, heath, flush and degraded bog. As is often the case with these habitats they occur as mosaics within the survey area with diffuse boundaries. The accurate mapping of such habitats is therefore extremely difficult and the habitat maps provided are therefore a best effort to map the habitats present, noting that large areas have necessarily been mapped as mosaics. In addition, a large grass fire was reported within the survey area in Spring 2020, after the initial Phase 1 survey had been completed. As the habitat survey has been completed in stages (with surveys completed both before and after the fire), the fire has resulted in changes to the habitat classifications in some areas. As these habitats recover from the fire, the dominant vegetation is likely to be subject to a degree of ongoing change and this in turn may result in some changes to the classifications of the habitats present.

Due to the long history of human influence over much of the Pen March site (i.e. grazing, fire, mining *etc.*) and the resulting degradation of the habitats, it is considered that the NVC classification should be used with caution for describing habitats at this site. Two areas within the Site boundary, with a total extent of approximately 18ha, have not been subject to Phase 1 habitat survey, as these were added to the area within the red line Site boundary after the 2019-2021 surveys were completed. These are located at the north-western and southern boundaries of the Site, as shown on Figure 7.2.1. A further 0.88ha at the western boundary of the site was also inaccessible, as shown on Figure 7.2.1. No infrastructure is to be located within these areas and this is therefore not considered to be a significant omission.

No other constraints were noted during the completion of the Phase 1 habitat survey and the survey area was otherwise fully accessible.

3.0 Results

3.1 Desk Study

The SEWBRC data search report returned records of two protected or priority plants species⁹ (bluebell *Hyacinthoides non-scripta* and fragrant orchid *Gymnadenia conopsea*) within 2km of the survey area. However, none of these plant records relate to the survey area itself, with the closest records of these species being recorded 257m east and 1500m west of the Site respectively.

The SEWBRC data search report also included records of a number of other plant species of conservation concern and these mostly comprised records of mossy saxifrage *Saxifraga bryoides*, soft-leaved sedge *Carex montana*, limestone fern *Gymnocarpium robertianum* and small water-pepper *Persicaria minor*. The records of mossy saxifrage, soft-leaved sedge and limestone fern were generally aggregated around former limestone quarry workings approximately 1km or more to the west and north-west of the survey area. The records of small water-pepper were however located on grazed common land adjacent to the south-western corner of the Site. All these species are listed on The Vascular Plant Red Data List for Great Britain¹⁰.

3.2 Phase 1 Habitat Survey - Summary

Table 3-1 lists all Phase 1 habitat types recorded within the survey area boundary, including habitats which represent a mosaic of two or more habitat types. Section 3.3 gives further descriptions of the habitat types present to provide more detail on the composition and location of each Phase 1 habitat type. The results of the Phase 1 habitat survey are displayed on Figures 7.2.1-7.2.7 and detailed Target Notes are provided in Appendix 01. A full botanical species list is provided in Appendix 02.

⁹ The SEWBRC data search report considered 'Protected or Priority' plant species to be those protected by national and / or international legislation, and / or are listed under Schedule 7 of the Environment (Wales) Act 2016 as species of principal importance for the purpose of conserving biodiversity in Wales

¹⁰ Leach, S.J. 2019 (in prep) The Vascular Plant Red Data List for Great Britain: a summary of amendments in years 12 and 13 (2017-2018) of the annual amendments process. BSBI News 141

Table 3-1
Summary of Phase 1 Habitats Present within the Survey Area

Habitat	Extent within Site (ha)	Extent with Survey Area (ha)
Mosaic: Marshy Grassland, Acid Flush, Wet Heath	228.02	250.76
Mosaic: Acid Flush, Wet Heath, Wet Modified Bog	90.24	102.58
Marsh/Marshy Grassland	46.36	62.94
Semi-Improved Acid Grassland	36.25	43.92
Semi-Improved Neutral Grassland	10.57	18.76
Rock Exposure / Semi-improved Acid Grassland Mosaic	10.35	10.35
Mosaic: Rock Exposure, Dry Heath, Acid Grassland	4.63	9.48
Mosaic: Marshy Grassland, Semi-improved Acid Grassland	3.77	8.04
Mosaic: Dry Heath, Semi-improved Acid Grassland, Bracken	3.06	3.22
Mosaic: Dry Heath, Acid Grassland	3.22	3.22
Standing Water	2.20	2.20
Mosaic: Rock Exposure, Marshy Grassland	1.83	1.83
Semi-Improved Acid Grassland and Scattered Scrub	0.97	18.59
Semi-Improved Acid Grassland and Scattered Bracken Mosaic	0.01	1.62
Mosaic: Marshy Grassland, Semi-improved Neutral Grassland	0.90	0.90
Continuous Bracken	0.56	0.56
Marsh/Marshy Grassland and Scattered Scrub	0.47	0.47
Fen - Basin Mire	0.09	0.20
Bare Ground	0.16	0.20
Plantation Mixed Woodland	0.18	0.18
Dry Heath	0.07	0.07
Flush and Spring - Acid/Neutral Flush	0.01	0.01
Marshy Grassland and Scattered Bracken	0	9.72
Improved Grassland	0	4.66
Semi-Natural Broad-Leaved Woodland	0	1.50
Mosaic: Rock Exposure, Dry Heath	0	0.11
Rock Exposure	0	0.07
Dense/Continuous Scrub	0	0.05
No Access	0.13	6.84

3.3 Phase 1 Habitat Survey - Habitat Descriptions

3.3.1 Marsh/Marshy Grassland and Mosaic: Marshy Grassland, Wet Heath and Flush

The majority of the survey area supports a sward dominated by purple moor grass and / or soft rush *Juncus effusus*, sharp flowered rush *Juncus acutiflorus*, compact rush *J. conglomeratus* and sedge species (most commonly star sedge *Carex echinata*) (see Photograph 1). Other grass, sedge and rush species present but rarely dominant included sweet vernal grass *Anthoxanthum odoratum*, heath rush *Juncus squarrosus*, bulbous rush *Juncus bulbosus*, Yorkshire fog *Holcus lanatus*, deergrass *Trichophorum germanicum*, common cotton-grass *Eriophorum angustifolium* and hare's tail cotton grass *Eriophorum vaginatum*. Broad leaved herbs tended to be rare or occasional and comprised species typical of wet acidic conditions, namely heath bedstraw *Galium saxatile*, bog asphodel *Narthecium ossifragum*, marsh thistle *Cirsium palustre*, tormentil *Potentilla erecta* and milkwort *Polygala* sp. Some areas are closely cropped with swards of <10cm as a result of heavy grazing, whilst other areas had higher swards (up to 70cm) primarily as a result of the dominance of rushes.

Dwarf shrub species are patchily present at low density and comprise cross-leaved heath *Erica tetralix* and bilberry *Vaccinium myrtillus*, with occasional common heather *Calluna vulgaris* and crowberry *Empetrum nigrum*. All of the woody shrubs are short, with all common heather noted to be in the pioneer or building phase.

Habitats were initially largely classified as marshy grassland on the basis of having less than 25% dwarf shrub cover, over 25% cover of either purple moor grass and / or rushes on less than 0.5m of peat, with a water table that is likely to be level with or below substratum for much of the year³. However, subsequent detailed peat mapping has confirmed that much of the peat is over 50cm deep, and therefore the purple moor grass dominated areas in those locations are better classified as wet modified bog (see Section 3.3.2 below).

Where deergrass shares dominance with purple moor grass, usually with cross leaved heath also present, and in the absence of significant amounts of sphagnum moss, these areas were initially considered to be degraded wet heath. They have been mapped as such where the peat is less than 50cm deep. Where it is more than 50cm deep these areas are also better classified as degraded bog under Phase 1 terminology (see Section 3.3.2 below).

Where rushes gain dominance over the purple moor grass, and where Sphagnum or other bryophytes are present as a ground layer these areas are considered to be acid/neutral flush. Such areas can occur on various peat depths, and are present as an intimate mosaic with the marshy grassland, wet heath described above.

It was not considered practical or necessary to map these habitats individually due to the fine level of mosaic present. Instead, numerous target notes have been gathered across the area (for example flush habitats described in TNs 48, 58, 61, 72, 89, 91, 92, 93 and 304).



Photograph 1
Marshy Grassland/Wet Heath (TN68) Typical of the Survey Area

3.3.2 Mosaic: Flush, Wet Heath and Wet Modified Bog

This vegetation type is visually the same as that described above (though hares' tail cotton grass and sphagnum are more frequent) and has been mapped as mosaic since peat depth (a discriminating characteristic in Phase 1 classification) is patchy. Where vegetation is underlain by more than 50cm depth of peat, it is considered to comprise wet modified bog or flush, where it is less than 50cm it is considered to be wet heath.

Substantial areas of wet modified bog are present at the site, based on recorded and interpolated peat depth information. The largest area recorded was on the Pwll Mere plateau at the northern boundary. Here the bog habitat supported abundant hare's tail cotton-grass, with purple moor grass tussocks also present too. Sphagnum mosses were rare with only blunt-leaved bog moss *Sphagnum palustre* noted, whilst heath rush, deergrass and heath bedstraw were all present but not dominant.

The other areas of modified wet bog habitat were dominated by purple moor grass, hare's tail cotton-grass, and soft rush, with sphagnum mosses (including flat-topped bog moss *Sphagnum fallax*, lustrous bog moss *Sphagnum subnitens*, and blunt-leaved bog moss), sedges (star sedge *Carex echinata*, carnation sedge *Carex panicea* and glaucous sedge *Carex flacca*), and other typical bog species (heath milkwort, bog asphodel and tormentil) all present. In all cases the wet modified bog occurs in mosaic with flush and wet heath as described in Section 3.3.1.

3.3.3 Marshy Grassland and Scattered Bracken

Marshy grassland with frequent small stands of scattered bracken (e.g. TN268, Photograph 2) was recorded in the south-west of the survey area, to the north-east of Pant. The marshy grassland here is dominated by purple moor grass, with common bent, sharp-flowered rush and wavy hair grass also present. However, the grassland also comprises a significant proportion of bracken cover as a result of numerous small, scattered stands occurring throughout the grassland. The bracken was mostly below 1m in height and was typically restricted to the slightly drier parts of the grassland.



Photograph 2

Marshy Grassland and Scattered Bracken (TN268) within the south-west of the survey area, to the north-east of Pant.

3.3.4 Scattered Scrub

In one location (TN131) scattered willow (*Salix* sp.) scrub has developed amongst the mosaic of marshy grassland, wet heath and flush. The willow scrub is up to 4m in height but is still relatively sparse and scattered.

3.3.5 Semi-improved Acid Grassland

Semi-improved acid grassland was recorded in several locations within the survey area (e.g., TN76, 78-80, 93b, 94b, 113, 154, 175, 185-187, 191, 212, 225, 229, 232, 234-235, 239-243, 252, 256, 259, 289, 296, 299 and 300 – 302 (also recorded as a mosaic with other habitats, see following sections). The areas recorded as semi-improved acid grassland were typically grazed but even when closely grazed obviously comprised species indicative of acidic conditions.

The acid grassland within the survey area was typically dominated by common bent *Agrostis capillaris*, sheep's fescue *Festuca ovina*, wavy hair grass *Deschampsia flexuosa* and mat-grass *Nardus stricta*, with soft rush and heath rush occasionally present (Photograph 3). The grasslands were generally on sloped areas or plateaus which were dry and free-draining, with particularly frequent occurrence of this habitat in the north-east of the survey area which contained significant bands of this habitat. These grasslands are relatively species poor and as a result broad-leaved plants within the grassland were particularly sparse and where present were generally represented by low, heavily-grazed heath bedstraw, bilberry, crowberry and common heather plants.



Photograph 3
Semi-improved Acid Grassland (TN76) present in the north-east of the Survey Area

3.3.6 Semi-improved Acid Grassland and Scattered Bracken

Semi-improved acid grassland, as described in Section 3.3.5, with the addition of scattered bracken distributed throughout the grassland is all located in the north-east of the survey area (TN224 and 216 – 218). In some areas the bracken dominated and comprised up to 75% of vegetation cover, however, more typically it comprised approximately 50% of the vegetation. At the locations described in TN216 – 218 small amounts of common gorse *Ulex europaeus* scrub were present although it is not a major component of the habitat (Photograph 4).



Photograph 4

Semi-improved acid grassland and scattered bracken (TN217) in the north-east of the Survey Area

3.3.7 Semi-improved Acid Grassland and Scattered Scrub

Several large areas of scattered common gorse scrub occur in the south of the survey area (TN41 - 42 and 141). The gorse scrub is up to 1m in height and interspersed with short, heavily-grazed semi-improved acid grassland. Despite the intensity of the grazing, the habitat retained some species indicative of acid conditions including mat-grass and heath bedstraw.

Similarly, acid grassland within the part of the survey area to the north-east of Pant also contains scattered gorse scrub up to 1m in height (TN269 – 271 and 273 – 274), albeit at lower densities to the areas described above.

3.3.8 Semi-improved Acid Grassland and Dry Heath Mosaic

Several areas of the site contain semi-improved acid grassland and dry heath (TN286 and 297) which occur in a complex mosaic. These areas tend to be dominated by sheep's fescue and other fine-leaved grasses, with occasional soft rush and heath rush, with purple moor grass present but not dominant. The dry heath areas typically comprise areas of acid grassland, but with a higher percentage cover of bilberry, and / or occasionally common heather. As is the case with much of the site, these areas are typically heavily grazed and so generally have a short sward with dwarf shrubs often being maintained a low height and close to the ground.

3.3.9 Semi-improved Acid Grassland, Dry Heath and Bracken Mosaic

In one location, semi-improved acid grassland and dry heath, as described in Section 3.3.8, also occurs as a mosaic with stands of bracken. This location is in the west of the survey area (TN293) and the habitat mosaic has formed on the broad banks which descend down to a small water course. The bracken is dense but only occurs as small, scattered stands and only accounts for approximately 10% of the habitat area.

3.3.10 Semi-improved Neutral Grassland

Many areas of the semi-improved grassland within the survey area did not exhibit acidic characteristics or acidic botanical communities. These grasslands have been recorded as semi-improved neutral grassland.

Improvement of grasslands often reduces the character of grasslands³ and in this instance it is likely that the prolonged heavy grazing has resulted in grassland communities more representative of neutral soils. However, it should be noted that whilst the plant communities present are more representative of semi-improved neutral grassland, the soil conditions may still be relatively acidic.

The semi-improved neutral grasslands (TN5, 6, 9-16, 18, 20-33, 45, 59, 105-107, 116, 117 and 128) are dominated by annual meadow grass *Poa annua*, sheep's fescue, Yorkshire fog and sweet vernal grass, with occasional tufted hairgrass *Deschampsia cespitosa* and crested dog's-tail *Cynosurus cristatus*. As a result of the heavy grazing, the sward in most of these areas was grazed down to a height of 5cm or less (Photograph 5). Broad-leaved herbs were locally abundant (albeit closely cropped) and included white clover *Trifolium repens*, common daisy *Bellis perennis*, bird's-foot trefoil *Lotus corniculatus*, selfheal *Prunella vulgaris*, black medick *Medicago lupulina*, marsh thistle, creeping thistle *Cirsium arvense*, meadow buttercup *Ranunculus repens*, ribwort plantain *Plantago lanceolata*, broad-leaved plantain and rosebay willowherb *Chamaenerion angustifolium*. These semi-improved neutral grasslands were typically recorded in relatively dry areas and heavily grazed areas on the lower slopes in the south of the survey area.



Photograph 5
Semi-improved Neutral Grassland (TN18) present in the south-east of the Survey Area

The south-western part of the survey area, located to the north-east of Pant, also had several extensive areas of semi-improved neutral grassland (TN281 and 283, Photograph 6). Whereas the semi-improved neutral grasslands discussed above were considered likely to have had acidic characteristics lost as a result of prolonged heavy grazing, these areas of semi-improved neutral grassland were considered more lowland in character. These grasslands were dominated by cock's-foot *Dactylis glomerata* and false oat grass *Arrhenatherum elatius*, along with Yorkshire fog, creeping bent and timothy *Phleum pratense*. Broad-leaved herbs were also present and relatively frequent comprising common ragwort *Senecio jacobaea*, broad-leaved dock *Rumex obtusifolius*, greater bird's-foot-trefoil, creeping thistle, common knapweed *Centaurea nigra* and a range of umbellifers.



Photograph 6
Semi-improved neutral grassland (TN283) located to the north-east of Pant

3.3.11 Marshy Grassland / Semi-improved Acid Grassland Mosaic

Marshy grassland and semi-improved acid grassland habitats also occurred growing as a mosaic within the south-east (TN4) and far south-west of the survey area (TN276). The habitats largely comprised soft rush dominated marshy grassland with common bent and Yorkshire fog also present. However, interspersed within this grassland were shorter, more heavily grazed grassland areas which still retained plant species which favour acidic conditions (e.g. tormentil and heath bedstraw).

3.3.12 Marshy Grassland / Semi-improved Neutral Grassland Mosaic

Similarly, marshy grassland and semi-improved neutral grassland habitats also occur growing as a mosaic within the south-west of the survey area (TN109-111 and 189). The component habitats are as previously described and occur in a mosaic of scattered areas of intensely grazed neutral grassland amongst larger areas of marshy grassland.

3.3.13 Improved Grassland

The far south-west of the survey area, to the north-east of Pant, contained three improved grassland fields bounded by wire fencing (TN266). The grassland sward was dominated by perennial ryegrass *Lolium perenne* and cock's-foot with broad-leaved herbs limited to white clover, ribwort plantain and creeping buttercup. The grassland is regularly managed and cut to approximately 5cm in height and has likely been subject to long-term agricultural improvement.

3.3.14 Rock Exposure

There are several small and isolated areas of exposed rock (TN272) within the far south-west of the survey area to the north-east of Pant. These areas of exposed rock were devoid of vegetation.

3.3.15 Rock Exposure / Marshy Grassland Mosaic

Exposures of limestone rock are scattered across the survey area with such areas usually comprising localised areas or ridges of small limestone boulders. These areas of rock exposure are normally interspersed with other habitats. In one area (TN47) the rock exposure occurs as a mosaic with soft rush-dominated marshy grassland.

3.3.16 Rock Exposure / Semi-improved Acid Grassland Mosaic

In some locations in the centre of the survey area heavily grazed semi-improved acid grassland is found growing amongst and immediately adjacent to areas of rock exposure (TN50, 55 and 56). These grasslands are closely cropped with a sward normally less than 2cm in height dominated by sheep's fescue and wavy hair grass. The grasslands contain little or no shrub cover (i.e. bilberry or heather). Such grasslands, whilst clearly semi-improved, retain some plant species characteristic of acidic conditions including heath rush, wavy hair grass, heath bedstraw, green-ribbed sedge *Carex binervis* and sheep's sorrel *Rumex acetosella*.

3.3.17 Rock Exposure and Dry Heath / Acid Grassland Mosaic

In many areas the rock exposure / semi-improved acid grassland mosaic habitat described in Section 3.3.16 also had significant bilberry and / or common heather cover resulting in a rock exposure and dry heath and acid grassland mosaic (TN99, 143-147, 151-153, 155, 171, 176, 177, 263 and 290). This habitat predominately occurred in a band across the centre and west of the survey area. In some locations western gorse scrub *Ulex gallii* was also occasional.



Photograph 7

Rock Exposure and Dry Heath / Acid Grassland Mosaic (TN153) within the Survey Area

3.3.18 Rock Exposure / Dry Heath Mosaic

Several small areas of rock exposure / dry heath mosaic were recorded in the north-east of the survey area (TN250 and 251). The habitat comprises exposed rock interspersed with common heather and bilberry up to 30cm in height and up to 60% cover.

3.3.19 Dry Heath

Several small areas of dry heath were recorded in the far north-east (TN246 and 254 – 255, Photograph 8), north-west (TN86c and 261) and south-west (TN303) of the survey area. One of these areas (TN246) is a small narrow strip immediately adjacent to the boundary fence line which was dominated by common heather, with bilberry,

crowberry and reindeer lichen *Cladonia* sp. also present but only occasionally. The heath vegetation accounted for approximately 40% of vegetative cover within the habitat, with the remaining areas interspersed with patches of grazed semi-improved acid grassland. The heather is up to 30cm in height and subject to regular grazing. The other areas of dry heath in the north-east of the survey area (TN254-255) were similar to that described above, except the heath vegetation was dominated by bilberry as opposed to common heather.



Photograph 8

Small band of dry heath habitat (TN246) in the north-east of the Survey Area

The areas of dry heath vegetation occurring in the north-west of the survey area (TN86c and 261) are growing on well drained slopes and are dominated by bilberry. The bilberry was heavily grazed and averaged less than 30cm in height. The remaining areas within the habitat were occupied by short grazed semi-improved acid grassland similar to that found in other parts of the site.

The area of dry heath within the south-west of the survey area (TN303) was small and isolated, and comprised grazed bilberry and common heather, interspersed with fine leaved grasses.

3.3.20 Continuous Bracken

A single large continuous stand of bracken (TN238) has developed around and largely covered an area of exposed rock in the north-east of the survey area. The bracken is on average less than 50cm tall.

3.3.21 Dense Continuous Scrub

A single dense stand of common gorse scrub (TN277) was recorded in the far south-west of the survey area, to the north-east of Pant. The scrub was up to 1m in height and not subject to management.

3.3.22 Mixed Plantation Woodland

There is a single isolated area of mixed plantation woodland (TN103 and 104) in the south of the survey area. The woodland is recently planted with immature trees up to 7m in height. The woodland strips have likely been planted as screening and are protected from grazing animals by a stock-fence and a stone wall. The trees within the woodland comprise Scot's pine *Pinus sylvestris*, goat willow *Salix caprea*, blackthorn *Prunus spinosa*, common hawthorn *Crataegus monogyna*, hazel *Corylus avellana* and rowan *Sorbus aucuparia*.

3.3.23 Semi-natural Broad-leaved Woodland

The far south-west of the survey area, to the north-east of Pant, contains an area of semi-natural broad-leaved woodland (TN284, Photograph 9) which has developed on the steep slopes leading down to the stream described in TN282. The woodland is still establishing and currently comprises semi-mature common hawthorn, rowan and hazel trees below 10m in height. Any gaps in the woodland were filled by small isolated stands of bracken or patches of semi-improved neutral grassland.



Photograph 9

Semi-natural Broad-leaved Woodland (TN284) in the far south-west of the Survey Area, to the north-east of Pant.

3.3.24 Standing Open Water

Standing open water habitats within the survey area are relatively scarce, despite the marshy nature of much of the grassland, and this is likely due to the broadly sloping nature of the site and the survey area. Standing open water habitats within the survey area are restricted to a small reservoir (TN127, Photograph 10), a pond (TN172) and two wet ditches (TN130 and TN157). These habitats are all located in the south-west and west of the survey area.

The small reservoir (named as Jepson's Pond on Ordnance Survey mapping) is approximately 1.9ha in size and is located in the south-west of the main survey area. The southern edge of the reservoir is formed from a soil bund fronted with large stone blocks, whilst the northern margin is formed by the hillside and as a result is more naturalised. The water is largely devoid of vegetation but with scattered areas of horsetail *Equisetum* sp. growth in the shallower margins.



Photograph 10
Jepson's Pond (TN127) in the south-west of the Survey Area

The one pond present within the survey area is approximately 20m x 10m and estimated to be 1.5m deep. The pond is located close to the western boundary of the main survey area. The pond is associated with disused pumping infrastructure and as a result is likely to be man-made. The pond is divided by a causeway with one half with no open water and densely vegetated by soft rush, common cotton-grass, lesser spearwort and marsh thistle. The other half of the pond comprises open water fringed with soft rush and horsetail *Equisetum* sp. Aquatic vegetation within the open water is limited to water crowfoot *Ranunculus aquatilis*, pondweed *Potamogeton* sp. and floating sweet-grass *Glyceria fluitans*.

The two wet ditches are located in the west (TN157) and south-west (TN130) of the main survey area. Both are relatively narrow (between 1-1.5m in width) and with shallow water (<30cm deep). The ditches are densely vegetated with wetland and bog species including soft rush, sharp-flowered rush, common cotton-grass, bogbean *Menyanthes trifoliata* and pondweed *Potamogeton* sp. The ditches do not have large expanses of standing open water, however, and are considered to best fit this habitat category based on the setting of the habitat.

3.3.25 Running Water

A total of 11 areas of running water were recorded during the survey (TN34, 77, 108, 125, 148, 158, 173, 247, 282, 288 and 292). These 11 locations equated to five separate watercourses within the survey area (some of the water courses were assessed at multiple different points). Running water recorded at TN34 and 77 were part of the same stream in the far east of the survey area. The stream had a very slight water flow with a rock and gravel substrate. The stream channel was devoid of aquatic and marginal vegetation and is likely to be subject to large fluctuations in flow depending on local rainfall.

Running water recorded at TN108 was an outfall / discharge point from industrial operations immediately adjacent to the south-west of the site. The water course was canalised with large stone blocks with a steady flow of shallow (~30cm deep), foul-smelling water.

Running water recorded at TN125 and 148 are the small channels carrying the outflow and inflow to Jepson's Pond (TN127) in the south-west of the survey area. Both water courses are relatively small (approximately 1m wide and 20cm deep) with a slight water flow. The water course feeding Jepson's Pond had sporadic vegetation within the channel dominated by soft rush, sharp-flowered rush and common bent, whilst the water course carrying the outflow has a channel devoid of vegetation.

The running water recorded at TN158, 173, 282, 288 and 292 are different parts of the same stream which is located close to the western boundary of the survey area. In the upper reaches (TN158, 173, 288 and 292), the water course is similar to those others within the survey area being relatively small (<2m wide) and shallow (<30cm deep) with sporadic areas of vegetation. The stream itself is at least 3-5m below the surrounding ground level in these locations. The lower reaches of the stream (TN282) see the stream approximately 2m wide, with a moderate flow and a rocky substrate. The stream channel remains devoid of vegetation, however, the banks comprise semi-improved neutral grassland, occasional willow scrub and stands of Japanese knotweed.

The running water recorded at TN247 comprises a small stream approximately 0.5 – 1m wide with a water depth ranging between 10 – 50cm. There is no vegetation within the ditch channel but either side is bordered by marshy grassland.

3.3.26 Fen – Basin Mire

One small area of fen – basin mire habitat (TN85, Photograph 11) was recorded in the north-west of the survey area. The habitat has formed in a level circular depression on a broad slope. The vegetation present is dominated by bottle sedge *Carex rostrata*, with bog bean, round-leaved sundew *Drosera rotundifolia*, *Sphagnum* sp. moss and common cotton-grass also scattered throughout. The peat depth in this area was more than 1m. Drier areas at the edge of the habitat were colonised with soft rush and common bent. The area was classified as fen – basin mire as it contained no open water, with abundant bottle sedge and *Sphagnum* moss.



Photograph 11
Fen Basin Mire Habitat (TN85) in the north-east of the Survey Area

3.3.27 Bare Ground

Two areas of bare ground are present within the survey area, both old stone trackways (TN19 and TN223) in the south-east and north-east of the survey area respectively.

Both trackways are approximately 2m wide and is formed from compacted stone and earth. The trackways are unvegetated and thus are likely to be in frequent use.

3.3.28 Dry Ditch

There are numerous dry ditches and channels distributed widely across the survey area. These ditches and channels have likely been dug to aid the drainage of the site, or naturally created through run-off erosion during periods of heavy rainfall. Some of these ditches and channels are marked as watercourses on Ordnance Survey mapping but most are considered unlikely to hold water except during periods of prolonged or heavy rainfall. The vegetation within ditches is mostly a continuation of the vegetation present within adjacent areas, with many being dominated by dense stands of soft rush and sharp-flowered rush.

3.4 National Vegetation Classification (NVC) Survey

3.4.1 Overview

The results of the NVC survey completed in June 2021 and August 2022 are presented below and specifically describe the vegetation within 100m of the areas within which the proposed infrastructure would be sited, as shown on Figure 7.2.1, with a specific focus on habitats of conservation importance present.

The areas in which the proposed infrastructure would be sited occupy a south facing part of the hill, with very variable topography that is influenced both by previous industrial uses and by depth of soil above the bedrock. Where the slopes are greatest and on “shoulders” leading to the summit, mineral soil and occasional rock outcrops are present. These areas tend to support acid grassland and dry heath (or a mosaic of the two), but grade into marshy grassland and wet heath where the slope eases or soil depth increases. Between these shoulders, convex slopes and/or small valleys/re-entrants support wetter substrates, with flushes, wet heath and degraded mire vegetation depending on the angle of slope and depth of peat. Summit areas and the heads of these small valleys also support degraded mire vegetation if a plateau is present.

The effect of fire and grazing on the hill is pronounced. Large parts of the summit now support a short sward dominated by deergrass, with young bilberry sometimes sharing dominance, and wavy hair grass and purple moor grass also constant. Heather is almost absent, and where present was recorded as pioneer or building phase, never mature. Cross-leaved heath remains occasional across the whole hill (a species that is reasonably unpalatable to stock), more abundant in the wetter locations but never a significant component of the sward. Small amounts of crowberry (also not favoured by stock) are also present at the summit, but it too is young and short.

Purple moor grass is present across the entire area, though its density and dominance varies depending on the topography, fire history and grazing. Large tussocks are most commonly present at the summit, sharing dominance with hare’s tail cotton-grass and with minimal other species present, where it is presumed peat is deepest and the effects of fire and grazing more limited. Elsewhere it dominates the vegetation without being as tussocky/with no accumulation of thatch, most commonly it occurs with variable amounts of hare’s tail cotton grass, deergrass, wavy hair grass, red fescue, sheep’s fescue, heath rush, heath bedstraw and rushes (mainly soft rush). In the wettest locations common cotton grass, bog asphodel, star sedge and a limited number of sphagnum species are also conspicuous. The proportions of these (and key bryophytes) variously tip the NVC community description toward dry heath, wet heath, acid grass, or degraded mire, though the NVC descriptions are rarely satisfactory in this case, and mapping as discrete areas of homogenous communities is practically impossible.

Whilst it is considered that the NVC should be used with caution (due to the recent fire and long history of fire and grazing at the site), descriptions of the vegetation, using the NVC definitions that are considered to best describe the communities present, are given below. These broadly accord with the NVC types recorded previously at the site by NRW (note the NRW data is undated), as indicated on Figures 7.2.8-7.2.14, the majority of which have also been mapped as mosaic. Where there are differences between the NRW NVC Survey Results and the survey results reported within this document these are considered likely to be a function of:

- The time that has elapsed between the two surveys, resulting in changes to vegetation communities, e.g., in response to fire and other management since the NRW Survey was undertaken (noting that the NRW survey is undated);
- The complexity of the site, and mosaic extent of habitats, making accurate mapping very difficult (as previously noted); and
- Differences in community identification between surveyors, which is a known limitation when comparing habitat survey data gathered over time/between different surveyors.

3.4.2 Marshy Grassland, Flush and Wet Heath

M6 *Carex echinata* – *Sphagnum recurvum/auriculatum* mire

Large parts of the NVC survey area can be classified as M6 mire habitats, most notably where soft and/or sharp flowered rush gain dominance over purple moor grass and there are *Sphagnum* mosses (*S. fallax*, *S. palustre*, *S. denticulatum*), common haircap moss *Polytrichum commune*, and/or springy turf moss *Rhytidialedphus squarrosus* below. Velvet bent *Agrostis canina*, marsh violet, tormentil, heath bedstraw and marsh thistle were also present in these areas. M6c *Juncus acutiflorus* subcommunity is considered the most abundant type present (TN69-72) due to the frequency of sharp flowered rush, though M6a was also noted where star sedge was the dominant species (TN95, 96).

The M6 occurs in mosaic with U5 and U6 acid grassland and comprises the bulk of the vegetation in the southern and eastern parts of the site, east of Jepson's Pond, and south of TNs 47 and 48, as well as at the centre of the site, e.g., TN58.

It also occurs with M15 and H18 wet heaths, as described below.

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

M23 rush pasture habitat, similar to the M6 mire habitats, but with higher grass cover and without the presence of *Sphagnum* or *Polytrichum* sp mosses tends to occur in the north-east part of the NVC survey area where it extends eastwards (in mosaic) from the vicinity of TNs 38 and 47 down the hill to the Nant Pitwellt below. The community is considered to be well described by the *Juncus effusus* M23b subcommunity type and occurs in mosaic with acid grassland types described below. The areas south of Jepson's Pond also supports this habitat type (TN119 – 126), in mosaic with acid grassland.

M25b *Molinia caerulea* – *Potentilla erecta* Mire

Molinia dominated mire occurs throughout the NVC survey area, in mosaic with all the other habitat types listed. The survey found no species-rich *Molinia* grassland present within the survey area. However, in the lower, south-western parts of the site, and in the far north-west of the site some marsh marigold *Caltha palustris*, marsh thistle *Cirsium palustre*, glaucous sedge *Carex flacca*, marsh violet *Viola palustris*, lesser spearwort *Ranunculus flammula*, cuckoo flower *Cardamine pratensis*, carnation sedge *Carex panicea* and black sedge *Carex nigra* were evident, plus soft rush, sharp flowered rush and compact rush (along with the omnipresent but at low cover tormentil and marsh bedstraw).

M29 *Hypericum elodes* – *Potamogeton polygonifolius* soakways and M6b *Carex nigra* – *Nardus stricta* sub-community bog pools

In the southern western, and lower parts of the NVC survey area there are small soakaways, pools, ditches remnants that support bog pondweed *Potamogeton polygonifolius*, lesser spearwort *Ranunculus flammula* and star sedge *Carex echinata*, as well as variable amounts of *Sphagnum* mosses. These small features always occur on the flatter ground, with M6b on the sloping or steeper areas adjacent, and most often associated with water features.

3.4.3 Flush, Wet Heath and Wet Modified Bog

M15 *Scirpus cespitosus* – *Erica tetralix* wet heath, M15d *Vaccinium myrtillus* sub-community

Parts of the NVC survey area, particularly in the area affected by fire in spring 2020, are dominated by deergrass, but also with bilberry, purple moor grass, heath rush, mat grass, wavy hair grass, tormentil, and bryophytes present (excluding bog mosses (*Sphagnum* sp.) but typically including common haircap and broom fork-moss (*Dicranum scoparium*)). Cotton grasses (*Eriophorum* sp.) are rare. This particular NVC type is recognised as “extending onto deep peat where the original bog vegetation has been damaged or modified by burning, grazing, drainage and peat cutting” (Averis, *et al.*)⁷. The wet heath within the NVC survey area typically occurs as a mosaic with another community, commonly M6 flush towards the central and southern areas (TN 49 – 52, 100, 101) and immediately north of Jepson’s Pond (up to TN 148- 150).

The most homogenous areas of M15 occur on the plateau/shallow slopes that stretch NW-SE, toward the centre of the site between TN55 and 58 and also between TN146, 44 and 100.

M20 (degraded) *Eriophorum vaginatum* blanket & raised mire and M17 (heavily degraded) *Scirpus cespitosus* – *Eriophorum vaginatum* blanket mire

The wet modified bog recorded at the summit of the Pwll Mere plateau (TN84a and 84b) was dominated by hare’s tail cotton grass and thus most closely matches the M20 Hare’s tail cotton grass blanket and raised mire community description. Areas of similar habitat, where cotton grass (*Eriophorum* sp.) is present with deergrass, purple moor grass and small amounts of cross-leaved heath, the mire habitats may have historically been M17 blanket mire but are now not a good match for the community description due to the lack of *Sphagnum* mosses and other peat building bog mosses. A similar, but even more degraded area with less hare’s tails cotton grass also occurs between TN101 and 102.

3.4.4 Fen Basin Mire

M4 *Carex rostrata* – *Sphagnum recurvum* mire

The one small area of fen – basin mire habitat (TN85) recorded in the north-west of the survey area closely matches the M4 *Carex rostrata* – *Sphagnum recurvum* mire habitat community. The fen basin mire habitat had formed in a level circular depression on a broad slope. The vegetation present was dominated by bottle sedge and *Sphagnum* mosses, with other mire vegetation (including bog bean, round-leaved sundew and cotton grass (*Eriophorum* sp.) also present.

3.4.5 Dry Heath

H18 *Vaccinium myrtillus* – *Deschampsia flexuosa* heath

Short bilberry-dominated dry heath regularly occurs on mineral soils/outcrops within the western and northern parts of the NVC survey area. These areas may have originally been derived from more heather-rich communities (i.e., H12) with the heather having been lost through fire and/or grazing over the years.

Homogenous stands of H18 are limited to the extreme north and west of the site, north and west of TN162. In western parts of the survey area (TN99 down towards TN167) the H18 occurs in mosaic with M15. At the northern plateau (TN84) it occurs with M20, the M20 being replaced by M6 progressing southward (TN91, 93) and in southern parts (TN136-139). In the driest areas on thinnest soils, it also occurs within the acid grassland types described below (TN 87, 88, 98, 157, 144, 41, 212, and at the north-eastern parts of the site, east of TNs 62 - 66).

3.4.6 Acid Grassland

U4 *Festuca ovina* – *Galium saxatile* grassland, U6 *Juncus squarrosus* - *Festuca ovina* grassland and U5 *Nardus stricta* – *Galium saxatile* grassland

The acid grasslands within the NVC survey area typically follow the ecological gradient from U4 sheep's fescue – heath bedstraw grassland on mineral soils on steeper free draining parts, through to U5 mat grass – heath bedstraw grassland on moister peat topped soils on gentler slopes, to U6 grasslands on wetter plateaus and shallow slopes. In all cases these areas occur in mosaic with the habitat types previously listed. All show signs of grazing and/or fire, in places the sward is less than 1cm in height.

3.5 Protected, Notable and Invasive Non-native Plant Species

No protected or notable plant species were recorded during the surveys.

Japanese Knotweed is only invasive non-native plant species recorded within the survey area during the survey. However, Japanese knotweed was only recorded growing within semi-improved neutral grassland (TN281) within the far southwest of the survey area outside the site boundary.

The Japanese knotweed was well established within the grassland with a number of significant stands both adjacent to the stream (TN282) and on the grassland slope (TN281).

4.0 Discussion and Evaluation

The majority of the habitats present within the survey area have been heavily modified by livestock grazing and / or fire which has reduced the species and sward diversity. Most of the habitats present are relatively species poor and dominated by common, vigorous plant species that are most resilient to the effects of grazing.

Habitats of potential conservation importance are considered to be those listed on Annex I of the Habitats Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and wild fauna and flora) and / or those listed as 'priority habitats' under Section 7 of the Environment (Wales) Act 2016 as habitats of principal importance for the purpose of conserving biodiversity in Wales. In addition, the peat mapping exercise has identified that large parts of the site are underlain by at least 30cm pf peat, and in many places, peat more than 50cm deep is present. These locations, regardless of the species diversity or vegetation community present, are also considered to be of importance for carbon storage reasons.

The habitats of potential conservation importance occurring within the survey area are summarised in Table 4-1. The habitats listed in the table are listed as individual habitat types even where they have been largely (or entirely) mapped in mosaics.

Table 4-1
Habitats of Conservation Importance occurring within the Survey Area

Phase 1 Habitat Category (including where occurring as mosaics with other habitats):	NVC Type(s)	Conservation Status	Rationale
Dry Heath	H18	Annex I Habitat and Section 7 Habitat	The dry heath habitats recorded within the survey area are considered to represent Annex I European dry heath habitats on account of the vegetation being dominated (>25% cover) by bilberry (only very occasionally common heather) and wavy hair grass. This represents the H18 NVC community which falls under the definition of Annex I European dry heath ¹¹ . In addition, the heath habitats were recorded on free-draining, acidic soils, in areas of less than 50cm peat depth and were subject to regular grazing. These conditions are typical of European dry heath habitats. Due to these characteristics the dry heath habitat recorded within the survey area also meets the definition of 'upland heath', a habitat listed under Section 7 of the Environment (Wales) Act 2016 as habitats of principal importance for the purpose of conserving biodiversity in Wales.
Wet Heath	M15	Annex I Habitat and Section 7 Habitat	The wet heath habitat recorded, usually in mosaic with marshy grassland, flush and wet modified bog, is most closely aligned to the NVC M15 wet heath communities due to the dominance of deergrass. This NVC community falls under the definition of Annex I Northern Atlantic wet heaths. Wet heath habitats are also listed under Section 7 of the Environment (Wales) Act 2016 as habitats of principal importance for the purpose of conserving biodiversity in Wales. However, it should be recognised that this habitat is heavily

¹¹ <https://sac.jncc.gov.uk/habitat/H4030/>

Phase 1 Habitat Category (including where occurring as mosaics with other habitats):	NVC Type(s)	Conservation Status	Rationale
			degraded and modified as a result of grazing and fire and is invariably in very poor condition.
Wet Modified Bog	M20, M17, M25	Annex I Habitat and Section 7 Habitat	The wet modified bog habitats recorded, usually in mosaic with wet heath and flush, are considered to represent (albeit in a very degraded and modified form) the NVC M20 and M17 bog communities due to conspicuous dominance of hare's tail cotton grass. The most degraded areas support little other than purple moor grass, NVC community M25. All these NVC communities fall under the definition of Annex I blanket bog ¹² . Wet modified bog is listed under Section 7 of the Environment (Wales) Act 2016 as habitat of principal importance for the purpose of conserving biodiversity in Wales. However, it should be recognised that it has been heavily degraded and modified as a result of grazing and fire and is in very poor condition.
Fen – Basin Mire	M4	Annex I Habitat and Section 7 Habitat (included under Upland Flushes, Fen and Swamp)	The single area of fen – basin mire (TN85) recorded within the survey area fits the NVC M4 mire community description very well, being dominated by bottle sedge with Sphagnum mosses present throughout. The NVC M4 mire community falls under the definition of Annex I transition mires and quaking bogs habitats. The habitat only occurs in one small area within the site and has likely formed over small geological features which held water or at least restrict water flow downhill. The habitat is also considered to meet the criteria of the Section 7 habitat 'upland flushes, fens and swamps' ¹³ .

¹² <https://sac.jncc.gov.uk/habitat/H7130/>

¹³ UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008. (Updated 2011)

Phase 1 Habitat Category (including where occurring as mosaics with other habitats):	NVC Type(s)	Conservation Status	Rationale
Acid Flush	M6, M29	Section 7 Habitat (included under Upland Flushes, Fen and Swamp)	The acid flush habitat recorded within the survey area is considered to meet the criteria of the Section 7 habitat 'upland flushes, fens and swamps' ¹⁴ .

¹⁴ UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008. (Updated 2011)

None of the other habitats recorded during the survey were considered representative of any other type of Annex I habitats on account of the plant species composition and local geological and hydrological context. The potential presence of the purple moor grass meadows Annex I habitat (Annex I Habitat code: 6410) was also considered. However, the purple moor grass dominated grasslands within the survey area were not species-rich and did not include a diverse range of other species (which typically includes rushes, sedges and tall-growing herbs) which is indicative of this habitat type¹⁵.

A number of other habitats recorded within the survey area were also carefully considered, but ultimately discounted, for classification as habitats of principal importance for the purpose of conserving biodiversity in Wales under Section 7 of the Environment (Wales) Act 2016.

The purple moor grass dominated grasslands within the survey area were not considered to represent the ‘purple moor grass and rush pasture’ Section 7 habitat type due to the low diversity of plant species present and general lack of plant species indicative of this habitat. The Section 7 ‘purple moor grass and rush pasture’ habitat is meant to include only the most species-rich examples of this habitat type¹⁴.

The rock exposure habitats within the survey area were not considered to represent the ‘inland rock outcrop and scree’ Section 7 habitat due to the accessibility of the rock habitats to grazing animals. The presence of heavy grazing in these rocky areas has prevented the development of more diverse and interesting botanical communities which typify this Section 7 habitat type¹⁴.

The one area of semi-natural woodland (TN284) recorded during the survey is outside the site boundary and was recorded for additional context only. However, regardless of the woodland’s location it was not considered to match the priority habitat description of Lowland Mixed Woodland¹⁴ as based on aerial photography the woodland has only properly established in the last 20 years and prior to this was an open, grassland habitat type.

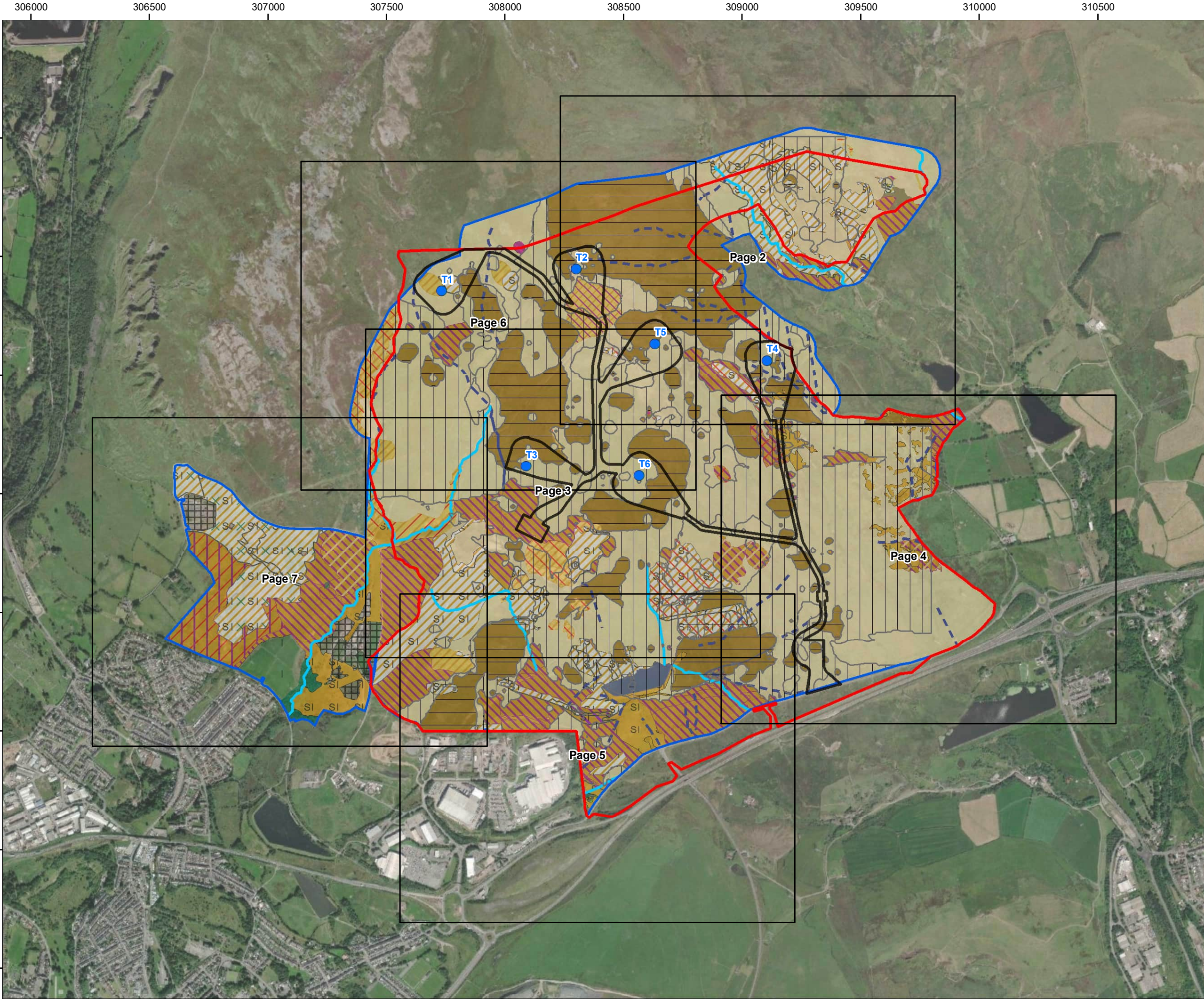
The areas of acid grassland recorded within the survey area were not considered to represent the ‘lowland dry acid grassland’ Section 7 habitat type as the acid grassland within the site all occurs over 300m above sea level and thus is not considered a ‘lowland’ habitat. In addition, the acid grassland present within the site is not managed in functional enclosures which is a key characteristic of the Section 7 habitat type. Areas of acid grassland in the upland fringes, which are managed as free-range rough grazing in association with unenclosed tracts of upland (as occurs within the survey area) are notably excluded from qualification under the Section 7 habitat type¹⁴.

The two ponds within the site do not meet the criteria for Section 7 Pond habitat, due to their limited botanical and habitat interest, nor do they meet the criteria in terms of supporting protected or rare species, based on surveys undertaken to inform the EIA (see the ES Ecology chapter for further details).

The habitats of potential conservation importance listed in Table 4-1 are generally not considered good examples of their habitat type due to the negative effects of grazing and fire within the survey area.

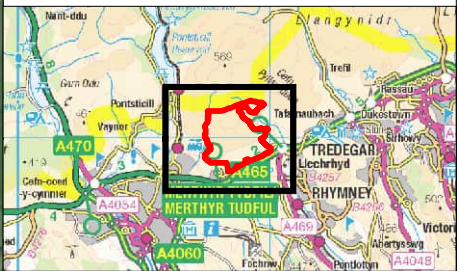
¹⁵ <https://sac.jncc.gov.uk/habitat/H6410/>

FIGURES



- Legend:**
- Pen March Site Boundary
 - Survey Boundary
 - Proposed Turbine Location
 - Areas Within Which Proposed Infrastructure Will Be Located (Including Possible Micro-siting)
 - RSK Peat Survey Depth [cm]
 - 30 - 50 cm
 - >50 cm
 - Phase 1 Habitats**
 - G1 - Standing Water
 - G2 - Running Water
 - J26 - Dry Ditch
 - A111 - Semi-natural Broad-leaved Woodland
 - A132 - Plantation Mixed Woodland
 - A21 - Dense/Continuous Scrub
 - B12 - Semi-improved Acid Grassland
 - B12A - Acid grassland - semi-improved and Scattered Scrub
 - Mosaic: Rock Exposure, Semi-improved Acid Grassland
 - B12C - Semi-improved Acid Grassland and Scattered Bracken
 - B22 - Semi-improved Neutral Grassland
 - B4 - Improved Grassland
 - B5 - Marsh/Marshy Grassland
 - Mosaic: Marshy Grassland, Acid Flush, Wet Heath
 - Mosaic: Acid Flush, Wet Heath, Wet Modified Bog
 - Mosaic: Marshy Grassland, Semi-improved Acid Grassland
 - Mosaic: Marshy Grassland and Scattered Scrub
 - Mosaic: Rock Exposure, Marshy Grassland
 - Marshy Grassland and Scattered Bracken
 - C11 - Continuous Bracken
 - D11 - Acid Dry Dwarf Shrub Heath
 - Mosaic: Dry Heath, Acid Grassland
 - Mosaic: Rock Exposure, Dry Heath, Acid Grassland
 - Mosaic: Rock Exposure, Dry Heath
 - Mosaic: Dry Heath, Semi-improved Acid Grassland, Bracken
 - Mosaic: Wet Heath, Acid Grassland
 - E21 - Acid/Neutral Flush
 - E32 - Basin Mire
 - G1 - Standing Water
 - I142 - Basic Exposure Inland Cliff
 - J37 - Not Surveyed
 - J4 - Bare Ground

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drn	Chk	App
2	31/05/2023	Second Revision	CN	SH	CM
1	09/16/2022	First Revision	JK	Chk	CM

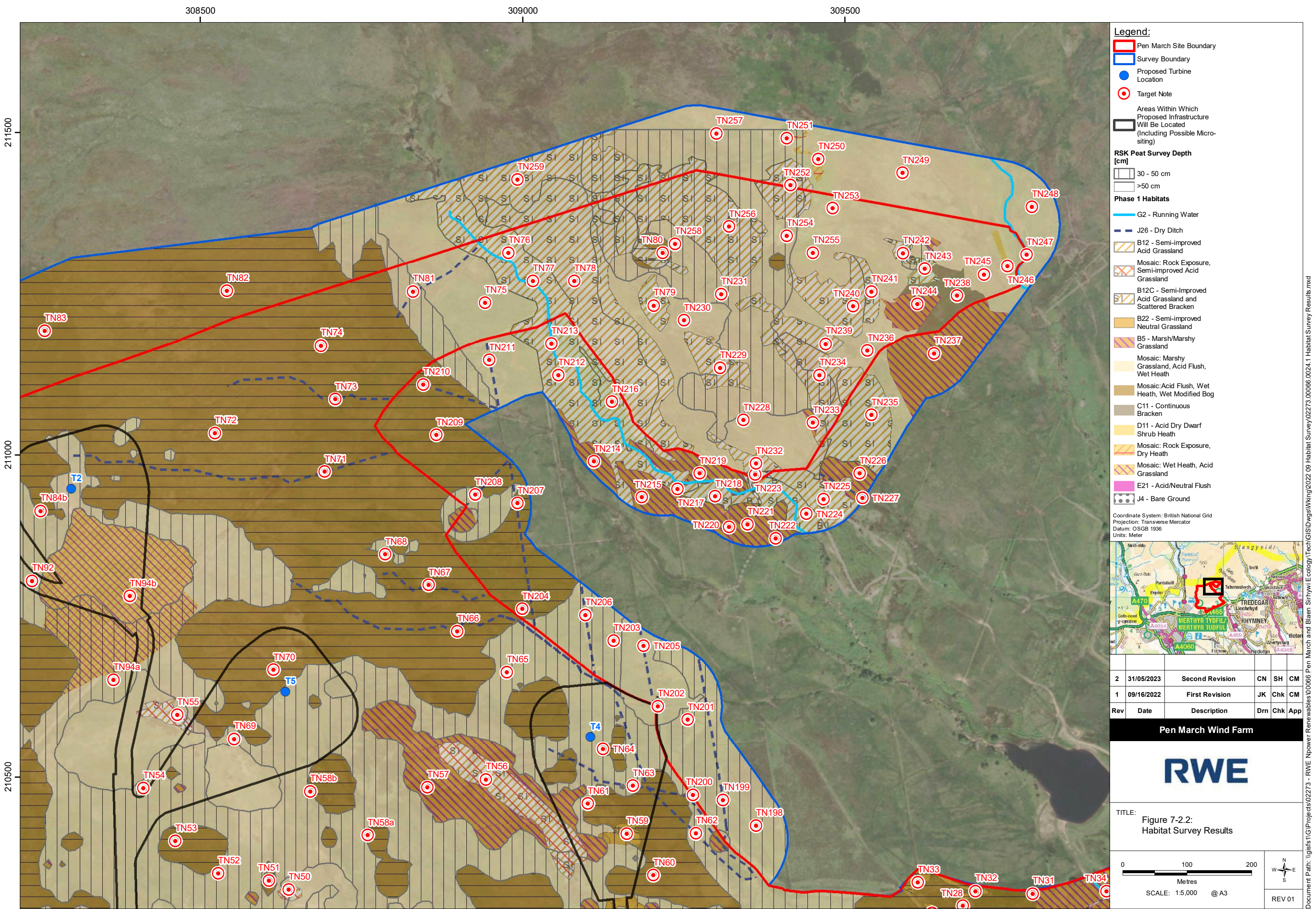
Pen March Wind Farm

RWE

TITLE: Figure 7-2.1:
Habitat Survey Results

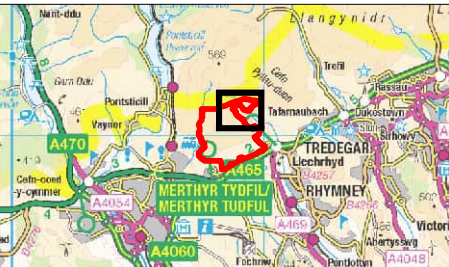
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REV 01



- Legend:**
- Pen March Site Boundary
 - Survey Boundary
 - Proposed Turbine Location
 - Target Note
 - Areas Within Which Proposed Infrastructure Will Be Located (Including Possible Micro-siting)
- RSK Peat Survey Depth [cm]**
- 30 - 50 cm
 - >50 cm
- Phase 1 Habitats**
- G2 - Running Water
 - J26 - Dry Ditch
 - B12 - Semi-improved Acid Grassland
 - Mosaic: Rock Exposure, Semi-improved Acid Grassland
 - B12C - Semi-improved Acid Grassland and Scattered Bracken
 - B22 - Semi-improved Neutral Grassland
 - B5 - Marsh/Marshy Grassland
 - Mosaic: Marshy Grassland, Acid Flush, Wet Heath
 - Mosaic: Acid Flush, Wet Heath, Wet Modified Bog
 - C11 - Continuous Bracken
 - D11 - Acid Dry Dwarf Shrub Heath
 - Mosaic: Rock Exposure, Dry Heath
 - Mosaic: Wet Heath, Acid Grassland
 - E21 - Acid/Neutral Flush
 - J4 - Bare Ground

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

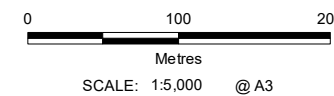


Rev	Date	Description	Drn	Chk	App
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1	09/16/2022	First Revision	JK	Chk	CM

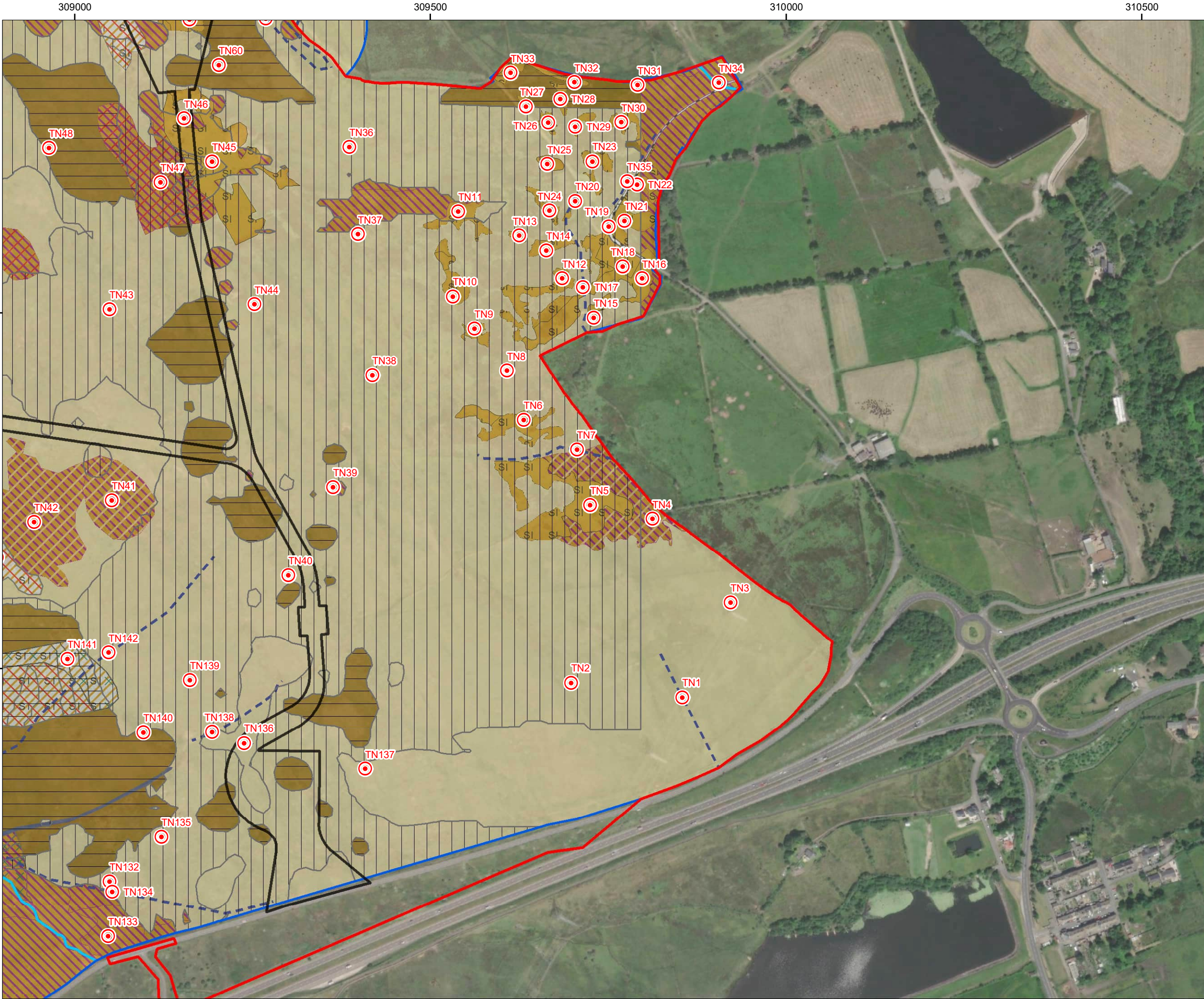
Pen March Wind Farm

RWE

TITLE: Figure 7-2.2:
Habitat Survey Results



REV 01



Legend:

- Pen March Site Boundary
- Survey Boundary
- Target Note
- Areas Within Which Proposed Infrastructure Will Be Located (Including Possible Micro-siting)

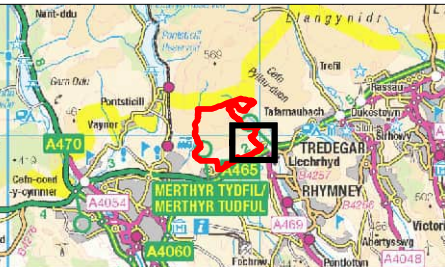
RSK Peat Survey Depth [cm]

- 30 - 50 cm
- >50 cm

Phase 1 Habitats

- G2 - Running Water
- J26 - Dry Ditch
- B12A - Acid grassland - semi-improved and Scattered Scrub
- Mosaic: Rock Exposure, Semi-improved Acid Grassland
- B22 - Semi-improved Neutral Grassland
- B5 - Marsh/Marshy Grassland
- Mosaic: Marshy Grassland, Acid Flush, Wet Heath
- Mosaic: Acid Flush, Wet Heath, Wet Modified Bog
- Mosaic: Marshy Grassland, Semi-improved Acid Grassland
- Marsh/marshy grassland and Scattered Scrub
- Mosaic: Rock Exposure, Marshy Grassland
- G1 - Standing Water
- J4 - Bare Ground

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

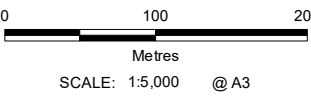


Rev	Date	Description	Drn	Chk	App
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1	09/16/2022	First Revision	JK	Chk	CM

Pen March Wind Farm



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Habitat Survey Results



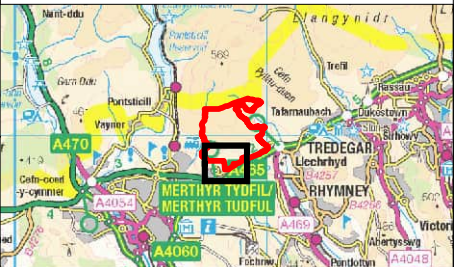
REV 01



Legend:

- Pen March Site Boundary
- Survey Boundary
- Target Note
- Areas Within Which Proposed Infrastructure Will Be Located (Including Possible Micro-siting)
- RSK Peat Survey Depth [cm]
 - 30 - 50 cm
 - >50 cm
- Phase 1 Habitats
 - G2 - Running Water
 - J26 - Dry Ditch
 - A132 - Plantation Mixed Woodland
 - B12 - Semi-improved Acid Grassland
 - B12A - Acid grassland - semi-improved and Scattered Scrub
 - Mosaic: Rock Exposure, Semi-improved Acid Grassland
 - B22 - Semi-improved Neutral Grassland
 - B5 - Marsh/Marshy Grassland
 - Mosaic: Marshy Grassland, Acid Flush, Wet Heath
 - Mosaic: Acid Flush, Wet Heath, Wet Modified Bog
 - Mosaic: Marshy Grassland, Semi-improved Neutral Grassland
 - Marsh/marshy grassland and Sacttered Scrub
 - Mosaic: Dry Heath, Acid Grassland
 - Mosaic: Rock Exposure, Dry Heath, Acid Grassland
 - G1 - Standing Water

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drn	Chk	App
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1	09/16/2022	First Revision	JK	Chk	CM

Pen March Wind Farm

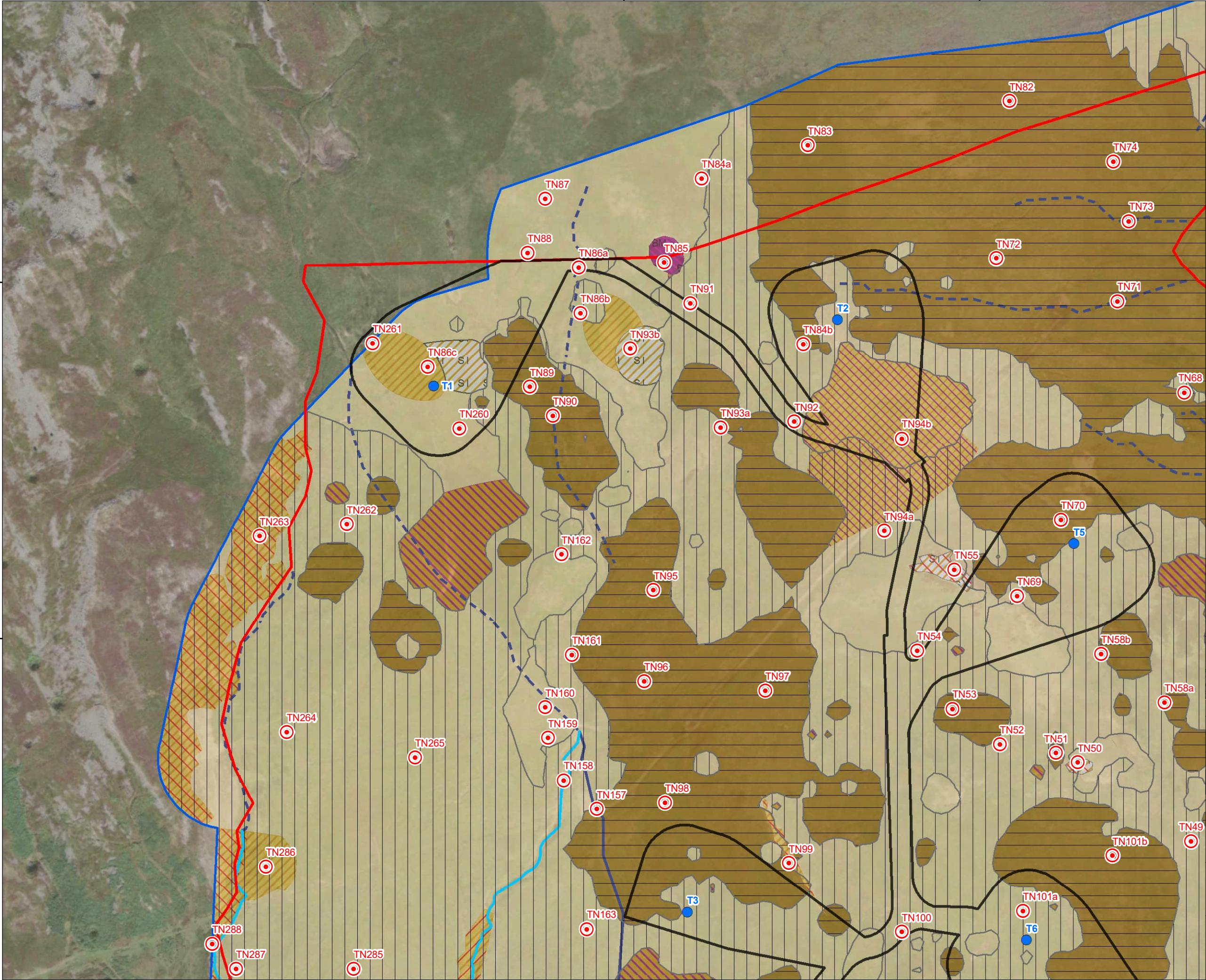
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0 100 200
Metres
SCALE: 1:5,000 @ A3

REV 01



Legend:

- Pen March Site Boundary
- Survey Boundary
- Proposed Turbine Location
- Target Note
- Areas Within Which Proposed Infrastructure Will Be Located (Including Possible Micro-siting)

RSK Peat Survey Depth [cm]

- 30 - 50 cm
- >50 cm

Phase 1 Habitats

- G1 - Standing Water
- G2 - Running Water
- J26 - Dry Ditch
- B12 - Semi-improved Acid Grassland
- Mosaic: Rock Exposure, Semi-improved Acid Grassland
- B5 - Marsh/Marshy Grassland
- Mosaic: Marshy Grassland, Acid Flush, Wet Heath
- Mosaic: Acid Flush, Wet Heath, Wet Modified Bog
- Mosaic: Dry Heath, Acid Grassland
- Mosaic: Rock Exposure, Dry Heath, Acid Grassland
- Mosaic: Dry Heath, Semi-improved Acid Grassland, Bracken
- Mosaic: Wet Heath, Acid Grassland
- E21 - Acid/Neutral Flush
- E32 - Basin Mire

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

2	31/05/2023	Second Revision	CN	SH	CM
1	09/16/2022	First Revision	JK	Chk	CM
Rev	Date	Description	Drn	Chk	App

Pen March Wind Farm

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Habitat Survey Results

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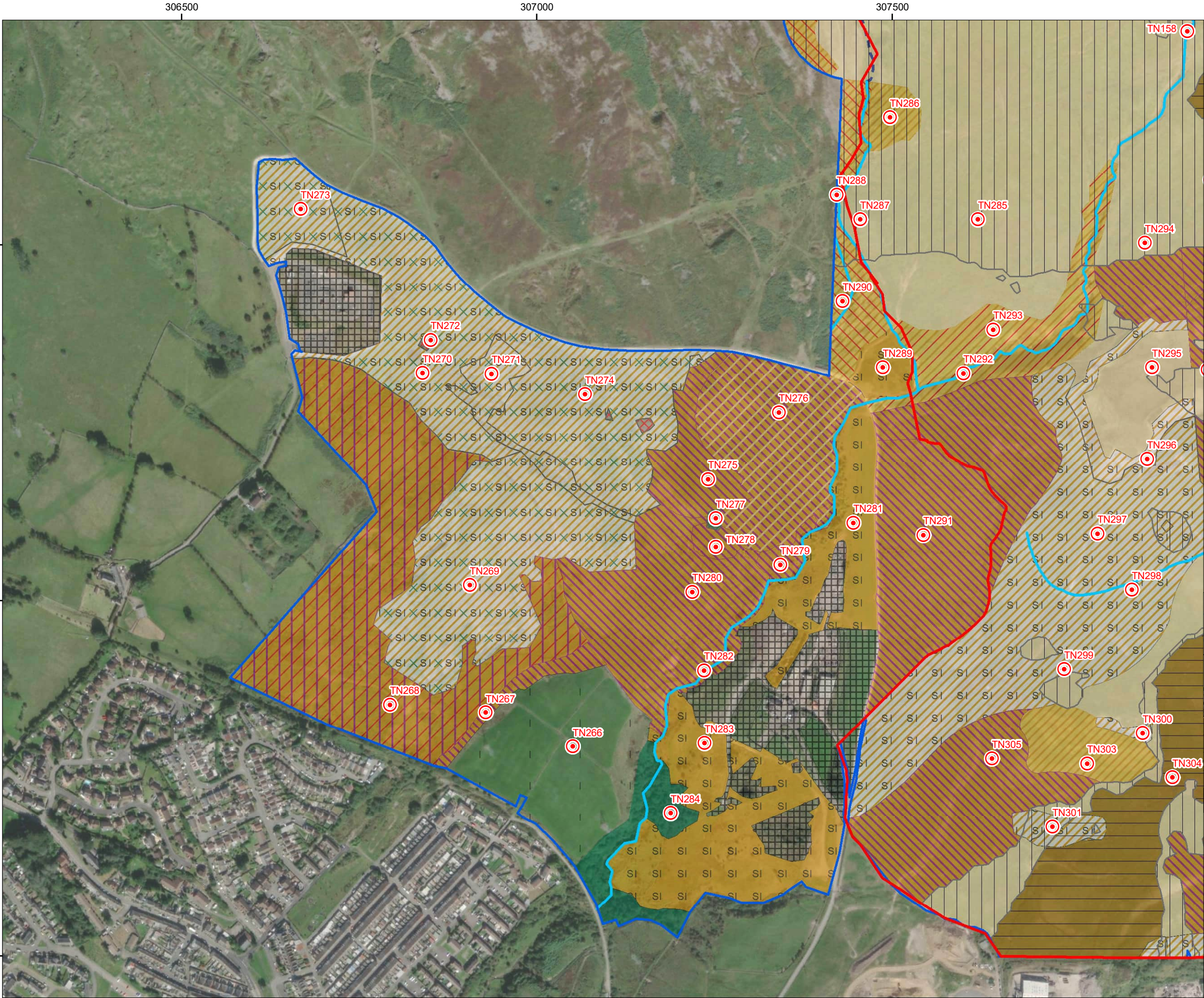
N

W

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S

REV 01



Legend:

Pen March Site Boundary

Survey Boundary

Target Note

RSK Peat Survey Depth [cm]

30 - 50 cm

>50 cm

Phase 1 Habitats

G2 - Running Water

J26 - Dry Ditch

A111 - Semi-natural Broad-leaved Woodland

A21 - Dense/Continuous Scrub

B12 - Semi-improved Acid Grassland

B12A - Acid grassland - semi-improved and Scattered Scrub

B22 - Semi-improved Neutral Grassland

B4 - Improved Grassland

B5 - Marsh/Marshy Grassland

Mosaic: Marshy Grassland, Acid Flush, Wet Heath

Mosaic: Acid Flush, Wet Heath, Wet Modified Bog

Mosaic: Marshy Grassland, Semi-improved Acid Grassland

Marshy Grassland and Scattered Bracken

Mosaic: Dry Heath, Acid Grassland

Mosaic: Rock Exposure, Dry Heath, Acid Grassland

Mosaic: Dry Heath, Semi-improved Acid Grassland, Bracken

I142 - Basic Exposure Inland Cliff

J37 - Not Surveyed

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

Rev	Date	Description	Drn	Chk	App
2	31/05/2023	Second Revision	CN	SH	CM
1	09/16/2022	First Revision	JK	Chk	CM

Pen March Wind Farm

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Habitat Survey Results

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N

W

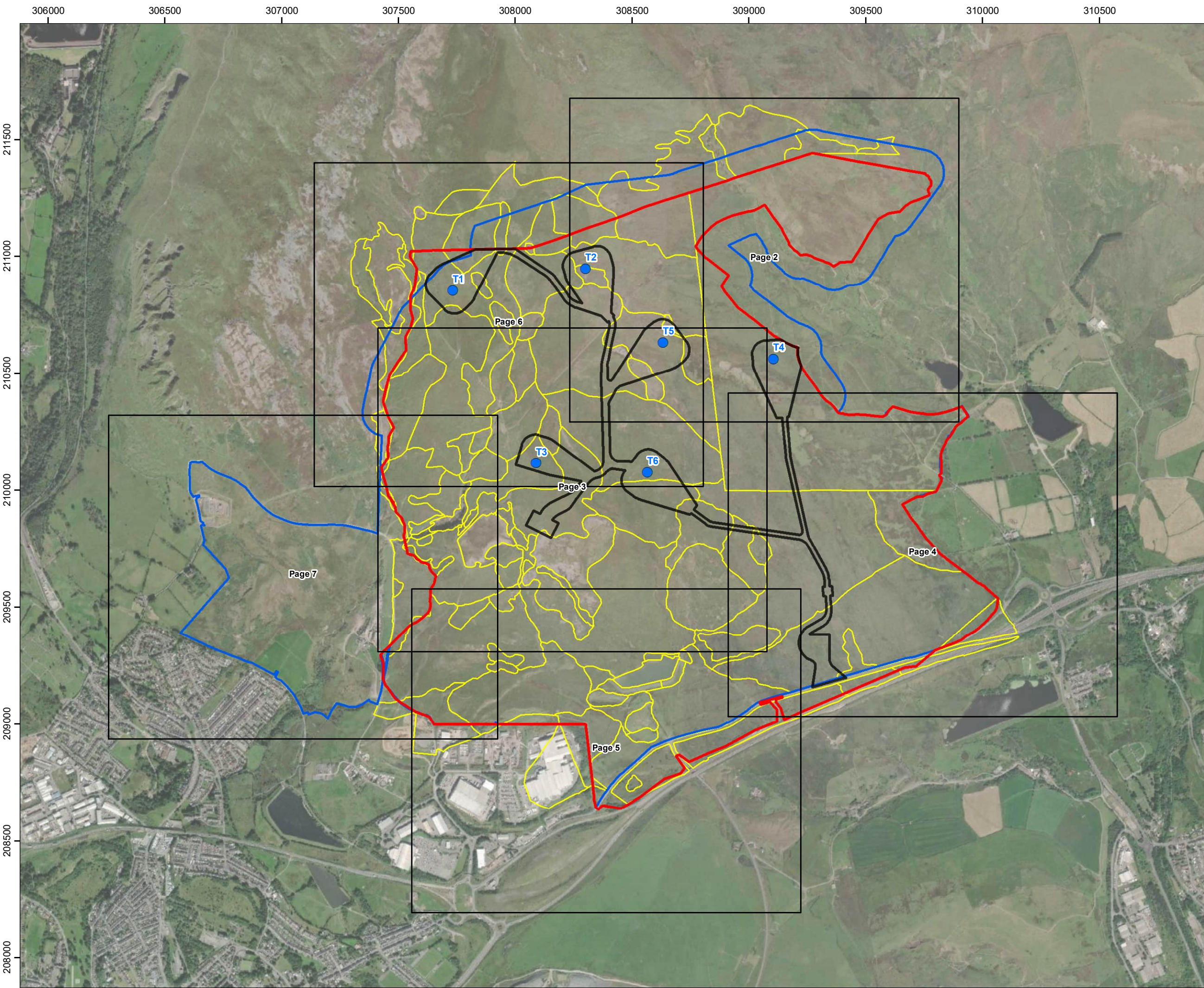
E

S

REV 01

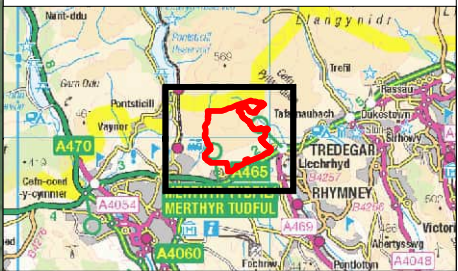
Aerial Imagery (2019): Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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- Legend:**
- Pen March Site Boundary
 - Survey Boundary
 - Proposed Turbine Location
 - Areas Within Which Proposed Infrastructure Will Be Located (Including Possible Micro-siting)
 - National Vegetation Classification (NVC)

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

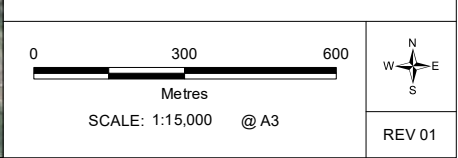


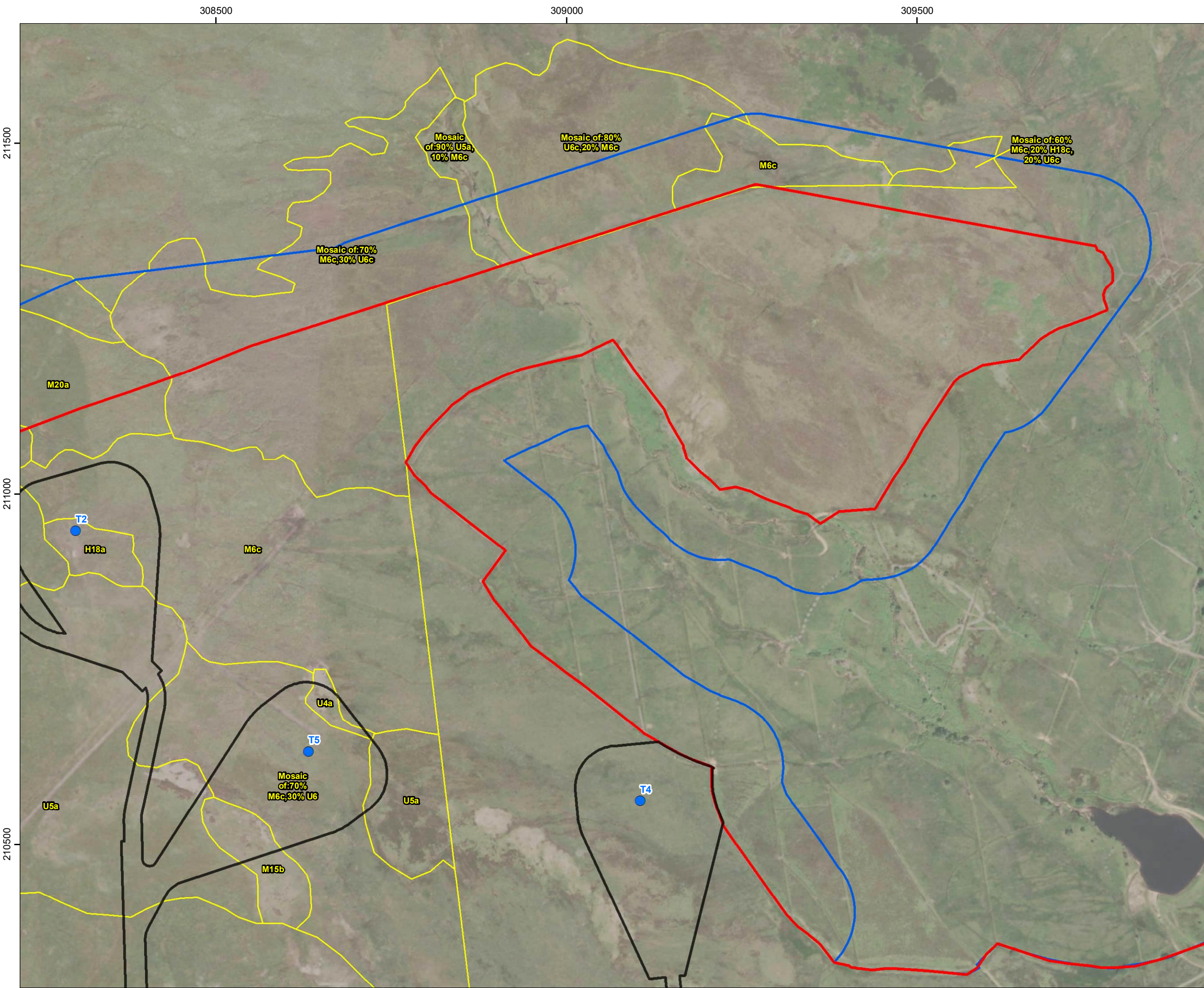
Rev	Date	Description	Drn	Chk	App
2	31/05/2023	Second Revision	CN	SH	CM
1	09/16/2022	First Revision	JK	Chk	CM

Pen March Wind Farm



TITLE: Figure 7-2.8:
NRW NVC Results





Legend:

- Pen March Site Boundary
- Survey Boundary
- Proposed Turbine Location
- Areas Within Which Proposed Infrastructure Will Be Located (Including Possible Micro-siting)
- National Vegetation Classification (NVC)

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

2	31/05/2023	Second Revision	CN	SH	CM
1	09/16/2022	First Revision	JK	Chk	CM
Rev	Date	Description	Drn	Chk	App

Pen March Wind Farm

TITLE: Figure 7-2.9:
NRW NVC Results

0

100

200

Metres

SCALE: 1:5,000 @ A3

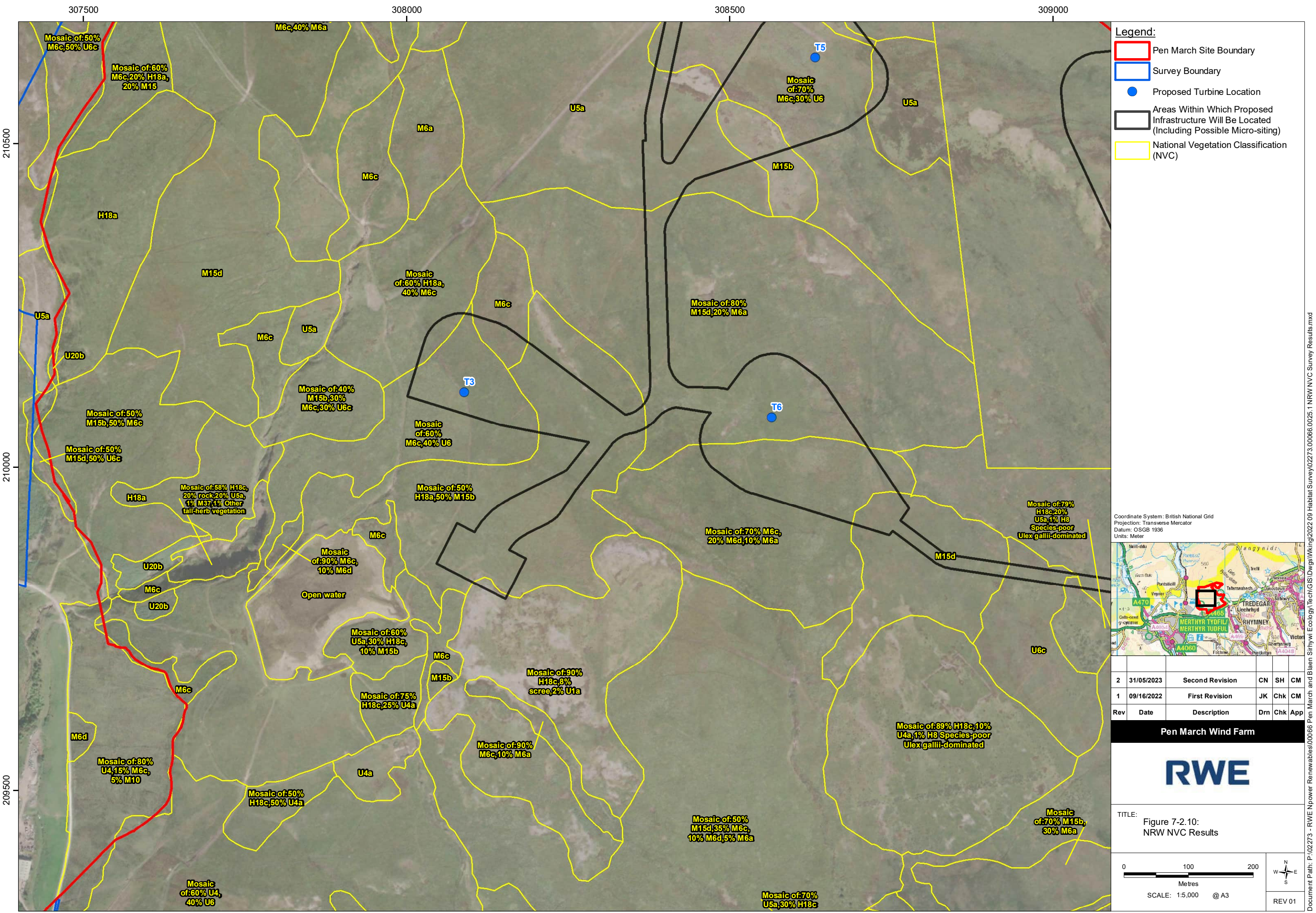
N

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S

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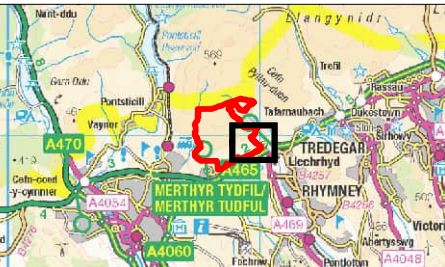
REV 01





- Legend:**
- Pen March Site Boundary
 - Survey Boundary
 - Areas Within Which Proposed Infrastructure Will Be Located (Including Possible Micro-siting)
 - National Vegetation Classification (NVC)

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

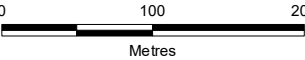


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1	09/16/2022	First Revision	JK	Chk	CM

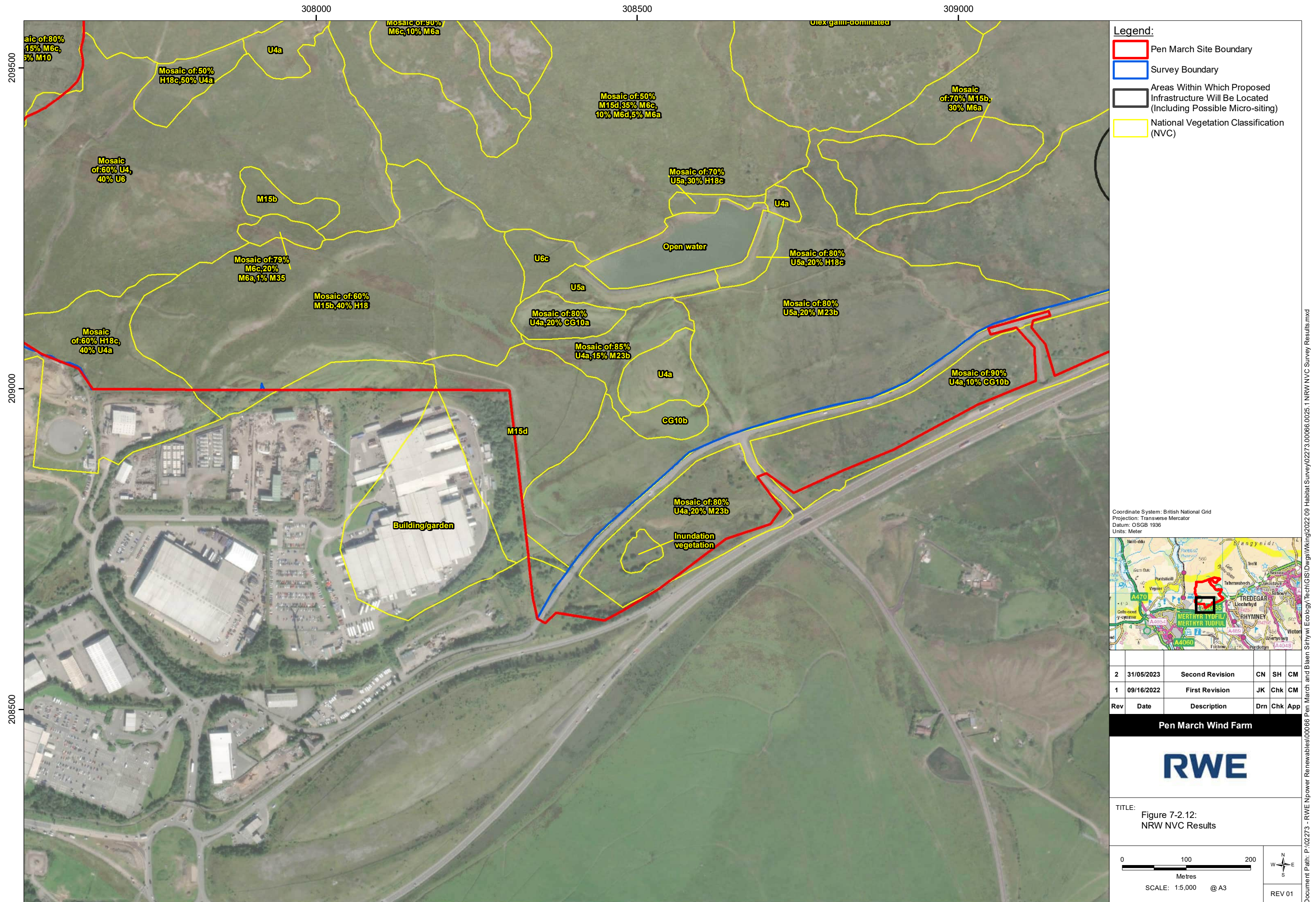
Pen March Wind Farm

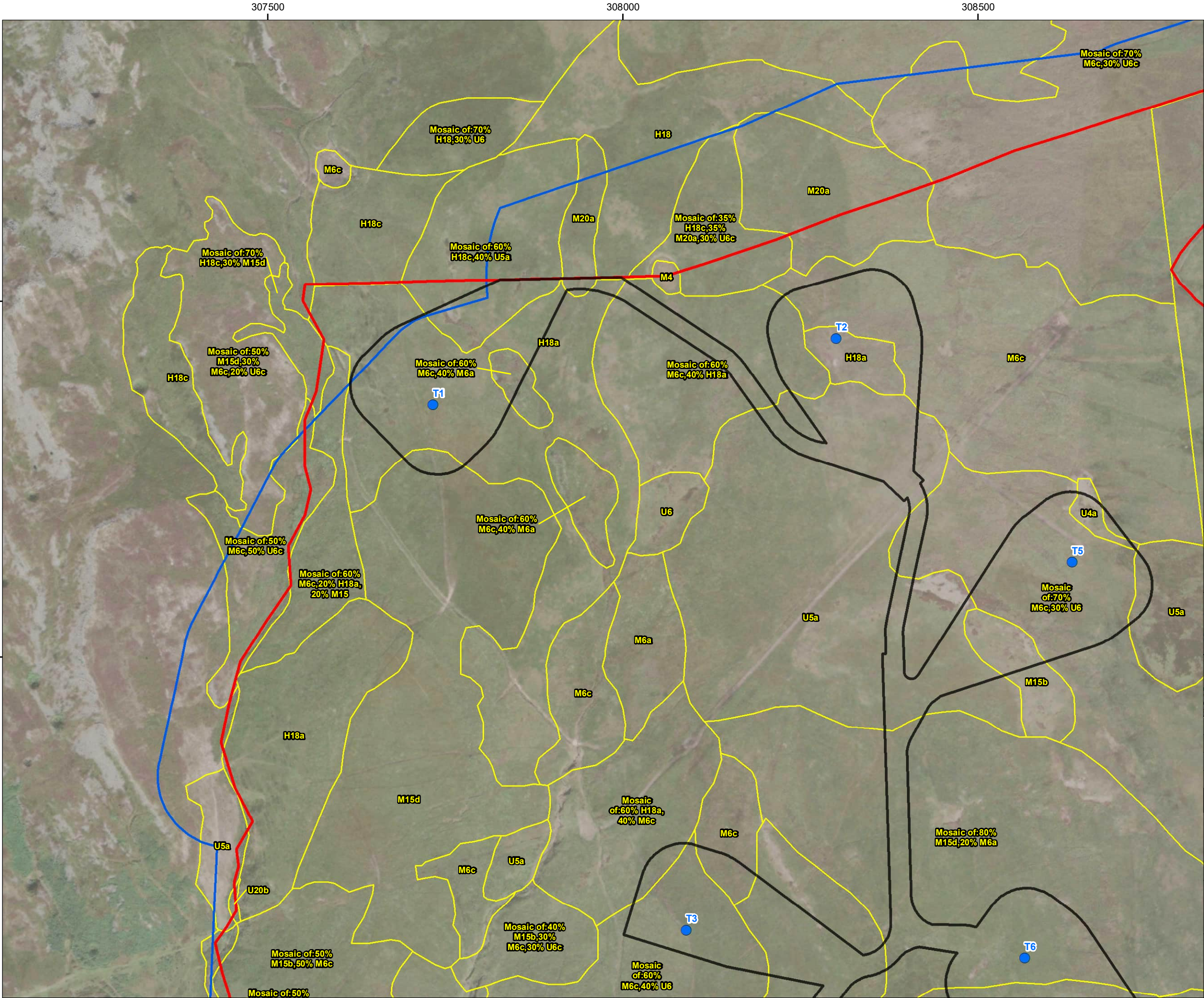
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TITLE: Figure 7-2.11:
NRW NVC Results



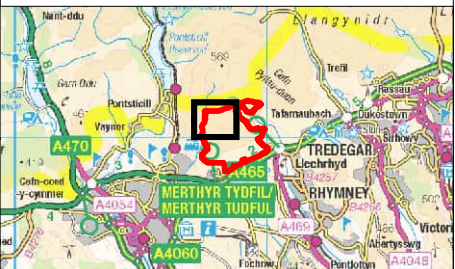
REV 01





- Legend:
- Pen March Site Boundary
 - Survey Boundary
 - Proposed Turbine Location
 - Areas Within Which Proposed Infrastructure Will Be Located (Including Possible Micro-siting)
 - National Vegetation Classification (NVC)

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

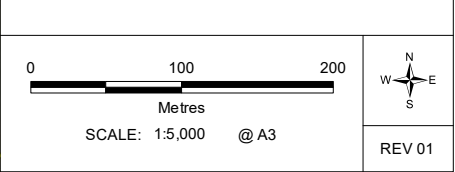


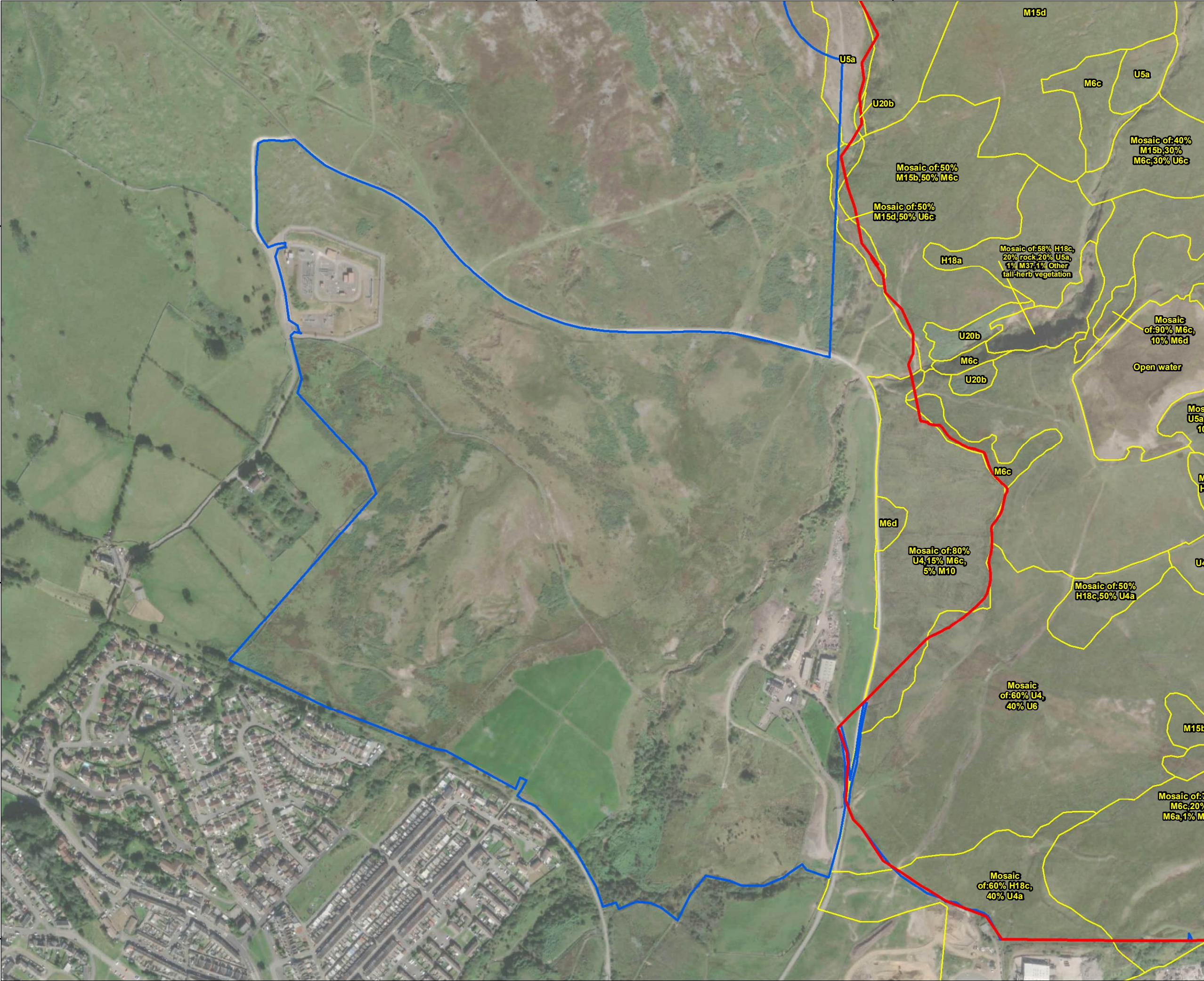
Rev	Date	Description	Drn	Chk	App
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1	09/16/2022	First Revision	JK	Chk	CM

Pen March Wind Farm



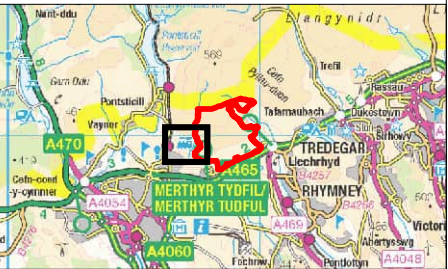
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NRW NVC Results





- Legend:
- Pen March Site Boundary
 - Survey Boundary
 - National Vegetation Classification (NVC)

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

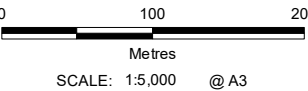


Rev	Date	Description	Drn	Chk	App
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1	09/16/2022	First Revision	JK	Chk	CM

Pen March Wind Farm

RWE

TITLE: Figure 7-2.14:
NRW NVC Results



REV 01

APPENDIX 01

Phase 1 Habitat Survey Target Notes

All Photographs of Target Notes (TN) were taken between 10th and 11th July 2019 (TN1 – 197), 12th and 14th August 2020 (TN198 – 284), and 5th May 2021 (TN285—305).

Note that the TNs relate to the specific locations indicated on Figures 7.2.1-7.2.7, therefore in many instances they describe a single habitat type present within an area that has been mapped as mosaic.

Target Note No.	Photograph:	Habitat Type and Description:
1		Dry Ditch 1m wide and 30cm deep dry ditch. Unlikely to hold permanent water and supports the same terrestrial vegetation as the surrounding grassland.
2		Marshy Grassland, Acid Flush Damp grassland which has formed on a broad slope. Grassland is grazed with a moderate sward (20cm in height) with a tussocky nature. Sward comprises purple moor grass <i>Molinia caerulea</i> and common bent <i>Agrostis capillaris</i>, with sweet vernal grass <i>Anthoxanthum odoratum</i> present but less frequent. Heath rush <i>Juncus squarrosus</i>, sharp-flowered rush <i>Juncus acutiflorus</i>, star sedge <i>Carex echinata</i>, bulbous rush <i>Juncus bulbosus</i> and soft rush <i>Juncus effusus</i> are all present but scattered and rare within the grassland. Broad-leaved herbs are also rare within the grassland with heath bedstraw <i>Galium saxatile</i>, marsh thistle <i>Cirsium palustre</i>, tormentil <i>Potentilla erecta</i>, self-heal <i>Prunella vulgaris</i> and bog pimpernel <i>Anagallis tenella</i> all present.

Target Note No.	Photograph:	Habitat Type and Description:
3		Marshy Grassland, Acid Flush Grassland as per TN2 but soft rush increasingly dominant and with marsh thistle occasional. Growing around pylon base.
4		Marshy Grassland / Semi-improved Acid Grassland Mosaic Soft rush dominated grassland with common bent and Yorkshire fog <i>Holcus lanatus</i> also frequent and tufted hairgrass <i>Deschampsia cespitosa</i> and sweet vernal grass both present but rare. Marsh thistle and foxglove <i>Digitalis purpurea</i> occasionally present and widespread within the grassland. Habitat is growing on a broad slope and is interspersed with short heavily-grazed grassland patches.
5 & 6		Semi-improved Neutral Grassland Short, heavily-grazed grassland (sward 1-2cm in height) dominated by annual meadow grass <i>Poa annua</i> and sheep's fescue <i>Festuca ovina</i>. Broad-leaved herbs are scattered and dominated by white clover <i>Trifolium repens</i>, broad-leaved plantain <i>Plantago major</i>, creeping buttercup <i>Ranunculus repens</i>, common daisy <i>Bellis perennis</i> and procumbent pearlwort <i>Sagina procumbens</i>. The grassland has frequent bare and eroded areas.

Target Note No.	Photograph:	Habitat Type and Description:
7		Dry Ditch 1m wide and 30cm deep dry ditch which is considered unlikely to hold permanent water and supports the same terrestrial vegetation as TN4, except heath bedstraw is also present.
8		Marshy Grassland / Semi-improved Acid Grassland Mosaic Soft rush-dominated grassland as described in TN4.
9 - 16		Semi-improved Neutral Grassland Short, heavily-grazed grassland (sward 1-2cm in height) as described for TN5&6.

Target Note No.	Photograph:	Habitat Type and Description:
17		Dry Ditch 1m wide and 30cm deep dry ditch which is considered unlikely to hold permanent water and supports the same terrestrial vegetation as TN4, except sharp-flowered rush is also occasionally present.
18		Semi-improved Neutral Grassland Short, heavily-grazed grassland (sward 1-2cm in height) dominated by common bent, annual meadow grass and sheep's fescue (as described for TN5&6).
19	No Photo Available	Bare Ground Compacted stone access track.
20 - 33		Semi-improved Neutral Grassland Short, heavily-grazed grassland (sward 1-2cm in height) dominated by annual meadow grass, common bent and sheep's fescue as described for TN5&6.

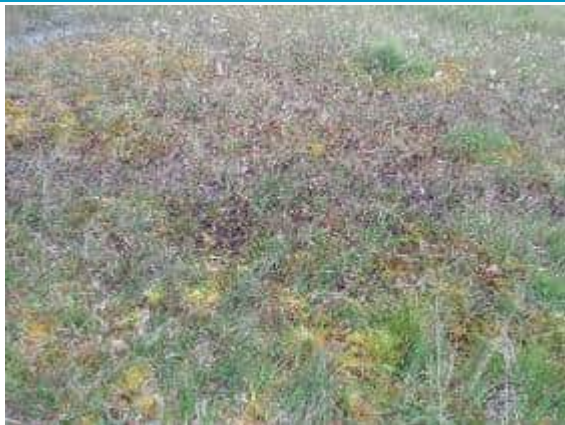
Target Note No.	Photograph:	Habitat Type and Description:
34		Running Water Small stream approximately 2-3m wide and up to 50cm deep. At the time of survey only a small trickle of water but likely to be subject to large flows seasonally and after heavy rain. Stream bed formed of exposed rock and gravels with little or no emergent / aquatic vegetation.
35		Dry Ditch 1m wide and 30cm deep dry ditch as described in TN17.
36		Marshy Grassland, Acid Flush Grazed grassland dominated by purple moor grass and soft rush, with common bent also occasional and widespread. Star sedge, sweet vernal grass, heath rush, wavy hairgrass <i>Deschampsia flexuosa</i> , marsh thistle and foxglove are all widespread but rare. Sward height is up to 60cm.

Target Note No.	Photograph:	Habitat Type and Description:
37		Marshy Grassland, Acid Flush Grassland as per TN36 but sward here dominated almost solely by soft rush, with Yorkshire fog also present but occasional. Habitat is growing on a plateau at the top of a slope. The grassland is grazed but the sward is up to 70cm in height with a number of shorter channels worn through the grassland.
38		Marshy Grassland Grazed grassland as described in TN2 comprising purple moor grass, common bent and soft rush, with sheep's fescue, heath rush, sweet vernal grass and wavy hairgrass all widespread but occasional. Ivy-leaved bellflower <i>Wahlenbergia hederacea</i> present but rare.
39		Marshy Grassland, Acid Flush Purple moor grass dominated grassland, with wavy hair grass, sharp-flowered rush and soft rush also frequent. The grassland is growing on a broad slope, with an open / sparse sward up to 40cm in height. Due to the open sward cross-leaved heath <i>Erica tetralix</i>, tormentil, bog asphodel <i>Narthecium ossifragum</i> and milkwort <i>Polygala</i> sp. are present but rare within the sward.

Target Note No.	Photograph:	Habitat Type and Description:
40		Marshy Grassland, Acid Flush Grassland as described in TN39, however, purple moor grass and soft rush more dominant and as a result other grasses are less frequent. The grassland also has developing mounds of <i>Polytrichum</i> and <i>Sphagnum</i> moss sp.
41 & 42		Scattered Scrub / Semi-improved Acid Grassland Mosaic Common gorse <i>Ulex europaeus</i> scrub up to 1m in height interspersed with short heavily grazed grassland.
43		Marshy Grassland, Acid Flush, Wet Heath Purple moor grass and soft rush dominated grassland with wavy hair grass and sweet vernal grass widespread but occasional. Star sedge, bilberry <i>Vaccinium myrtillus</i> and heath rush are rare and only present in more open areas of sward. Sward is grazed and is on average between 20 – 40cm in height.

Target Note No.	Photograph:	Habitat Type and Description:
44		Marshy Grassland, Acid Flush Grassland as described in TN39, with heath bedstraw present.
45		Semi-improved Neutral Grassland Short, heavily-grazed grassland (sward 1-2cm in height) dominated by annual meadow grass and sheep's fescue.
46		Marshy Grassland Dense stand of soft rush with common nettle <i>Urtica dioica</i> and marsh thistle at the margins.

Target Note No.	Photograph:	Habitat Type and Description:
47		Rock Exposure / Marshy Grassland Mosaic Dense stands of soft rush interspersed with small discrete areas of exposed rock / scree.
48		Flush, Wet Heath, Wet Modified Bog A marshy grassland, flushed hillside, dominated by soft rush and purple moor grass. Tormetil, wavy hair grass, marsh thistle, deergrass <i>Trichophorum germanicum</i> , green-ribbed sedge <i>Carex binervis</i> and hard rush <i>Juncus inflexus</i> also present. Occasional papillose peatmoss <i>Sphagnum papillosum</i> is also present although sphagnums are otherwise rare.
49		Marshy Grassland, Acid Flush, Wet Heath Grassland as described in TN43, however, purple moor grass is the dominant grass species with soft rush now only frequent. The sward is also more open with rare cross-leaved heath, deer grass <i>Trichophorum germanicum</i> , tormentil and locally rare common cotton-grass <i>Eriophorum angustifolium</i> .

Target Note No.	Photograph:	Habitat Type and Description:
50		Rock Exposure / Semi-improved Acid Grassland Mosaic Exposed rock fringed by areas of short heavily grazed grassland dominated by sheep's fescue, wavy hair grass, heath rush and green-ribbed sedge <i>Carex binervis</i>, with small localised areas of bilberry and heath bedstraw present.
51		Wet Modified Bog Approximately 10m x 10m dominated by <i>Sphagnum</i> moss sp. and common cotton-grass, with round-leaved sundew <i>Drosera rotundifolia</i>, bog asphodel and bulbous rush. Star sedge and cross-leaved heath occasional on the margins. Peat depth approximately 70-80cm.
52-53		Marshy Grassland, Wet Heath Purple moor grass dominated grassland with wavy hair grass, sheep's fescue and deergrass also frequent. Grassland is grazed and has an open sward averaging 20cm in height. Heath rush and cross-leaved heath both occasional, with bog asphodel and tormentil both rare.

Target Note No.	Photograph:	Habitat Type and Description:
54		Marshy Grassland, Wet Heath Deergrass dominated grassland with decreased amounts of purple moor grass. The grassland is dry underfoot and no sphagnum moss is present. Cross-leaved heath and bilberry both present but rare. It is likely that this habitat has been altered in the fire in spring 2020 and as a result the cover of deergrass has increased.
55 & 56		Rock Exposure and Semi-improved Acid Grassland Exposed rock fringed by areas of short, heavily-grazed grassland as described in TN50 with sheep's sorrel <i>Rumex acetosella</i> frequent.
57		Marshy Grassland Soft rush dominated grassland with occasional marsh thistle, spear thistle <i>Cirsium vulgare</i> and common nettle. Whilst the grassland is rush dominated, the area is dry underfoot and within the area are pathways of closely cropped grassland dominated by common bent and annual meadow grass.

Target Note No.	Photograph:	Habitat Type and Description:
58a		Flush, Wet Heath, Wet Modified Bog As described in TN48.
58b		Wet Modified Bog An area of degraded bog with purple moor grass, common cottongrass, and soft rush sharing dominance, with wavy hairgrass also abundant. Flat-topped bog moss <i>Sphagnum fallax</i> , lustrous bog moss <i>Sphagnum subnitens</i> , and blunt-leaved bog moss <i>Sphagnum palustre</i> are all present between the grasses, along with star sedge <i>Carex echinata</i> and bog asphodel in the wet/poached areas.
59		Semi-improved Neutral Grassland Short heavily grazed grassland (sward 1-2cm in height) dominated by common bent, annual meadow grass and sheep's fescue. Broad-leaved herbs are scattered and dominated by white clover, broad-leaved plantain, creeping buttercup, common daisy and procumbent pearlwort.

Target Note No.	Photograph:	Habitat Type and Description:
60		Acid Flush Dominated by purple moor grass and soft rush with common bent frequent, and Yorkshire fog and sweet vernal grass present but rare. Broad-leaved herbs are limited to rare marsh thistle and heath bedstraw. Some parts of the grassland are dominated by large stands of soft rush. The grassland is grazed with a tall sward up to 70cm in height and is growing on a broad slope.
61		Marshy Grassland, Acid Flush Flushed marshy grassland to the east of the rock exposure described in TN56. Grassland comprises soft rush with mounds of <i>Polytrichum</i> sp. moss, fork-moss <i>Dicranum</i> sp. and springy turf-moss <i>Rhytidiadelphus squarrosus</i>. Red fescue, heath rush and sweet vernal grass also present and locally frequent, with rare marsh thistle. The grassland is dry underfoot with negligible sphagnum present.
62	No Photo Available	Dry Ditch Approximately 1m wide and 30cm deep. The ditch is dry and unlikely to ever hold water. Sharp-flowered rush dominant in the ditch base.
63	No Photo Available	Dry Ditch Approximately 1m wide and 30cm deep. The ditch is dry and unlikely to ever hold water. Soft rush dominant in the ditch base.

Target Note No.	Photograph:	Habitat Type and Description:
64 & 65		Marshy Grassland, Acid Flush, Wet Heath Purple moor grass dominated grassland with frequent sheep's fescue, wavy hair grass and common bent. Sweet vernal grass, deergrass and heath rush all present but occasional. Sward grazed to 20cm and relatively open. Common heather <i>Calluna vulgaris</i> , cross-leaved heath, tormentil, milkwort and bog asphodel present but rare and very scattered. Growing on a broad slope.
66 & 67		Dry Ditch Dry ditches as described in TN62 and TN63 with soft rush and sharp-flowered rush dominant.
68		Wet Heath, Wet Modified Bog Purple moor grass dominated grassland with wavy hair grass also abundant. Grassland is grazed and has an open sward averaging 20cm in height. Bilberry frequent and tormentil rare within the sward.

Target Note No.	Photograph:	Habitat Type and Description:
69		Wet Heath, Wet Modified Bog Area of deergrass dominated vegetation with continual presence of wavy hair grass and purple moor grass in the sward too. Common cottongrass is present but occasional, along with heath milkwort <i>Polygala serpyllifolia</i> , tormentil and bilberry. No sphagnum is present. It is likely that this area was affected in the fire in spring 2020 and the deergrass has dominated the vegetation at this stage in the habitats recovery.
70		Wet Heath, Wet Modified Bog Area dominated by purple moor grass with wavy hair grass frequent, and Yorkshire fog and sweet vernal grass present in varying abundance. Soft rush also frequent but stands are localised within the grassland. Bilberry is rare within the grassland, along with common cotton-grass and heath rush. Grassland is grazed to 30cm and is growing on a gently sloping plateau.
71	No Photo Available	Ditch marked on OS base map but no evidence of a ditch present.
72		Acid Flush, Wet Heath, Wet Modified Bog Soft rush and purple moor grass dominated grassland with occasional mounds of <i>Polytrichum</i> sp. moss. Flush habitats interspersed within the area following small streams, with wavy hair grass, common cotton grass, blunt-leaved bog moss and flat-topped bog moss all present.
73	No Photo Available	Ditch marked on OS base map but no evidence of a ditch present.

Target Note No.	Photograph:	Habitat Type and Description:
74		Acid Flush, Wet Heath, Wet Modified Bog Soft rush dominated grassland, albeit with areas where purple moor grass is locally dominant. Wavy hair grass frequent throughout. Mounds of <i>Polytrichum</i> sp. moss are present which in turn are colonised by reindeer lichen <i>Cladonia</i> sp. and heath bedstraw. Heath rush and bilberry are both present but rare. Habitat is growing at the base of a slope and on a plateaued area and is likely to be saturated for much of the year.
75		Marshy Grassland, Acid Flush Grassland almost entirely dominated by purple moor grass with mounds of <i>Polytrichum</i> sp. moss and heath bedstraw also present. Only rare areas of soft rush and wavy hair grass.
76		Semi-improved Acid Grassland Heavily-grazed grassland growing on steep slopes leading down to a stream. Fine leaved grasses including common bent, sheep's fescue and wavy hair grass dominate the sward. Soft rush is also present growing in scattered clumps in the grassland. Bilberry and heath rush are both occasional. Slopes are dry and free-draining.

Target Note No.	Photograph:	Habitat Type and Description:
77		Running Water Small slow-flowing stream approximately 1m wide and 10-40cm deep with a rock / gravel substrate and peat-stained water. Stream is devoid of aquatic vegetation. Margins lined with soft rush and broad buckler-fern <i>Dryopteris dilatata</i>.
78 & 79		Semi-improved Acid Grassland Heavily-grazed grassland with a sward <5cm. Grass species dominated by sheep's fescue, common bent and wavy hair grass, with bilberry and heath bedstraw both frequent. Crowberry <i>Empetrum nigrum</i> and common heather present but rare. Soft rush is occasional and with a localised spread. Habitat is growing on a dry, free-draining plateau.
80		Wet Heath, Wet Modified Bog As described in TN78 and 79 but with <i>Polytrichum</i> sp. moss, bilberry and soft rush now more frequent and fine-leaved grasses more often occurring in a network of paths through the area.

Target Note No.	Photograph:	Habitat Type and Description:
81	No Photo Available	Dry Ditch Broad dry channel dominated by soft rush.
82		Acid Flush, Wet Heath, Wet Modified Bog Soft rush dominated flush with areas where purple moor grass is locally dominant, as described in TN74.
83		Wet Heath, Wet Modified Bog Grazed area dominated by purple moor grass, with wavy hair grass and heath rush also abundant in the sward. Sward height is approximately 30cm. Common cotton-grass and bilberry are both present but rare. Little or no broad-leaved herbs noted. Grassland growing on a broad-plateau.
84a		Wet Modified Bog Summit / Pwll Mere plateau, which supports abundant hare's tail cotton-grass, with purple moor grass tussocks also present too. Sphagnum is rare with only blunt-leaved bog moss noted. Heath rush, deergrass and bedstraw all present.

Target Note No.	Photograph:	Habitat Type and Description:
84b		Wet Modified Bog Abundant hare's tail cotton-grass, wavy hair grass, purple moor grass and soft rush.
85		Fen – Basin Mire Fen basin mire dominated by bottle sedge <i>Carex rostrata</i>, with bog bean <i>Menyanthes trifoliata</i>, round-leaved sundew and cotton-grass also scattered throughout. Peat over 50cm depth. Drier areas at the edge of bog pool colonised with soft rush and common bent.
86a		Dry Ditch Small dry channel cut through peat only 30cm wide and 30cm deep. Likely to only carry water in periods of heavy rain.

Target Note No.	Photograph:	Habitat Type and Description:
86b		Wet Modified Bog, Wet Heath The habitat has hare's tail cotton grass, purple moor grass, wavy hair grass, heath rush, with occasional sweet vernal grass, bilberry and tormentil. Soft rush dominates ditches/streams with flat-topped bog moss below.
86c		Dry Heath Dry heath which is bilberry dominated with rare common heather. Heath bedstraw and wavy hair grass present throughout. Restricted to sloped dome around the summit area.
87		Wet Heath Dominated by purple moor grass as described in TN83 but with wavy hair grass now rare and deergrass abundant. Little or no broad-leaved herbs present.

Target Note No.	Photograph:	Habitat Type and Description:
88		Acid Flush Small eroded area characterised by bare ground and localised stands of soft rush.
89		Acid Flush, Wet Heath, Wet Modified Bog Grassland growing in a low channel between adjacent slopes. Sward is up to 80cm in height and is unlikely to be heavily grazed. Sward dominated by purple moor grass and soft rush, with common bent, wavy hair grass, common cotton-grass and hare's tail cotton-grass also frequent. Ground feels wet underfoot and mounds of <i>Polytrichum</i> sp. and Sphagnum mosses (blunt-leaved bog moss, flat-topped bog moss and papillose peatmoss) are present, along with heath rush, star sedge and heath bedstraw. Lesser spearwort <i>Ranunculus flammula</i> is present but rare. Small patches of semi-improved acid grassland dominated by purple moor grass, fescue <i>Festuca</i> sp., mat grass, bent <i>Agrostis</i> sp. and green ribbed sedge, with bilberry also present, are present on the adjacent drier slopes.
90		Dry Ditch Small dry channel approximately 1m wide and dominated by soft rush.

Target Note No.	Photograph:	Habitat Type and Description:
91		Marshy Grassland, Acid Flush Wet grassland and flush, with locally dominant soft rush and purple moor grass growing on water-logged and sloping ground. Bog bean, marsh violet <i>Viola palustre</i> , sharp-flowered rush, broad buckler fern, marsh bedstraw and marsh thistle all present but occasional. Flat topped bog moss and <i>Polytrichum</i> moss are also present throughout the area. Habitat slopes down in a continuous band to TN93.
92		Acid Flush, Wet Heath, Wet Modified Bog Marshy grassland with numerous flushed areas dominated by purple moor grass, soft rush and hare's tail cotton-grass. Heath rush, wavy hair grass and sheep's fescue also frequent in the sward. Heath bedstraw locally abundant, whilst bilberry is present but occasional.
93a		Marshy Grassland, Acid Flush Wet flushed grassland as described in TN91.

Target Note No.	Photograph:	Habitat Type and Description:
93b		Wet Heath Grazed acid grassland with a short sward. Purple moor grass, wavy hair grass, deergrass, fescues, mat grass and bulbous rush all present and sharing dominance within the sward, with bilberry locally dominant in places. Within the grassland are small, scattered areas of short bilberry dominated sward, with fescue grasses <i>Festuca</i> sp. and tormentil present. Purple moor grass present but not abundant. This area has potentially been altered by the fire in spring 2020 and is the regrowth is being heavily grazed.
94a		Marshy Grassland, Wet Heath As the hill levels off, deer grass is less abundant and is increasingly dominated with purple moor grass and soft rush, with hare's tail cotton grass also present and locally frequent. Bilberry is also present along with heath rush, <i>Polytrichum</i> sp. moss and wavy hair grass. No sphagnum is present.
94b		Wet Heath, Acid Grassland Acid grassland dominated by wavy hair grass, purple moor grass, sweet vernal grass, mat grass and fescue. The grassland has a short sward with bilberry, purple moor grass and springy turf moss all increasing in abundance in the north. As the grassland extends northwards, tussocks of purple moor grass and bilberry are more prevalent, with fork moss and <i>Polytrichum</i> sp. moss both present in between tussocks. Heath rush, bedstraw and deergrass are all present and occasional, whilst common heather and crowberry are both present but rare. Dried out sphagnums are present within track ruts.

Target Note No.	Photograph:	Habitat Type and Description:
95		Wet Heath, Wet Modified Bog Soft rush dominated grassland with frequent mounds of <i>Polytrichum</i> sp. moss present. Centre of the area is wetter with <i>Sphagnum</i> sp. moss, Yorkshire fog and heath bedstraw all frequent.
96-97		Acid Flush, Wet Heath, Wet Modified Bog As described in TN89, however, sward is increasingly dominated by purple moor grass.
99		Rock Exposure and Dry Heath / Acid Grassland Mosaic Line of exposed rock / scree with fine leaved grasses and abundant bilberry.

Target Note No.	Photograph:	Habitat Type and Description:
100		Wet Modified Bog Area of degraded wet modified bog approximately 30m in diameter and broadly circular in shape. This area is dominated by purple moor grass, hare's tail cotton-grass, and soft rush, with sphagnum mosses (including blunt-leaved bog-moss, feathery bog-moss <i>Sphagnum cuspidatum</i> and cow-horn bog-moss <i>Sphagnum denticulatum</i>, heath milkwort, bog asphodel, tormentil, carnation sedge <i>Carex panicea</i> and glaucous sedge <i>Carex flacca</i> all present. Some areas in the centre are poached by livestock and these areas only comprise purple moor grass and cotton grass. There are also areas of degraded Sphagnum lawn with glaucous sedge, bog asphodel, star sedge, common cotton-grass, red bog-moss <i>Sphagnum capillifolium</i>, blunt-leaved bog-moss, flat-topped bog moss and lustrous bog-moss. These areas of wet modified bog are surrounded by purple moor grass and deergrass dominated grassland.
101a		Marshy Grassland, Acid Flush, Wet Heath Marshy grassland dominated by deergrass and purple moor grass to the north, with wavy hair grass, red fescue, sheep's fescue, bog asphodel, and star sedge all present but occasional. Common and heath milkwort, common cotton-grass, heath rush and marsh bedstraw all present but rare. Blunt-leaved bog-moss and red bog-moss commonly occur with the bog asphodel. Sphagnum more or less constant below the grasses, with a high percentage cover in some areas. Further south the marshy grassland comprises a mix of purple moor grass, soft rush and wavy hair grass, with occasional bilberry, tormentil, and cross-leaved heath. Star sedge and bog asphodel occur in the dampest areas, along with occasional hare's tail cotton-grass, red bog-moss and sedges. The dominance of purple moor grass increases further south.

Target Note No.	Photograph:	Habitat Type and Description:
101b		Wet Modified Bog, Wet Heath Rushes and deergrass decrease within this area, whilst sphagnum mosses continue to be present, with tussocky purple moor grass, common cotton-grass, wavy hair grass all abundant. Star sedge, tormentil, bog asphodel and soft rush are all present in the wetter areas. Sphagnum then decreases as you proceed east, but persists as hummocks, with less cotton-grass and increased deergrass also notable, whilst the wettest areas continue to support bog asphodel, star sedge and sphagnum mosses.
102		Marshy Grassland, Wet Heath Grazed purple moor grass dominated grassland with an open sward up to 30cm in height. Deergrass and sweet vernal grass all frequent, with bog asphodel, cross-leaved heath and common cotton-grass present but rare.
103 & 104		Mixed Plantation Woodland Narrow belt of immature mixed woodland currently up to 7m in height comprising Scot's pine <i>Pinus sylvestris</i>, goat willow <i>Salix caprea</i>, blackthorn <i>Prunus spinosa</i>, common hawthorn <i>Crataegus monogyna</i>, hazel <i>Corylus avellana</i> and rowan <i>Sorbus aucuparia</i>. Surrounded by stock fence and a stone wall.

Target Note No.	Photograph:	Habitat Type and Description:
105 – 107		Semi-improved Neutral Grassland Heavily-grazed grassland dominated by annual meadow grass, sheep's fescue, Yorkshire fog and sweet vernal grass, with occasional tufted hairgrass. Abundant broad-leaved herbs include bird's-foot trefoil <i>Lotus corniculatus</i>, selfheal <i>Prunella vulgaris</i>, black medick <i>Medicago lupulina</i>, marsh thistle, creeping thistle <i>Cirsium arvense</i>, meadow buttercup <i>Ranunculus repens</i>, ribwort plantain <i>Plantago lanceolata</i>, broad-leaved plantain and rosebay willowherb <i>Chamaenerion angustifolium</i>. Sward grazed down to 2cm with abundant ant hills present.
108		Running Water Stream / outfall which is canalised by large boulders and is approximately 1m wide with 30cm water depth. Water smells foul and channel is devoid of aquatic plants. However, stands of common nettle and common bent have established on the margins.
109 - 111		Marshy Grassland / Semi-improved Neutral Grassland Mosaic Mosaic of soft rush and sharp-flowered rush dominated grassland interspersed with areas of heavily grazed grassland as described in TN105 – 107.

Target Note No.	Photograph:	Habitat Type and Description:
112		Dry Ditch Dry, canalised outfall channel with a base formed of interlocking concrete blocks. The channel is approximately 2m wide and 1m below ground level and is devoid of vegetation.
113		Semi-improved Acid Grassland Heavily grazed grassland dominated by fine leaved grasses including common bent, sheep's fescue and mat-grass <i>Nardus stricta</i> . Heath rush is occasional and broad-leaved herbs now very scarce.
114		Marshy Grassland, Acid Flush Marshy grassland growing at the base of a slope with a sward dominated by common bent, with soft rush and sharp-flowered rush both abundant.

Target Note No.	Photograph:	Habitat Type and Description:
115		Marshy Grassland Purple moor grass dominated grassland which is heavily grazed down to 15cm, with heath rush also frequent within the sward.
116		Semi-improved Neutral Grassland Short, heavily-grazed grassland dominated by annual meadow grass, blue sedge <i>Carex flacca</i> and crested dog's tail <i>Cynosurus cristatus</i>. Broad-leaved herbs are also frequent and are dominated by common daisy, meadow buttercup and selfheal. Soft rush occurs in scattered clumps.
117		Semi-improved Neutral Grassland Grassland as described in TN116 but soft rush is locally dominant.
118		Dry Ditch Large channel between two adjacent mounds. Ditch is approximately 3m across and is dominated by soft rush, with lesser spearwort and pondweed <i>Potamogeton</i> sp. present in the centre. At the time of survey the ditch was dry but it is likely to hold at least small amounts of water throughout much of the year.

Target Note No.	Photograph:	Habitat Type and Description:
		
119		Marshy Grassland Purple moor grass dominated grassland with frequent soft rush. Grassland is growing on a gentle slope and feels relatively dry. The grassland is heavily grazed down to 10-20cm and as a result fine leaved grasses including mat-grass, sheep's fescue and common bent are also locally frequent. Bilberry and cross-leaved heath present but both very rare.
120 & 121		Dry Ditch Dry, shallow channels approximately 1m wide and 30cm deep. Unlikely to hold water except in heavy rain. Vegetation present dominated by soft rush and sharp-flowered rush.

Target Note No.	Photograph:	Habitat Type and Description:
122		Marshy Grassland Soft rush dominated grassland with common bent also abundant. Marsh thistle occasional. Sward up to 70cm in height and growing on a broad slope.
123		Marshy Grassland Purple moor grass dominated grassland as described in TN119.
124		Dry Ditch Dry, shallow channel approximately 1m wide and 50cm deep. Likely to hold water periodically and not just after heavy rain. Vegetation present entirely dominated by soft rush and sharp-flowered rush.

Target Note No.	Photograph:	Habitat Type and Description:
125		Running Water Stream with rocky substrate approximately 1m wide and 10-20cm deep. Water is peat-stained and at the time of survey the stream had minimal flow. No aquatic vegetation is present within the water, however, the channel margins are fringed with soft rush, marsh thistle and broad buckler-fern.
126	No Photo Available	Marshy Grassland Purple moor grass dominated grassland as described in TN119.
127		Standing Open Water Large reservoir (Jepson's Pond) lined with stone blocks. Water largely devoid of vegetation but some small areas of horsetail <i>Equisetum</i> sp. are growing in the shallow margins.
128		Semi-improved Neutral Grassland Short, heavily-grazed grassland dominated by annual meadow grass, mat-grass, blue sedge and crested dog's tail as described in TN116. Broad-leaved herbs are also frequent and are dominated by common daisy, meadow buttercup and selfheal. Soft rush occurs in scattered clumps.

Target Note No.	Photograph:	Habitat Type and Description:
129		Wet Heath, Wet Modified Bog Purple moor grass dominated mire with soft rush occurring sporadically in small stands. Star sedge, common cotton-grass, cross-leaved heath and bog asphodel all present but occasional. The area is on a broad slope, is noticeably wet and is grazed to approximately 30cm height.
130		Standing Open Water (Wet Ditch) Wet ditch approximately 1m wide by 30cm deep. Ditch is vegetated with bog bean and pondweed <i>Potamogeton</i> sp. in the centre and fringed with <i>Sphagnum</i> sp. mosses, common cotton-grass and jointed rush <i>Juncus articulatus</i> at the margins. The ditch is likely to hold water or be damp for the majority of the year.
131		Marshy Grassland and Scattered Scrub Purple moor grass dominated grassland with frequent soft rush as described in TN119 with scattered goat willow scrub.

Target Note No.	Photograph:	Habitat Type and Description:
132 & 133		Marshy Grassland Grazed grassland dominated by soft rush with abundant common bent and sweet vernal grass. Marsh thistle and heath bedstraw both frequent. Grassland sward is up to 40cm in height and grassland appears relatively dry.
134		Dry Ditch Ditch approximately 1m wide and entirely vegetated with purple moor grass and soft rush. Marsh thistle and heath bedstraw also occasionally present.
135-137		Marshy Grassland, Acid Flush Purple moor grass and soft rush dominated grassland with a high sward up to 50cm in height. Grassland still subject to grazing but not as intensive. Dense sward, but with <i>Polytrichum</i> sp. moss, star sedge, heath rush, cross-leaved heath, tormentil, bog asphodel and bog pimpernel occurring rarely in the more open areas. Occasional scattered goat willows are also present. Single small area of quaking oat grass <i>Briza media</i> recorded (potentially suggesting a very localised calcareous substrate). Growing on a broad slope with some distinctly wetter areas.

Target Note No.	Photograph:	Habitat Type and Description:
138		Dry Ditch Ditch approximately 1m wide dominated by soft rush.
139 & 140		Marshy Grassland, Acid Flush Purple moor grass and soft rush dominated grassland which is moderately grazed with an average sward height of 30cm. The grassland is growing mid-slope and feels relatively free draining. Wavy hair grass, common bent and sweet vernal grass are all abundant in the sward. Mounds of <i>Polytrichum</i> sp. moss, tormentil, bilberry, star sedge, cross-leaved heath and heath rush all occasional but locally distributed.
141		Scattered Scrub and Semi-improved Acid Grassland Low gorse scrub (<1m in height) interspersed with intensively grazed grassland as described in TN113.

Target Note No.	Photograph:	Habitat Type and Description:
142		Dry Ditch Ditch approximately 1m wide dominated by soft rush.
143 & 144		Rock Exposure and Dry Heath / Acid Grassland Mosaic Exposed rock bounded by bilberry and wavy hair grass. Sheep's fescue and mat grass present in the more heavily grazed areas. Scattered patches of purple moor grass, soft rush and low gorse scrub. Green-ribbed sedge and sheep's sorrel both present but occasional.
145-147		Rock Exposure and Dry Heath / Acid Grassland Mosaic Mosaic of scattered gorse scrub (as described in TN141) and exposed rock with associated closely grazed vegetation (as described in TN143).

Target Note No.	Photograph:	Habitat Type and Description:
148		Running Water Sinuuous channel approximately 1-3m wide and 20cm deep. Channel has numerous pools of water and a slight flow. Some of the channel is devoid of vegetation, however, some parts are densely vegetated with soft rush, sharp-flowered rush and common bent.
149		Marshy Grassland, Acid Flush Grazed purple moor grass and soft rush dominated grassland as described in TN139 and TN140.
150		Dry Ditch Ditch approximately 1m wide dominated by soft rush.

Target Note No.	Photograph:	Habitat Type and Description:
151-153		Rock Exposure and Dry Heath / Acid Grassland Mosaic Exposed rock areas bounded by bilberry and wavy hair grass. Sheep's fescue and mat grass present in the more heavily-grazed areas. Scattered patches of purple moor grass and soft rush.
154		Semi-improved Acid Grassland Grazed grassland growing at the top of a slope with an average sward height of 5-10cm. The grassland is relatively dry, with the sward dominated by wavy hair grass and sheep's fescue, with purple moor grass and soft rush present but occasional. Bilberry, heath bedstraw and heath rush all occasional.
155		Rock Exposure and Dry Heath / Acid Grassland Mosaic Exposed rock areas bounded by bilberry and wavy hair grass as described in TN151.

Target Note No.	Photograph:	Habitat Type and Description:
156		Marshy Grassland, Wet Heath Area of purple moor grass and bilberry dominated grassland, with occasional heath rush, tormentil, hare's tail cotton-grass and wavy hair grass. Parts of this grassland area (particularly to the east of the TN location) display the after effect of fire, with some areas being dominated deergrass (which has likely dominated since the fire), with wavy hair grass, bilberry, heath rush and purple moor grass all present in varying proportions.
157		Standing Open Water (Wet Ditch) Broad ditch approximately 1.5m wide and 20cm water depth. Parts of channel are open, whereas other parts are vegetated with stands of soft rush, sweet vernal grass and common bent. Cotton-grass and <i>Polytrichum</i> sp. moss are also invading the channel.
158		Running Water Stream approximately 2m wide and 10-30cm deep. Stream had a light flow at the time of survey. Substrate is rocky and main channel is devoid of vegetation. Margins of stream are colonised by soft rush. Stream is within an eroded channel up to 5m below ground level.

Target Note No.	Photograph:	Habitat Type and Description:
159		Marshy Grassland Purple moor grass dominated grassland as described in TN156 except growing on upper slope and a slight plateau.
160	No Photo Available	Dry Ditch Dry stream bed approximately 1-2m wide and 1.5m below ground level. Stream bed has a stony substrate.
161		Marshy Grassland, Acid Flush Purple moor grass and soft rush dominated grassland up to 70cm in height with frequent <i>Polytrichum</i> sp. moss mounds and heath bedstraw. Sward subject to relatively light grazing, with marsh thistle, broad-buckler fern and marsh violet all present but rare.
162	No Photo Available	Marshy Grassland Purple moor grass dominated grassland which is heavily grazed and growing on an upper slope. Sward is approximately 15cm in height and contains occasional bilberry, tormentil and heath bedstraw, with frequent black sedge. Grassland is relatively dry.

Target Note No.	Photograph:	Habitat Type and Description:
163		Acid Flush, Wet Heath, Wet Modified Bog As described in TN98.
164	No Photo Available	Marshy Grassland Marshy grassland which has colonised the bare ground which resulted from the absence of standing water in the defunct reservoir.
165 - 167		Marshy Grassland, Wet Heath Marshy grassland dominated by purple moor grass on a slope at the eastern end of Pitwellt Pool, but also extending on to the summit. Other species present include fescue sp., sedges sp., tormentil, and bedstraws <i>Gallium</i> sp. No pools noted, whilst increasing amounts of bilberry were present on the top.
168		Acid Flush Small area of wet plateau approximately 20m x 5m with the vegetation present dominated by sharp-flowered rush and lesser spearwort.

Target Note No.	Photograph:	Habitat Type and Description:
169 – 170		Marshy Grassland Soft rush growing in a furrow between two slopes with purple moor grass, sweet vernal grass, Yorkshire fog and common bent all frequently present.
171		Rock Exposure and Dry Heath / Acid Grassland Mosaic Exposed rock bounded by bilberry and wavy hair grass. Sheep's fescue and mat-grass present in the more heavily grazed areas. Scattered patches of purple moor grass and soft rush. Green-ribbed sedge and sheep's sorrel both present but occasional.
172		Standing Open Water Small pond associated with a disused pumping facility, approximately 20m x 10m and estimated to be 1.5m deep. Pond is divided by a causeway with one half with no open water and densely vegetated by soft rush, common cotton-grass, lesser spearwort and marsh thistle. The other half of the pond comprises open water fringed with soft rush and horsetail <i>Equisetum</i> sp. Aquatic vegetation within the open water is limited to water crowfoot <i>Ranunculus aquatilis</i> , pondweed <i>Potamogeton</i> sp. and floating sweet-grass <i>Glyceria fluitans</i> .

Target Note No.	Photograph:	Habitat Type and Description:
		
173		Running Water Stream with a slight flow, approximately 1m wide and 3m below surrounding ground-level. Stream has numerous pools of standing water. Stream channel is relatively open with soft rush fringing the edges and pondweed <i>Potamogeton</i> sp. and lesser spearwort within the pools. Upper edges of the channel are severely eroded in places.
174		Wet Modified Bog Purple moor grass dominated area described in TN162, except with rare bog asphodel and cross-leaved heath in the wetter parts.

Target Note No.	Photograph:	Habitat Type and Description:
175		Semi-improved Acid Grassland Dry, open, rocky grassland which is heavily-grazed down to 5-10cm. Sward comprises wavy hairgrass, sheep's fescue, common bent, heath rush, mat-grass, green-ribbed sedge and patches of purple moor grass. Bilberry, tormentil and sheep's sorrel are all occasional.
176 & 177		Rock Exposure and Dry Heath / Acid Grassland Mosaic Exposed rock areas bounded by bilberry and wavy hair grass. Sheep's fescue and mat-grass present in the more heavily grazed areas. Scattered patches of purple moor grass, soft rush and low gorse scrub.
178 - 180		Marshy Grassland Purple moor grass dominated grassland which is heavily grazed and growing on an upper slope. Sward is approximately 15cm in height and contains occasional bilberry, tormentil and heath bedstraw, with frequent green-ribbed sedge and rare common heather.

Target Note No.	Photograph:	Habitat Type and Description:
181		Marshy Grassland, Acid Flush Soft rush dominated grassland with frequent wavy hair grass and mounds of <i>Polytrichum</i> sp. moss. Heath bedstraw and cross-leaved heath present occasionally in the margins. Habitat growing in a slight furrow.
182 - 184		Marshy Grassland Purple moor grass dominated grassland which is heavily grazed and growing on an upper slope. Sward is approximately 15cm in height and contains occasional bilberry, tormentil and heath bedstraw, with frequent green-ribbed sedge and rare common heather.
185 – 187		Semi-improved Acid Grassland Undulating area comprising mounds and furrows with heavily grazed grassland dominated by fine leaved grasses including common bent, sheep's fescue and mat-grass. Heath rush is occasional and broad-leaved herbs are limited to common daisy, marsh thistle and spear thistle.

Target Note No.	Photograph:	Habitat Type and Description:
188		Marshy Grassland Stand of soft rush with common nettle also abundant.
189		Marshy Grassland / Semi-improved Neutral Grassland Mosaic Mosaic of soft rush stands interspersed with heavily grazed grassland dominated by annual meadow grass and white clover.
190		Dry Ditch Dry ditch approximately 1m wide and densely vegetated with soft rush.

Target Note No.	Photograph:	Habitat Type and Description:
191		Semi-improved Acid Grassland Undulating area of heavily grazed grassland as described in TN185-187.
192		Marshy Grassland Heavily grazed purple moor grass dominated grassland with a sward height of 15cm. The grassland also comprises frequent wavy hair grass, sheep's fescue, green ribbed sedge, with little or no broad-leaved herbs.
193		Marshy Grassland Purple moor grass dominated grassland which is heavily grazed and growing on an upper slope. Sward is approximately 15cm in height and contains occasional bilberry, tormentil and heath bedstraw, with frequent green-ribbed sedge and rare common heather and bog asphodel.
194	No Photo Available	Marshy Grassland Heavily grazed purple moor grass dominated grassland as described in TN192.

Target Note No.	Photograph:	Habitat Type and Description:
195		Dry Ditch Dry ditch approximately 1m wide and densely vegetated with soft rush.
196	No Photo Available	Marshy Grassland Heavily grazed purple moor grass dominated grassland as described in TN192.
197	No Photo Available	Dry Ditch Dry ditch approximately 1m wide and densely vegetated with soft rush.
198		Marshy Grassland Grazed marshy grassland with a sward height of 10-20cm. The sward is dominated by purple moor grass and soft rush (approximately 90% combined cover), with occasional scattered Yorkshire fog, creeping bent and annual meadow grass also present. Broad-leaved herbs limited to scattered marsh thistle in most areas. However, very small and scattered heavily grazed areas also comprise white clover and common mouse-ear in addition to perennial rye and crested dog's tail.

Target Note No.	Photograph:	Habitat Type and Description:
199		Dry Ditch Approximately 1m wide and 1m depth compared to surrounding ground level. No water in the ditch base and no recent evidence of holding permanent water. Vegetation within the ditch is dominated by soft rush, with sharp-flowering rush and lesser spearwort present but occasional.
200 & 201		Marshy Grassland Marshy grassland as described in TN198.
202	No Photograph Available	Bare Ground Bare ground within an area of marshy grassland as a result of significant erosion and poaching from livestock.

Target Note No.	Photograph:	Habitat Type and Description:
203 & 204		Marshy Grassland Grazed marshy grassland with approximately 80% cover of purple moor grass, with scattered areas of soft rush. Sward is grazed down to approximately 10-15cm. Broad-leaved herbs are scarce and comprise occasional tormentil and rare occurrences of common heather.
205 & 206	No Photograph Available	Dry Ditch Dry ditch as described in TN199.
207		Dry Ditch Dry ditch with no standing water, however, the base of the ditch was damp and is considered likely to be seasonally wet. The ditch was approximately 1.5m wide, with the vegetation dominated by soft rush and <i>Polytrichum</i> moss. Wavy hair grass and creeping bent were also present and scattered occasionally throughout the ditch.
208		Dry Ditch Dry ditch as described in TN199.

Target Note No.	Photograph:	Habitat Type and Description:
209		Marshy Grassland Grazed marshy grassland as described in TN203 and 204, except with wavy hair grass and sweet vernal grass both abundant within the grassland sward. Bilberry and cross-leaved heath are also present but rare.
210 & 211	No Photograph Available	Dry Ditch Dry ditch as described in TN199.
212		Semi-improved Acid Grassland Heavily-grazed grassland (sward <5cm) growing on steep slopes leading down to a stream. Grassland sward is dominated by fine leaved grasses including common bent, sheep's fescue, wavy hair grass and sweet vernal grass. Soft rush and Yorkshire fog is also present growing in scattered clumps within wetter areas of the grassland. Scattered rowan trees and clumps of bracken are also present.
213		Running Water A continuation of stream described in TN77. In this location the stream widens to approximately 1.5m, but remains approximately 10-40cm deep with a rock / gravel substrate and peat-stained water. The banks are dominated by moisture-loving grasses and rushes including Yorkshire fog and soft rush, along with bracken and foxglove.

Target Note No.	Photograph:	Habitat Type and Description:
214 & 215		Marshy Grassland Marshy grassland as described in TN209.
216 - 218		Semi-improved Acid Grassland and Scattered Bracken Bracken is dominant within these areas and comprises up to 75% of vegetation cover. However, the bracken is scattered and interspersed throughout with areas of semi-improved acid grassland (as described in TN212) and small amounts of exposed rock.
219		Marshy Grassland Purple moor grass and soft rush dominated marshy grassland with these species accounting for 80% and 15% of the sward respectively. The area is not heavily grazed and thus the sward is up to 50cm height in places. As a result of the high sward broad-leaved herbs are limited with only scattered tormentil noted.

Target Note No.	Photograph:	Habitat Type and Description:
220 - 222		Marshy Grassland Marshy grassland as described in TN219, except only approximately 70% cover of purple moor grass, and wavy hair grass also now abundant within the sward.
223		Bare Ground Area of bare ground created by regular vehicle access.
224		Semi-improved Acid Grassland and Scattered Bracken Habitat as described in TN216 – 218 with the addition of small amounts of scattered gorse scrub also present. Gorse and bracken in total account for approximately 50-60% of vegetative cover but with these plants mostly below 50cm in height. Scattered rowan trees up to 5m in height also present.

Target Note No.	Photograph:	Habitat Type and Description:
225		Semi-improved Acid Grassland Heavily grazed semi-improved acid grassland dominated by common bent, sweet vernal grass, mat-grass and annual meadow grass. The sward in many places is grazed down to 5cm. Broad-leaved herbs are present and scattered throughout the grassland and comprise tormentil, sheep's sorrel and heath bedstraw. The grassland is interspersed with clumps of soft rush up to 50cm in height.
226		Marshy Grassland Marshy grassland as described in TN220 – 222.
227		Dry Ditch Dry ditch vegetated almost entirely with soft rush. The ditch is approximately 1m wide and the ditch base is approximately 50cm below the surrounding ground level.

Target Note No.	Photograph:	Habitat Type and Description:
228		Marshy Grassland, Acid Flush Marshy grassland dominated by soft rush (up to 60% cover), with wavy hair grass, sweet vernal grass, heath rush and mat-grass comprising the majority of the remaining sward. The grassland is interspersed with mounds of <i>Polytrichum</i> moss. Bilberry and heath bedstraw grow within and through the mounds of <i>Polytrichum</i> but are heavily grazed thereafter.
229		Semi-improved Acid Grassland Semi-improved acid grassland which is subject to moderate levels of grazing. The grassland is dominated by mat-grass and wavy hair grass, with purple moor grass and soft rush scattered throughout but accounting for less than 10% cover. The grassland is growing on top of a plateau and is grazed down to 10cm. Heathland plants present include heath rush, bilberry and crowberry, however, these are all rare within the sward.
230 & 231		Marshy Grassland, Acid Flush Marshy grassland as described in TN228, except soft rush cover is up to 80%.

Target Note No.	Photograph:	Habitat Type and Description:
232		Semi-improved Acid Grassland Semi-improved acid grassland as described in TN229, except with scattered <i>Polytrichum</i> mounds present.
233		Marshy Grassland Narrow strip of purple moor grass dominated marshy grassland (approximately 90% cover), with soft rush and wavy hair grass present and scattered throughout. The grassland is growing in a slight valley and thus is likely to be wetter than surrounding areas. Broad-leaved herbs limited to rare occurrence of common heather.
234 - 235		Semi-improved Acid Grassland Semi-improved acid grassland as described in TN229 except with common heather and deergrass present but rare.

Target Note No.	Photograph:	Habitat Type and Description:
236		Marshy Grassland, Acid Flush Marshy grassland dominated by soft rush and purple moor grass, with wavy hair grass also abundant. The grassland also contains frequent mounds of <i>Polytrichum</i> moss, amongst which heath bedstraw and crowberry are also present.
237		Marshy Grassland An area of heavily grazed marshy grassland which is dominated by purple moor grass. The heavy grazing means the sward is on average approximately 10cm in height, which is interspersed with occasional scattered clumps of soft rush.
238		Continuous Bracken An extensive stand of bracken which has colonised around an area of scattered rock exposure. The bracken is on average less than 50cm tall and in some places gives way to exposed rock.

Target Note No.	Photograph:	Habitat Type and Description:
239 - 243		Semi-improved Acid Grassland Semi-improved acid grassland dominated by wavy hair grass, mat-grass and sheep's fescue, with purple moor grass frequent but not dominant. The sward is heavily grazed down to 15cm. Mounds of <i>Polytrichum</i> moss are frequent, within which bilberry and common heather often occur.
244 - 245		Marshy Grassland, Acid Flush Marshy grassland dominated by purple moor grass and soft rush. The area is not subject to heavy grazing and thus the sward is up to 50cm in height. Mounds of <i>Polytrichum</i> moss are frequent throughout the grassland.
246		Dry Heath Small narrow strip of dry heath occurring adjacent to a fence line. Dwarf shrubs within the heath comprise common heather and bilberry which account for approximately 40% cover in the area. The heath occurs on less than 50cm depth of peat and is interspersed with grazed grassland dominated by wavy hair grass, purple moor grass and mat-grass. Reindeer lichen and crowberry are also present but only occasionally.

Target Note No.	Photograph:	Habitat Type and Description:
247		Running Water A small stream approximately 0.5 -1m wide with a water depth of 10 – 50cm. There is no vegetation within the main channel but is bordered either side by marshy grassland.
248		Marshy Grassland Marshy grassland dominated by purple moor grass, soft rush and creeping bent, with wavy hair grass also abundant. The sward is grazed to an average height of 25cm. Broad-leaved herbs are scarce with tormentil, common heather, cross-leaved heath and bilberry all present but rare within the sward.
249		Marshy Grassland Marshy grassland as described in TN245 and TN248.

Target Note No.	Photograph:	Habitat Type and Description:
250 & 251		Rock Exposure and Dry Heath Mosaic Areas of exposed rock interspersed with common heather and bilberry up to 30cm in height. Interspersed within the heathland plants are small areas of acid grassland and the eastern side of the rock exposure is flanked by a band of bracken.
252		Semi-improved Acid Grassland Heavily grazed semi-improved acid grassland with an average sward height of 10cm. The grassland sward is dominated by mat-grass and wavy hair grass, with deergrass also abundant. The grassland is growing on top of a broad mound. There are very few broad-leaved herbs noted within the grassland with only rare occurrences of tormentil, common heather and bilberry noted.
253		Marshy Grassland Soft rush dominated marshy grassland, with soft rush accounting for approximately 95% of vegetation cover. Grassland is not heavily grazed and the sward is up to 1m in height.

Target Note No.	Photograph:	Habitat Type and Description:
254 & 255		Dry Heath Small areas of dry heath dominated by bilberry (approximately 40% cover) with small amounts of common heather also present. Interspersed amongst the shrub vegetation are patches of semi-improved acid grassland dominated by wavy hair grass.
256		Semi-improved Acid Grassland Semi-improved acid grassland as described in TN252 which is growing on a plateau. Common heather, bilberry and crowberry are all present within the grassland but are rare and where present are heavily grazed.
257 & 258		Marshy Grassland Marshy grassland dominated by soft rush (which accounts for approximately 90% of the vegetation cover) with purple moor grass dominating in scattered areas. Most of the sward is high with an average height of 1m. However, where open areas exist common heather, cross-leaved heath and crowberry are present albeit occasionally.

Target Note No.	Photograph:	Habitat Type and Description:
259		Semi-improved Acid Grassland Semi-improved acid grassland dominated by wavy hair grass, sheep's fescue and mat-grass, with soft rush and purple moor grass both present but occasional. The grassland is heavily grazed down to approximately 10cm. <i>Polytrichum</i> moss is common within the grassland, whilst heath rush, bilberry and crowberry are all present but rare and heavily grazed.
260		Marshy Grassland Marshy grassland dominated by purple moor grass, with wavy hair grass also abundant. The grassland is grazed down to 20-25cm in height and is relatively uniform in terms of structure. Cross-leaved heath, common heather and bilberry are both present but their distribution is scattered and localised and they are not a major component of the grassland. Cotton grass, deergrass and tormentil are all present but rare.
261		Dry Heath Small area of dry heath growing on a steep slope. Bilberry dominates the heath vegetation and accounts for 75% of the vegetation cover. The bilberry is heavily grazed and averages 30cm in height. Acid grass species including wavy hair grass, mat-grass and common bent are interspersed amongst the bilberry.

Target Note No.	Photograph:	Habitat Type and Description:
262		Marshy Grassland Large expanse of marshy grassland dominated by purple moor grass and soft rush which together account for 90% of the vegetation cover. Soft rush is locally dominant within any depressions and shallow valleys which are likely to collect water. Purple moor grass tends to dominate in the other areas. Broad-leaved species are very limited and are mainly restricted to occasional bilberry, heath bedstraw and sheep's sorrel in the more open and heavily grazed areas.
263		Rock Exposure, Dry Heath and Acid Grassland Mosaic Variable mosaic habitat comprising small, scattered areas of exposed rock which are largely devoid of vegetation, amongst dry heath and acid grassland. Grassland areas comprise wavy hair grass, mat-grass and common bent, with heath rush also abundant. The grassland is heavily grazed with the sward height averaging 5cm in most places. Dry heath areas are dominated by increased cover of common heather and bilberry. <i>Polytrichum</i> moss is abundant throughout the habitat.
264 - 265		Marshy Grassland Purple moor grass dominated (approximately 70% cover) marshy grassland which is grazed down to 20-30cm in height. Wavy hair grass and creeping bent are also frequent and scattered throughout the grassland. Common heather, heath rush and crowberry are all present but very occasional.

Target Note No.	Photograph:	Habitat Type and Description:
266		Improved Grassland Three improved grassland fields bounded by wire fencing. The grassland sward is dominated by perennial ryegrass and cock's-foot <i>Dactylis glomerata</i>, with broad-leaved herbs limited to white clover, ribwort plantain and creeping buttercup. The grassland is regularly managed and is cut down to approximately 5cm in height.
267		Marshy Grassland Marshy grassland dominated by soft rush and Yorkshire fog, with tufted hair grass and creeping bent also abundant. The grassland is only lightly grazed and as a result the sward is up to 60cm height in some areas. Broad-leaved herbs very scarce within the grassland, although greater bird's-foot-trefoil <i>Lotus corniculatus</i> was noted in a few areas.
268		Marshy Grassland and Scattered Bracken Marshy grassland dominated by purple moor grass, common bent, sharp-flowered rush and wavy hair grass. The grassland is grazed but not heavily and has an average sward height of 30cm. Soft rush is locally dominant in the wettest areas. Scattered bracken stands occur throughout the grassland in the drier areas. Broad-leaved herbs limited to tormentil and heath bedstraw which are rare within the sward.

Target Note No.	Photograph:	Habitat Type and Description:
269		Semi-improved Acid Grassland and Scattered Scrub Semi-improved acid grassland dominated by wavy hair grass, common bent and mat-grass, with purple moor grass and soft rush present but not dominant. The grassland is grazed down to approximately 20cm in height, however, some areas are subject to increased grazing and in these areas the sward is no more than 5cm. Scattered gorse is present within the grassland and in some areas has grown up to 1m in height. Broad-leaved herbs are very limited and comprise only heath bedstraw and tormentil.
270		Semi-improved Acid Grassland and Scattered Scrub Semi-improved acid grassland as described in TN269, except this area is not as heavily grazed and thus the sward averages approximately 30cm in height. Sweet vernal grass also noted to be present within the sward.
271		Semi-improved Acid Grassland and Scattered Scrub Semi-improved acid grassland as described in TN269 except this area has a varying topography with a series of large mounds and hollows. The grazing pressure in this area is higher and on average the sward is less than 10cm in height.
272	No Photograph Available	Rock Exposure Small area of exposed rock which is devoid of vegetation.

Target Note No.	Photograph:	Habitat Type and Description:
273		Semi-improved Acid Grassland and Scattered Scrub Semi-improved acid grassland as described in TN269.
274		Semi-improved Acid Grassland and Scattered Scrub Semi-improved acid grassland as described in TN269. The sward is open and grazed down to about 5 - 10cm in height. Occasional cross-leaved heath, common heath and bilberry within the sward but in total they account for <1% cover.
275		Marshy Grassland Marshy grassland comprising soft rush, purple moor grass, Yorkshire fog and sharp-flowered rush, with occasional sweet vernal grass and wavy hairgrass in the margins. The grassland is grazed but not heavily and has an average sward height of 30cm. There is surface water flow across the area. Broad-leaved herbs are limited to lesser spearwort in the wettest areas.

Target Note No.	Photograph:	Habitat Type and Description:
276		Marshy Grassland and Semi-improved Acid Grassland Mosaic An undulating area with a mosaic of semi-improved acid grassland (as described in TN274) occurring in the raised and drier areas, interspersed with marshy grassland (as described in TN275) in the lower wetter areas.
277	No Photograph Available	Dense Scrub Stand of continuous gorse scrub up to 1m in height.
278		Marshy Grassland Marshy grassland dominated by soft rush (up to 80% cover) and purple moor grass. The grassland is subject to grazing but the sward height remains approximately 30cm in height. No broad-leaved herbs were noted within the sward and are likely excluded by the high sward and vigorous grasses.
279 - 280		Marshy Grassland Grazed marshy grassland dominated by purple moor grass. The grassland sward is on average 25cm in height and is largely devoid of broad-leaved herbs. The grassland has some scattered heathland plants, including cross-leaved heath and common heath, however, these are very rare and confined to drier areas within the grassland.

Target Note No.	Photograph:	Habitat Type and Description:
281		Semi-improved Neutral Grassland Semi-improved neutral grassland growing on a steep undulating slope. The grassland could not be inspected closely but was seen to contain common ragwort <i>Senecio jacobaea</i>, broadleaved dock <i>Rumex obtusifolius</i>, greater bird's-foot-trefoil, creeping thistle, common knapweed <i>Centaurea nigra</i> and a range of umbellifers. The grassland was not grazed at the time of survey but may be subject to periodic grazing. Industrial / earth-moving activities were taking place in various level areas on the slope. Japanese knotweed <i>Fallopia japonica</i> was noted growing on the slope and within the grassland and has potentially colonised the site via the stream described in TN282.
282		Running Water Stream approximately 2m wide with a moderate flow and rocky substrate. The stream channel is devoid of vegetation, however, the banks comprise semi-improved neutral grassland, occasional willow scrub and stands of Japanese knotweed.
283		Semi-improved Neutral Grassland Semi-improved neutral grassland as described in TN281, except these grassland fields are subject to cattle grazing. Most of the grassland is grazed to less than 20cm in height, however, the sward is longer at the margins of the field. The grassland sward is dominated by cock's foot and false oat grass <i>Arrhenatherum elatius</i>, with Yorkshire fog, creeping bent and timothy also present.

Target Note No.	Photograph:	Habitat Type and Description:
284		Broad-leaved Woodland Developing broad-leaved woodland comprised largely of common hawthorn, hazel and rowan growing on the steep slopes adjacent to the stream described in TN282. The woodland trees are still mostly below 10m in height and are not yet fully mature.
285		Marshy Grassland Purple moor grass dominated marshy grassland with soft rush also abundant. The sward is moderately grazed down to approximately 20cm in height. Deergrass is present but occasional, whilst cross-leaved heath, heath rush and bilberry are all present but rare.
286		Dry Heath / Acid Grassland Mosaic Sheep's fescue dominated grassland with occasional soft rush and heath rush. Grassland is interspersed with areas of frequent bilberry, common heather and cross leaved heath.

Target Note No.	Photograph:	Habitat Type and Description:
287		Marshy Grassland Marshy grassland as per TN285.
288		Running Water Stream approximately 1-1.5m wide and 10cm deep with an unvegetated water channel with rocky substrate. Parts of the stream are colonised either side with marshy grassland.
289		Semi-improved Acid Grassland Sheep's fescue dominated grassland with mat grass and wavy hair grass also abundant. Grassland is heavily grazed with a short sward approximately 5cm in height.

Target Note No.	Photograph:	Habitat Type and Description:
290		Rock Exposure, Dry Heath and Acid Grassland Mosaic A mosaic habitat comprising acid grassland and dry heath habitats (as described in TN286) with areas of exposed rock.
291		Marshy Grassland An enclosed field of marshy grassland dominated by purple moor grass and soft rush with a high sward (up to 1m height). Grazing animals are present within the field but the habitat does not appear to be regularly grazed. Mounds of <i>Polytrichum</i> sp. moss are present in occasional areas.
292		Running Water Stream which is 1-2m across and up to 30cm deep. The water channel is unvegetated and the stream has an exposed rocky substrate.

Target Note No.	Photograph:	Habitat Type and Description:
293		Dry Heath, Acid Grassland and Bracken Mosaic The steep banks down to the stream comprise a grazed mosaic of dry heath (mainly formed of common heather), acid grassland (dominated by sheep's fescue and mat grass, with occasional bilberry and purple moor grass) and scattered clumps of bracken. Some of the area is eroding and as a result areas of bare ground are also present.
294		Marshy Grassland Large expanse of purple moor grass dominated marshy grassland with locally abundant soft rush, and only occasional presence of bilberry and cross-leaved heath. Sward appears lightly grazed with an average sward height of 30cm. Small occasional areas of heavily grazed dwarf shrub are also present.
295		Marshy Grassland Soft rush dominated (up to 90% cover) marshy grassland with a high sward up to 60cm in height. Purple moor grass is present but only occasional with approximately 10% cover. Marsh thistle and heath bedstraw are both present but rare, whilst <i>Polytrichum</i> sp. moss forms a carpet between the bases of soft rush tussocks.

Target Note No.	Photograph:	Habitat Type and Description:
296		Semi-improved Acid Grassland Dry, heavily grazed acid grassland growing on the exposed slopes of Pitwellt Pool. The grassland is grazed down to <5cm and is dominated by fine leaved grasses, namely sheep's fescue, mat grass and wavy hair grass.
297		Semi-improved Acid Grassland and Dry Heath Mosaic Area of sheep fescue and bilberry dominated mosaic of acid grassland and dry heath. Purple moor grass is present but less dominant. Heath bedstraw and black sedge <i>Carex nigra</i> were also noted to be present but were not abundant.
298		Dry Ditch Small drainage ditch approximately 0.5m wide, which is damp in the bottom but with no standing water. Vegetation within ditch is dominated by soft rush, with broad buckler fern and bilberry on the low bund adjacent to the ditch.

Target Note No.	Photograph:	Habitat Type and Description:
299		Semi-improved Acid Grassland Heavily grazed semi-improved acid grassland dominated by purple moor grass, fescue <i>sp.</i> , sweet vernal grass and soft rush. Bilberry is present and frequent scattered within the grassland sward.
300		Semi-improved Acid Grassland Acid grassland as described in TN299 but with less soft rush and increasing amounts of bilberry, tormentil, and common heather, along with broom fork-moss (<i>Dicranum scoparium</i>).
301 & 302		Semi-improved Acid Grassland Semi-improved acid grassland as described in TN297 which is very closely grazed (<5cm sward height).
303	No Photo Available	Dry Heath Small area of dry heath dominated by grazed bilberry and common heather, interspersed with fine leaved grasses.

Target Note No.	Photograph:	Habitat Type and Description:
304		Marshy Grassland Area of wet grassland dominated by soft rush, purple moor grass and hare's tail cottongrass (<i>Eriophorum vaginatum</i>), with marsh marigold (<i>Caltha palustris</i>) at margins over flat-topped bog moss (<i>Sphagnum fallax</i>) and lustrous bog moss (<i>Sphagnum subnitens</i>). There are some small bog pools colonised by lesser spearwort, marsh violet (<i>Viola palustris</i>), bog pondweed (<i>Potamogeton polygonifolius</i>), common cotton grass, and bittercress (<i>Cardamine</i> sp.) with star sedge also present at the edges of bog pools. Sphagnum mosses (including: red bog moss (<i>Sphagnum capillifolium</i>); spikey bog moss (<i>Sphagnum squarrosum</i>); flat topped bog moss, feathery bog moss (<i>Sphagnum cuspidatum</i>)); are frequent across the area but never dominant, with small ditches present filled with hare's tail cotton grass. Other parts of the grassland are still wet but increasingly dominated by purple moor grass, with rare cross leaved heath, bilberry, marsh bedstraw (<i>Galium palustre</i>), star sedge, marsh thistle and soft rush. Deergrass is present and abundant on trodden areas and tracks.
305		Marshy Grassland Marshy grassland dominated by soft rush, or shorter sward acidic grassland with heath rush, fescues sp., sweet vernal grass, bedstraw (<i>Gallium</i> sp.), which slopes down toward the industrial estate to the south. As the habitat extends westwards it becomes increasing purple moor grass and soft rush dominated.

APPENDIX 02

Botanical Species List

	Species	Common Name
1	<i>Agrostis stolonifera</i>	creeping bent
2	<i>Anagallis tenella</i>	bog pimpernel
3	<i>Anthoxanthum odoratum</i>	sweet vernal grass
4	<i>Bellis perennis</i>	common daisy
5	<i>Briza media</i>	quaking grass
6	<i>Calluna vulgaris</i>	common heather
7	<i>Caltha palustris</i>	marsh marigold
8	<i>Carex binervis</i>	green-ribbed sedge
9	<i>Carex echinata</i>	star sedge
10	<i>Carex flacca</i>	glaucous sedge
11	<i>Carex nigra</i>	black sedge
12	<i>Carex otrubae</i>	false fox sedge
13	<i>Carex panicea</i>	carnation sedge
14	<i>Carex rostrata</i>	bottle sedge
15	<i>Centaurea nigra</i>	common knapweed
16	<i>Cerastium fontanum</i>	common mouse-ear
17	<i>Chamaenerion angustifolium</i>	rosebay willowherb
18	<i>Cirsium arvense</i>	creeping thistle
19	<i>Cirsium palustre</i>	marsh thistle
20	<i>Cirsium vulgare</i>	spear thistle
21	<i>Cladonia sp.</i>	reindeer lichen
22	<i>Corylus avellana</i>	hazel
23	<i>Crataegus monogyna</i>	common hawthorn
24	<i>Cynosurus cristatus</i>	crested dog's tail
25	<i>Dactylis glomerata</i>	cock's-foot
26	<i>Deschampsia cespitosa</i>	tufted hair grass
27	<i>Deschampsia flexuosa</i>	wavy hair grass
28	<i>Dicranum scoparium</i>	broom fork-moss
29	<i>Digitalis purpurea</i>	foxglove

	Species	Common Name
30	<i>Drosera rotundifolia</i>	round-leaved sundew
31	<i>Dryopteris dilatata</i>	broad buckler-fern
32	<i>Empetrum nigrum</i>	crowberry
33	<i>Equisetum</i> sp.	horsetail
34	<i>Erica tetralix</i>	cross-leaved heath
35	<i>Eriophorum angustifolium</i>	common cotton-grass
36	<i>Eriophorum vaginatum</i>	Hare's tail cotton-grass
37	<i>Fallopia japonica</i>	Japanese knotweed
38	<i>Festuca ovina</i>	sheep's fescue
39	<i>Gallium saxatile</i>	heath bedstraw
40	<i>Glyceria fluitans</i>	floating sweet-grass
41	<i>Holcus lanatus</i>	Yorkshire fog
42	<i>Juncus acutiflorus</i>	sharp flowered rush
43	<i>Juncus articulatus</i>	jointed rush
44	<i>Juncus bulbosus</i>	bulbous rush
45	<i>Juncus effusus</i>	soft rush
46	<i>Juncus squarrosus</i>	heath rush
47	<i>Lolium perenne</i>	perennial ryegrass
48	<i>Lotus corniculatus</i>	greater bird's-foot-trefoil
49	<i>Luzula multiflora</i>	heath woodrush
50	<i>Medicago lupulina</i>	black medick
51	<i>Menyanthes trifoliata</i>	bog bean
52	<i>Molinia caerulea</i>	purple moor grass
53	<i>Nardus stricta</i>	mat-grass
54	<i>Narthecium ossifragum</i>	bog asphodel
55	<i>Pinus sylvestris</i>	Scot's pine
56	<i>Plantago lanceolata</i>	ribwort plantain
57	<i>Plantago major</i>	greater plantain
58	<i>Poa annua</i>	annual meadow grass
59	<i>Polygala</i> sp.	milkwort
60	<i>Polytrichum</i> sp.	haircap moss
61	<i>Potamogeton</i> sp.	pondweed
62	<i>Potentilla erecta</i>	tormentil
63	<i>Prunella vulgaris</i>	common self-heal
64	<i>Prunus spinosa</i>	blackthorn
65	<i>Ranunculus aquatilis</i>	water crowfoot

	Species	Common Name
66	<i>Ranunculus flammula</i>	lesser spearwort
67	<i>Ranunculus repens</i>	creeping buttercup
68	<i>Rumex acetosa</i>	common sorrel
69	<i>Rumex acetosella</i>	sheep's sorrel
70	<i>Rhytidiadelphus squarrosus</i>	springy turf-moss
71	<i>Sagina procumbens</i>	procumbent pearlwort
72	<i>Salix caprea</i>	goat willow
73	<i>Senecio jacobaea</i>	common ragwort
74	<i>Sorbus aucuparia</i>	rowan
75	<i>Sphagnum capillifolium</i>	red bog moss
76	<i>Sphagnum cuspidatum</i>	feathery bog moss
77	<i>Sphagnum denticulatum</i>	cow-horn bog-moss
78	<i>Sphagnum fallax</i>	flat-topped bog moss
79	<i>Sphagnum palustre</i>	blunt-leaved bog moss
80	<i>Sphagnum papillosum</i>	papilose peatmoss
81	<i>Sphagnum squarrosum</i>	spikey bog moss
82	<i>Sphagnum subnitens</i>	lustrous bog moss
83	<i>Trichophorum germanicum</i>	deergrass
84	<i>Trifolium repens</i>	white clover
85	<i>Tussilago farfara</i>	coltsfoot
86	<i>Ulex europaeus</i>	gorse
87	<i>Urtica dioica</i>	common nettle
88	<i>Vaccinium myrtillus</i>	bilberry
89	<i>Viola palustris</i>	marsh violet
90	<i>Wahlenbergia hederacea</i>	Ivy-leaved bellflower

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