HORIZON NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project

6.4.40 ES Volume D - WNDA Development App D9-7 - Phase 1 Habitat Survey Technical Summary Report

PINS Reference Number: EN010007

Application Reference Number: 6.4.40

June 2018

Revision 1.0

Regulation Number: 5(2)(a)

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Horizon Internal DCRM Number: WN0902-JAC-PAC-APP-00142

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Horizon Nuclear Power (Wylfa) Ltd

Consultancy Report:
A Phase 1 Habitat Survey

November 2013

Dr John Fowbert

Document Number: B1496000/WP6-2/R001
Horizon Ref: W202.01-S5-PAC-REP-00015
Document Date: December 2015
Version: 3

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Document Control Sheet

BPP 04 F8
Version 15; March 2013

Project: Wylfa Power Station
Client: Horizon Nuclear Power (Wylfa) Ltd. Project No: B1496000
Document title: Phase 1 Habitat Survey
Ref. No: B1496000/WP6-2/R001

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DATE 25/11/2013	**Document status: FINAL**		

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DATE 16/10/2015	**Document status: FINAL**		

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DATE 16/12/2015	**Document status : FINAL**		

Executive Summary

Horizon Nuclear Power Wylfa Ltd. (Horizon) is currently planning to develop a new nuclear power station on Anglesey (the Wylfa Newydd Generating Station) as identified in the National Policy Statement for Nuclear Power Generation (EN-6). The Wylfa Newydd Project (the Project) will require a number of applications to be made under different legislation to different regulators. Jacobs UK Ltd (Jacobs) was commissioned to collect baseline data to inform the various applications, assessments and permits that will be submitted for approval to construct and operate the Wylfa Newydd Generating Station.

A Phase 1 habitat survey was undertaken of the area around the location of the Wylfa Newydd Generating Station in 2013. The study area covered all habitats within the Wylfa Newydd Development Area and a 500m buffer around it where access had been allowed.

Within the study area there are a number of statutory designated sites: one Special Area of Conservation (SAC), one Special Protection Area (SPA) and three Sites of Special Scientific Interest (SSSIs). There is also one non-statutory designated site, the Wylfa Head candidate Wildlife Site.

The survey assessed and categorised all areas of habitat within the study area and identified those where a more detailed (Phase 2) assessment would be appropriate. This included all designated sites.

The majority of land-use within the study area was for agricultural purposes; improved grassland accounted for 56.2%, poor semi-improved grassland 17.5% and arable land 4.8%. Semi-improved neutral grassland consisting of largely herb-rich hay meadows, accounted for 6.1% of the study area.

Outwith the statutory and non-statutory designated sites, coastal heathland, coastal grassland and some areas of semi-improved grassland were assessed as having conservation interest. Traditional field boundaries (cloddiau) were also assessed as having some conservation interest, although the quality of these varied across the study area.

No rare species were recorded during the survey. One national priority species (cornflower, *Centaurea cyanus*) was recorded but it formed part of a planted “wildflower mix”. However, five species of conservation interest, either because they are classed as uncommon or because they are in decline, were recorded.

Three invasive non-native species were recorded across the study area:

- Japanese knotweed (*Fallopia japonica*) was recorded at four locations;
- giant rhubarb (*Gunnera sp.)* was recorded in Cemaes Bay village; and
- montbretia (*Crocosmia x crocosmiiflora*) was recorded on cliffs on the outskirts of Cemaes Bay village.

All three species are listed on Schedule 9 of the Wildlife and Countryside Act and it is an offence to plant or otherwise cause these species to grow in the wild. It is likely that exclusion zones or specialist treatment and disposal would be required to prevent an offence being caused if either plant is disturbed. Additionally any material that is likely to contain fragments of these plants is classed as controlled

waste and would require appropriate permits being obtained prior to any off-site disposal.

Recommendations for further survey were made to target known areas/habitat types of conservation interest. These are:

- species-rich meadows;
- heathland areas and associated species of conservation interest;
- saltmarsh and shingle beach vegetation; and
- traditional field boundaries.

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Contents

1 Introduction

1.1 Overview

Horizon Nuclear Power Wylfa Ltd. (Horizon) is currently planning to develop a new nuclear power station on Anglesey as identified in the National Policy Statement for Nuclear Power Generation (EN-6). The Wylfa Newydd Project (the Project) comprises the proposed new nuclear power station (the Wylfa Newydd Generating Station), including the reactors, associated plant and ancillary structures and features, together with all of the development needed to support its delivery, such as highway improvements, worker accommodation and specialist training facilities. The Project will require a number of applications to be made under different legislation to different regulators. As a nationally significant infrastructure project under the Planning Act 2008, the construction and operation must be authorised by a development consent order.

Jacobs UK Ltd (Jacobs) was commissioned by Horizon to undertake a full ecological survey programme within the vicinity of the Power Station Site. This work has included the gathering of baseline data to inform the various applications, assessments and permits that will be submitted for approval to construct and operate the Power Station and Associated Development.

This report presents the results of the Phase 1 habitat survey undertaken by Jacobs' ecologists in 2013.

1.2 Wylfa Newydd Project

The Project includes the Wylfa Newydd Generating Station and Associated Development[1]. The Wylfa Newydd Generating Station includes two UK Advanced Boiling Water Reactors to be supplied by Hitachi-GE Nuclear Energy Ltd, associated plant and ancillary structures and features. In addition to the reactors, development on the Power Station Site (the indicative area of land and sea within which the majority of the permanent Wylfa Newydd Generating Station buildings, plant and structures would be situated) will include steam turbines, control and service buildings, operational plant, radioactive waste storage buildings, ancillary structures, offices and coastal developments. The coastal developments will include a Cooling Water System (CWS) and breakwater, and a Marine Off-Loading Facility (MOLF).

1.3 Site description

The Wylfa Newydd Development Area (the indicative areas of land and sea, including the Power Station Site, the Wylfa NPS Site[2] and the surrounding areas that would be used for the construction and operation of the Wylfa Newydd Generating Station) covers an area of approximately 380 ha. It is bounded to the north by the coast and the Existing Power Station. To the east, it is separated from Cemaes by a narrow corridor of agricultural land. The A5025 and residential

[1] Development needed to support delivery of the Wylfa Newydd Generating Station is referred to as Associated Development. This includes highway improvements along the A5025, park and ride facilities for construction workers, Logistics Centre, Temporary Workers' Accommodation, specialist training facilities, Horizon's Visitor Centre and media briefing facilities.

[2] The site identified on Anglesey by the National Policy Statement for Energy EN-6/NPS EN-6 as potentially suitable for the deployment of a new nuclear power station.

properties define part of the south-east boundary, with a small parcel of land spanning the road to the north-east of Tregele. To the south and west, the Wylfa Newydd Development Area abuts agricultural land, and to the west it adjoins the coastal hinterland.

The Wylfa Newydd Development Area includes the headland south of Mynydd-y-Wylfa candidate Wildlife Site. There is one designated site for nature conservation within the Wylfa Newydd Development Area; Tre'r Gof Site of Special Scientific Interest (SSSI). It is also within 1km of the Cae Gwyn SSSI, Cemlyn Bay Special Area of Conservation (SAC) SSSI, and the Ynys Feurig, the Skerries and Cemlyn Bay Special Protection Area (SPA).

Tre'r Gof SSSI is a small basin mire adjacent to the Existing Power Station, west of Cemaes. The area receives mineral-enriched waters from the surrounding boulder clay leading to the development of notable flora. It is the botanical interest that provides the reason for the designation of the site as a SSSI.

Cae Gwyn SSSI is located immediately to the south of the Wylfa Newydd Development Area to the west of Llanfechell. The SSSI comprises two wetland areas separated by an outcrop of rock with heathland vegetation. The southern wetland is confined by a rock basin and is dominated by bogmoss *Sphagnum* spp. and a wide variety of common wetland herbs. The northern wetland has a different flora containing denser areas of willow *Salix spp.* and common reed *Phragmites communis*.

1.4 Survey aims and objectives

The objective of the surveys is to characterise the environment and collect baseline data to inform the various applications, assessments and permits required to construct and operate the Wylfa Newydd Generating Station.

The Phase 1 habitat survey characterises the environment and record the inventory of habitats within the study area.

The aims included:

- identifying any designated or non-designated sites for nature conservation;
- classify all habitats according to standard Phase 1 habitat survey methodology;
- recording protected and invasive plant species;
- identifying further considerations and recommending further survey work as required with respect to habitats; and
- reporting on the findings from the above.

This report presents the findings of a background data search and Phase 1 habitat survey work undertaken in June and July 2013.

1.5 Previous work

A Phase 1 habitat survey was undertaken by Arup in 2012 (Arup, 2013) within the Power Station Site which was itself an update to surveys undertaken in 2009. Habitat surveys were first undertaken in 2009 with additional surveys being undertaken as the proposed development area changed (Arup, 2009).

The surveys identified that the most diverse habitat areas are situated predominantly along the coastal fringe with the exception of the Tre'r Gof SSSI. Wylfa Head and Trwyn Pencarreg were highlighted as areas of particular interest for maritime heathland. In addition, the presence of traditional field boundaries (stone walls with an earth top) was reported.

2 Methodology

2.1 Study area

The study area comprised the footprint of the Power Station Site and a 500m buffer. This is shown in Figure 1

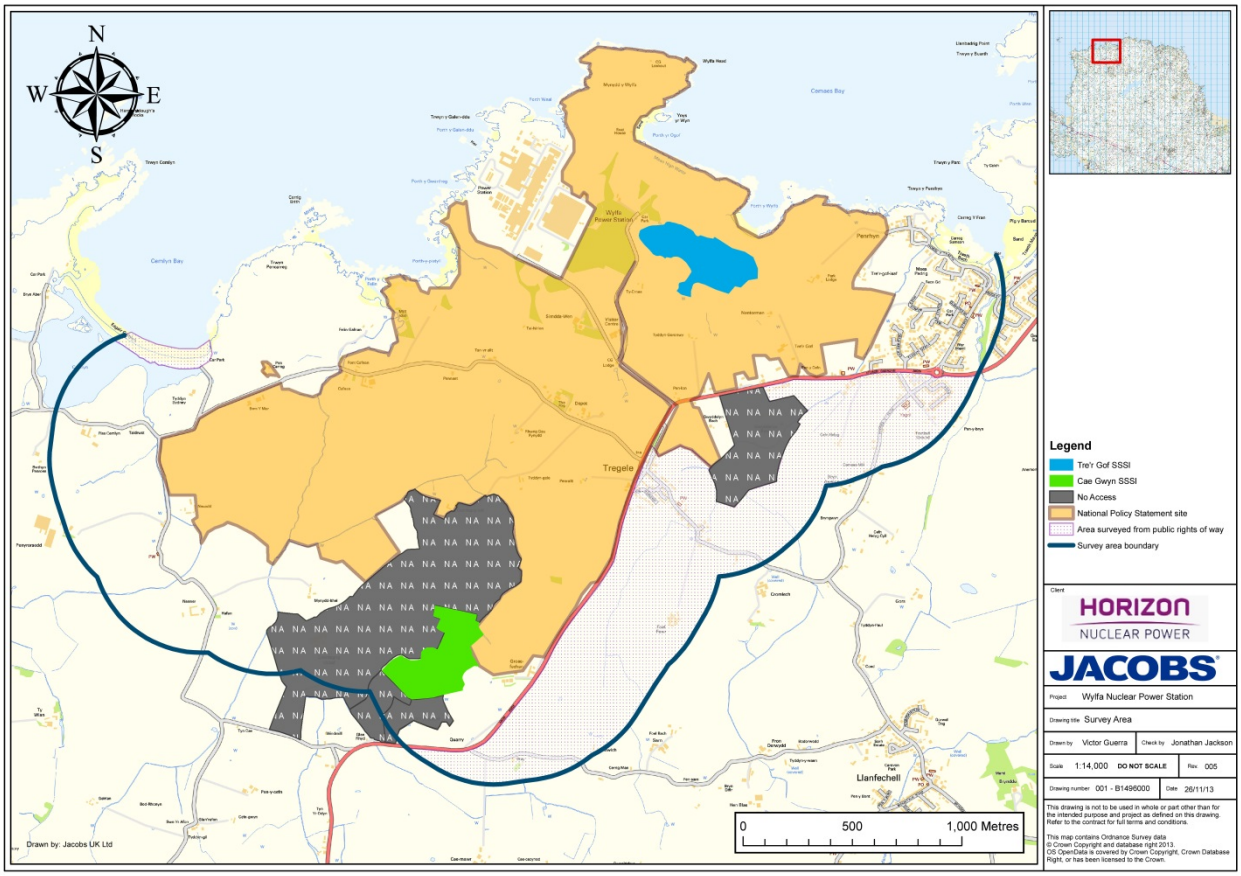

Figure 1: Study area

2.2 Desk study

A desk study was undertaken to identify sites of conservation interest within the study area and confirm their biological features. The previous study (Arup, 2013) was consulted and the following web resources were also used:

- Anglesey Nature: Natur Môn (http://angleseynature.co.uk/);
- Joint Nature Conservation Committee (JNCC) (http://jncc.defra.gov.uk/);
- Multi-Agency Geographical Information for the Countryside website, Coastal and Marine Resource Atlas (www.magic.gov.uk);
- Natural Resources Wales http://naturalresourceswales.gov.uk/?lang=en; and
- Wales Biodiversity Partnership (http://www.biodiversitywales.org.uk/en-GB/Species).

2.3 Field surveys

The survey used standard guidelines; *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit; Joint Nature Conservation Committee* (JNCC, 2010). Target notes were made where applicable; the abundance of plant species being recorded using the DAFOR (D=dominant; A=abundant; F=frequent; O=occasional; R=rare) scale. All habitats within the study area except for intertidal and marine habitats were assessed and classified.

Any incidental observations of evidence of protected species/species of conservation interest were also recorded.

Scientific and common names of plants are after Stace (2010).

2.4 Limitations

Access was not available to all land parcels within the study area. Areas not surveyed are clearly indicated on Figure 1. Some areas could only be surveyed from publicly accessible areas and as a result detailed observations of the vegetation or ecological features (i.e. signs of protected species/habitats) could not be fully made at:

- all land to the east of the A5025;
- small parcels of land near Ty'n-y-mynydd; and
- Cemlyn Bay (see below).

At Cemlyn Bay, during the tern breeding season, the coastal footpath was re-routed away from the ridge and through the grassland to the shingle beach below. As a result, only a small part of the grassland was accessible at this location.

3 Results

3.1 Desk study

3.1.1 Statutory designated sites

One SAC lies partly within the study area – the Bae Cemlyn/Cemlyn Bay SAC (site code: UK0030114). The site covers an area of 43.43 ha and is primarily designated for the presence of the Annex 1 habitat *Coastal lagoon*. The Cemlyn lagoon is considered to be the best example of a saline coastal lagoon in Wales (JNCC, 2011, 2013). The site also qualifies as a SAC due to the presence of the Annex I habitat *Perennial vegetation of stony banks*. The site also forms part of the larger Ynys Feurig, Cemlyn Bay and The Skerries SPA (site code: UK9013061). The SPA is designated for the presence of four species of breeding terns/Arctic tern (*Sterna paradisaea*), common tern (*S. hirundo*), roseate tern (*S. dougallii*) and Sandwich tern (*S. sandvicensis*) (JNCC, 2009).

Cemlyn Bay SSSI is 44.5 ha and is concurrently within the area of the SPA. It is a tidal lagoon enclosed by a shingle ridge with saltmarsh communities and populations of sea kale (*Crambe maritima*), sea radish (*Raphanus raphanistrum* ssp. *maritimus*[3]), brackish water-crowfoot (*Ranunculus baudotii*) and beaked tasselweed (*Ruppia maritima*) (CCW, 2013c). The yellow horned-poppy (*Glaucium flavum*) is also present (CCW, 2013d). The main lagoon provides habitat for the terns which breed on low islands.

Most of the Cemlyn Bay designated site is managed by the North Wales Wildlife Trust/Ymddiriedolaeth Natur Gogledd Cymru (NWWT). The land is owned by the National Trust and has been leased by the NWWT since 1971 (http://www.northwaleswildlifetrust.org.uk).

Two other SSSIs are wholly within the study area; Tre'r Gof and Cae Gwyn.

Tre'r Gof SSSI is a representative example of rich fen habitat in north-west Wales (CCW, 2013a). It covers an area of 10.1 ha. There are stands of fen meadows which grade into a variety of other communities including fen, fen scrub and swamp. Of particular interest is the presence of a population of the marsh fern (*Thelypteris palustris*[4]) (CCW, 2013).

Cae Gwyn SSSI comprises two wetland areas, separated by an area of heathland with outcropping rock. It covers an area of 10 ha. The flora is distinguished by an abundance of royal fern (*Osmunda regalis*) which varies from very large old plants to young plants; other notable species are bog sedge (*Carex limosa*) and cranberry (*Vaccinium oxycoccus*) (CCW, 2013b).

3.1.2 Non-statutory designated sites

The desk study also found one statutory designated site within the study area, Trywyn yr Wylfa/Wylfa Head candidate Wildlife Site. This is a mixture of coastal grassland and heath (http://angleseynature.co.uk/wylfalnr.html).

[3] Formerly *Raphanus maritimus*
[4] Formerly *Thelypteris thelypteroides*

Table 1: Designated sites within the study area.

Site	Designations
Bae Cemlyn/Cemlyn Bay	SAC, SPA, SSSI, NWWT site
Tre'r Gof	SSSI
Cae Gwyn	SSSI
Trywyn yr Wylfa/Wylfa Head	candidate Wildlife Site

3.1.3 Biodiversity Action Plans

The Welsh Biodiversity Partnership, consisting of a steering group and a wider partnership, provide the leadership for biodiversity action priorities in Wales. Available on their website is a list of habitats and species of principal importance for conservation of biological diversity in Wales. The 36 terrestrial, coastal and freshwater habitats are listed in Table 2. There are also nineteen marine habitats including coastal saltmarsh.

Table 2: Terrestrial, coastal and freshwater habitats of principal importance for conservation of biological diversity in Wales.

Broad Habitat	Priority Habitat
Broadleaved, mixed and yew woodland	Traditional orchards
	Wood pasture and parkland
	Upland oak woodland
	Lowland beech and yew woodland
	Upland mixed ash woodland
	Wet woodland
	Lowland mixed deciduous woodland
Boundary and linear features	Hedgerows
Arable and horticultural	Arable field margins
Improved grassland	Coastal and floodplain grazing marsh
Neutral grassland	Lowland meadows
Calcareous grassland	Lowland calcareous grassland
	Upland calcareous grassland
Acid grassland	Lowland dry acid grassland
Dwarf shrub heath	Lowland dwarf shrub heath
	Upland dwarf shrub heath
Fen, marsh and swamp	Upland flushes, fens and swamps
	Lowland fens
	Purple moorgrass and rush pastures
	Reedbeds
Bogs	Lowland raised bog
	Blanket bog
Montane habitat	Mountain heaths and willow scrub
Rivers and streams	Rivers
Standing open waters and canals	Oligotrophic and dystrophic lakes
	Ponds
	Mesotrophic lakes
	Eutrophic standing waters
	Aquifer-fed naturally fluctuating water bodies
Inland rock	Inland rock outcrop and scree habitats
	Calaminarian grasslands
	Open mosaic habitats on previously developed land
	Limestone pavement
Supralittoral rock	Maritime cliff and slopes
Supralittoral sediment	Coastal sand dunes
	Coastal vegetated shingle

There are 77 vascular plant priority species listed for Wales (Appendix B), 67 lichen species/assemblages and 52 species of bryophyte (mosses and liverworts).

Anglesey's Biodiversity Action Plan (BAP) is undergoing a review during 2010-2015 (www.anglesey.gov.uk). Nineteen habitats and four plant species are listed on the current BAP (Table 3)

Table 3: Local priority habitats on Anglesey.

Local Priority Habitat
Coastal and floodplain grazing marsh
Coastal saline lagoons
Coastal sand dunes
Field edges
Flower-rich roadside verges
Gardens
Hedgerows
Lakes
Limestone pavement
Lowland fen
Lowland heathland
Maritime cliff and slope
Plantations
Ponds
River and stream
Sandy beaches
Seagrass beds
Wet reedbed
Woodland

The four local priority species are:

- Petalwort, a liverwort (*Petalophyllum ralfsii*);
- Shoredock (*Rumex rupestris*);
- Slender green feather moss (*Drepanocladus (Hamatocaulis) vernicosus*); and,
- Three-lobed water crowfoot (*Ranunculus tripartitus*).

3.2 Field surveys

3.2.1 Overview of habitat types

The Phase 1 habitat map produced from the results of the survey is shown in Figure 2. This map is also shown in greater detail in Appendix A.

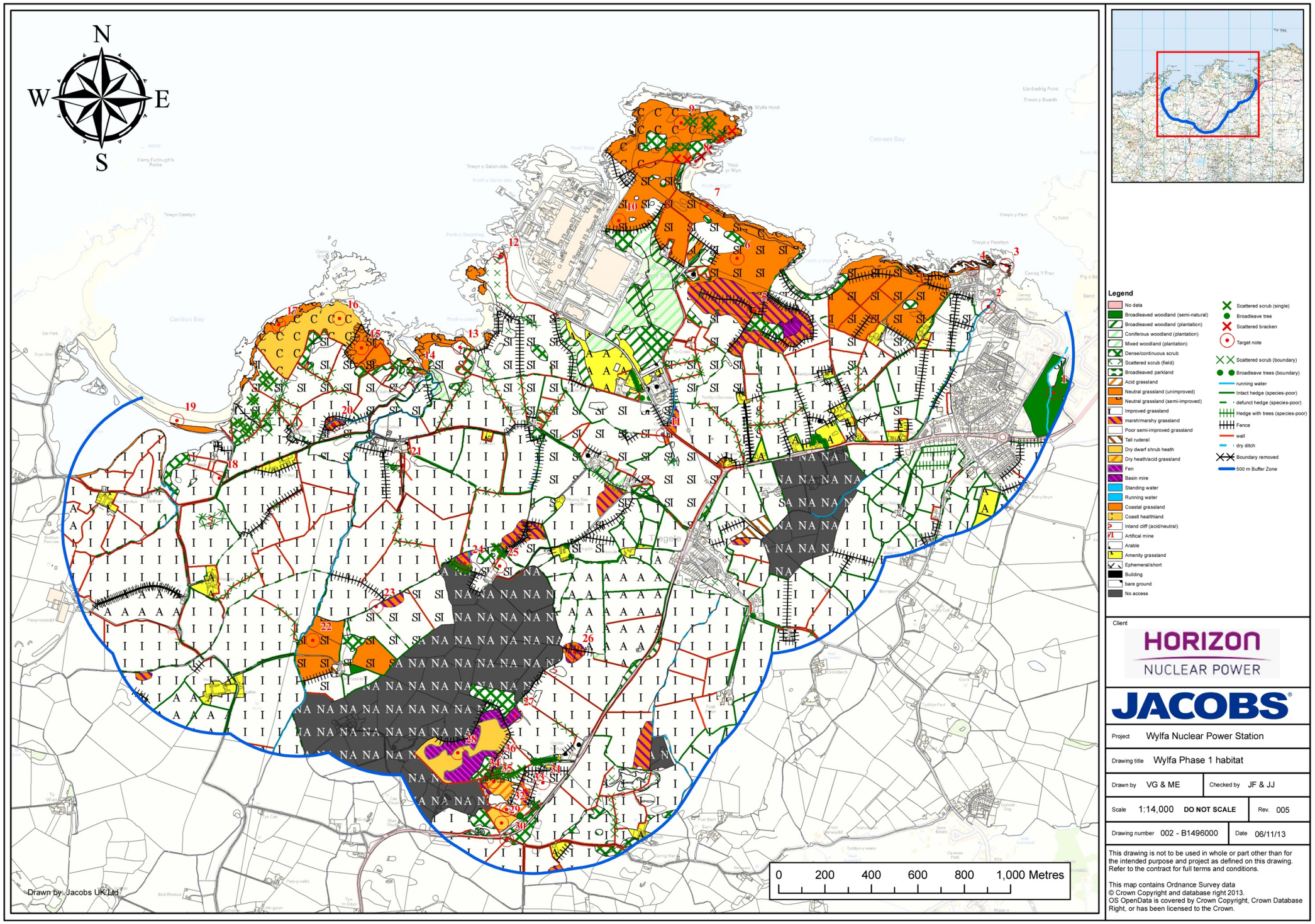

Figure 2: Phase 1 habitat map of study area

The majority of land within the study area (83.1%) was comprised of grassland of various types, for grazing, silage, etc., and of semi-improved or unimproved types. Of these, improved grassland accounted for 56.2% with poor semi-improved grassland accounting for another 17.5%.

Woodland and scrub habitats accounted for 6.5% of the area with nearly half of this comprising dense scrub (3.0%). Total plantation woodland (broad-leaved, coniferous and mixed) was 2.2% of the total area whilst semi-natural woodland (broad-leaved) was 0.6%.

Wetland habitats accounted for 2.9% of the total area. The majority of this (2.3%) was marshy grassland; the remainder (0.7%) comprised different types of mire habitat, including those recorded in the two SSSIs. Heathland habitat (including heath and/acid grassland mosaic) accounted for only 1.9% of the total area.

Other types of habitat accounted for 0.8% of the area. This included bare ground, tall ruderal vegetation and short perennial/ephemeral communities. Saltmarsh and shingle habitats were also recorded within the study area (see Target notes 12, 14 and 19) but due to their size and/or fragmented nature it was not possible to allocate areas to them. Maritime cliff vegetation also fell into this category (see Target note 8). A summary of habitat types recorded, the total area of the habitat, and the area by percentage of the whole study area is provided in Table 4.

Table 4: Habitats recorded within the study area.

Phase 1 Habitat Type	Total Area (ha)	Percentage
Improved grassland	343.3	56.2
Poor semi-improved grassland	106.7	17.5
Semi-improved neutral grassland	37.0	6.1
Coastal grassland	15.3	2.5
Amenity grassland	5.3	0.9
Acid unimproved grassland	0.6	0.1
Neutral unimproved grassland	0.5	<0.1
Grassland total	***508.6***	***83.1***
Dense scrub	18.5	3.0
Coniferous plantation woodland	8.2	1.4
Broad-leaved plantation woodland	5.0	0.8
Scattered scrub	4.1	0.7
Semi-natural broad-leaved woodland	3.8	0.6
Mixed plantation woodland	0.3	<0.1
Woodland and scrub total	***40.0***	***6.5***
Marshy grassland	14.0	2.3
Mire fen	3.4	0.6
Fen basin mire	0.5	<0.1
Wetlands total	***18.0***	***2.9***
Coastal heathland	6.3	1.0
Dry dwarf shrub heath	4.2	0.7
Dry heath/acid grassland mosaic	0.8	0.1
Heathland total	***11.4***	***1.9***
Other habitats	34	5.6

3.3 Habitat descriptions

3.3.1 Statutory designated sites

Cemlyn Bay SAC/SSSI, within the study area, comprised shingle, coastal grassland and a saline lagoon. Sea kale was a striking feature of the shingle beach (Photograph 1) with sea campion (*Silene uniflora*) and sea beet (*Beta vulgaris* ssp. *maritima*).

The area of grassland accessed was dominated by rough grassland species such as false oat-grass (*Arrhenatherum elatius*) and Yorkshire-fog (*Holcus lanatus*) both abundant with common ragwort (*Senecio jacobaea*) frequent.

Photograph 1: Sea kale at Cemlyn Bay. The coastal lagoon is on the left hand side.

Tre'r Gof SSSI comprised areas of wet scrub woodland dominated by goat willow (*Salix caprea*) with an understory of meadowsweet (*Filipendula ulmaria*), marshy grassland, basin mire and swamp vegetation. The basin mire vegetation was dominated by great fen-sedge[5] (*Cladium mariscus*) whilst the swamp vegetation was represented by a stand of common reed.

The marshy grassland comprised two distinctive areas. In much of the habitat rush species (*Juncus* spp.) were abundant forming a characteristic example of marshy grassland. However, the western part of the marshy grassland was less typical and has previously been classified as SD17 dune-slack vegetation at the NVC level (Budd, 2013); it was dominated by a variety of species which included water horsetail (*Equisetum fluviatile*), sharp-flowered rush (*Juncus acutiflorus*), water mint (*Mentha aquatica*) and meadowsweet. However, the fit to the SD17 dune-slack type was relatively poor and the nature of the vegetation SD17d *Potentilla anserina – Carex nigra* community (*Hydrocotyle vulgaris – Ranunculus flammula* sub-community, its location and relationship with adjacent types, indicated that at the Phase 1 level, marshy grassland was the most appropriate category. A small group

[5] Also known as saw-sedge

of northern marsh-orchid (*Dactylorhiza purpurella*) was also recorded towards the north-eastern edge of the area.

Cae Gwyn SSSI was a complex area of scrub, acid grassland and rock outcrops, with mires and heath. The scrub/heath comprised heather (*Calluna vulgaris*) and western gorse (*Ulex gallii*) vegetation with an acid grassland and bracken (*Pteridium aquilinum*) understory. Marshy/wetland comprised areas dominated by rush species or mire/big species such as carnation sedge (*Carex panicea*) and purple moor-grass (*Molinia caerulea*). Adjacent land parcels showed characteristics of the habitats within the SSSI. To the east of the site, wetland (fen and pond) habitat (Target note 34 and 36) and heathland and acid grassland habitats (Target note 35) were also found.

3.3.2 Non-statutory designated sites

Wylfa Head candidate Wildlife Site was comprised of mainly coastal[4] grassland with small flush areas. Towards the south of the site, patches of grassland became less maritime influenced and more akin to semi-improved grassland. Patches of scrub were scattered, especially on the eastern side. Also on this side it was evident that bracken would dominate the grassland later in the season. Small patches of heath were present on some of the rocky outcrops. The steep cliffs on the eastern side overlooking Porth yr Ogof were herb-rich with thrift (*Armeria maritima*), oxeye daisy (*Leucanthemum vulgare*) (Photograph 2), sea campion and sheep's-bit (*Jasione montana*) being distinctive features (Target note 8).

Photograph 2: Thrift and oxeye daisy on cliffs at Wylfa Head.

[4] This type of habitat is referred to as coastal for Phase 1 habitat surveys and maritime for NVC surveys

Photograph 3: Sheep's-bit and English stonecrop (*Sedum anglicum*) at Wylfa Head cWS.

3.3.3 Improved, poor semi-improved and amenity grassland

These were grasslands of low species richness or containing only common or "weedy" species. Grass species recorded were typical of agriculturally improved habitats and included perennial rye-grass (*Lolium perenne*), Yorkshire-fog, cock's-foot (*Dactylis glomerata*), crested dog's-tail (*Cynosurus cristatus*), sweet vernal-grass (*Anthoxanthum odoratum*), meadow foxtail (*Alopecurus pratensis*) and, in damper areas, marsh foxtail (*A. geniculatus*). Meadow-grass species, mainly smooth and rough meadow-grass (*Poa pratensis* and *P. trivialis*) were also present.

Herb species were similarly characteristic of these grassland types and included broad-leaved dock (*Rumex obtusifolius*), curled dock (*R. crispus*), common ragwort, creeping buttercup (*Ranunculus repens*), creeping thistle (*Cirsium arvense*), common sorrel (*Rumex acetosa*), hogweed (*Heracleum sphondylium*), lesser trefoil (*Trifolium dubium*), dandelion (*Taraxacum officinale*), common mouse-ear (*Cerastium fontanum*) and white clover (*Trifolium repens*). Less improved grasslands had a greater species richness including such species as meadow buttercup (*Ranunculus acris*), bulbous buttercup (*R. bulbosus*), yellow-rattle (*Rhinanthus minor*) and ribwort plantain (*Plantago lanceolata*). Where adjacent to coastal areas, spring squill (*Scilla verna*) was occasionally encountered. Highly improved grasslands comprised only a few grass or herb species.

Damp areas within the grasslands were characterised by stands of soft-rush which had a tendency to spread. Dense stands of the species were mapped as marshy grassland.

3.3.4 Semi-improved neutral grassland

The semi-improved neutral grassland was clearly agriculturally derived containing species characteristic of these habitats such as crested dog's-tail and perennial rye-grass. However, they contained a wider variety of herb species which were indicative of lower nutrient inputs. Species such as common knapweed (*Centaurea nigra),* red clover *(Trifolium pratense),* common bird's-foot trefoil *(Lotus corniculatus)*

and yellow-rattle. Meadow buttercup and bulbous buttercup were also recorded and pignut (*Conopodium majus*) was occasionally seen.

The vegetation varied widely. Semi-improved neutral grassland overlooking Porth yr Ogof (Target note 6) tended to be more improved than other examples, but also contained a greater range of species due to transitions to the wetland areas of Tre'r Gof SSSI to the south and coastal vegetation on the cliffs to the north. Grassland by Wylfa Head (Target note 10) appeared to be grazed and showed signs of enrichment with small clumps of creeping thistle and common nettle (*Urtica dioica*). Scrub species and common ragwort were also present. However, the soils appeared to be thinner here than in other areas and species such as sheep's-sorrel (*Rumex acetosella*), common centaury (*Centaurium eryrthraea*) and eyebright (*Euphrasia nemorosa*) were relatively common. In addition, yellow bartsia (*Parentucellia viscosa*) was recorded in this location (Photograph 4).

Photograph 4: Yellow bartsia near Wylfa Head.

Two fields near Porth y Felin were identified as being particularly herb-rich (Target note 15) (Photograph 5). Red clover and buttercup species were prominent features and, in parts, yellow-rattle was abundant. Yellow-rattle is a hemi-parasitic species, often parasitising grass species and reducing their prominence in grasslands. This can result in a greater biodiversity in hay meadows (Cuthbert, 2008; Pywell *et al*., 2004).

Photograph 5: Species-rich hay meadows near Porth y Felin.

3.3.5 Coastal grassland

Coastal grassland was generally limited to thin strips around Cemaes Bay (Target note 7) and Cemlyn Bay (Target note 17). It occurred in scattered patches elsewhere but was often relatively species-poor or contained species indicative of the surrounding semi-improved grasslands.

The coastal grassland also varied in its composition. In some areas around Cemaes Bay spring squill was particularly abundant in short tightly grazed grassland. Elsewhere, taller plants, such as sea campion, sheep's-bit, ribwort plantain and thrift were prominent features.

3.3.6 Woodland

The majority of woodland within the study area comprised dense scrub much of which was within Tre'r Gof SSSI and was mainly goat willow. Dense scrub was present scattered across the study area comprising western gorse patches. It is likely that the total area of dense scrub is under-recorded as many of these patches cannot be adequately mapped at the standard Phase 1 mapping scale. For instance, gorse was frequent in the area of coastal heathland and in the adjacent grasslands.

Across the entire study area woodland habitats were only a small component, although significant in certain areas, such as around Dame Sylvia's Mound and within Cemaes Bay village (Target note 1). At the former site, woodland was comprised of various plantation types including coniferous (various non-native species) mixed and broad-leaved woodland. The broad-leaved woodland comprised a range of native species. The ground flora was generally species-poor. In the older, dense coniferous areas, ground flora was largely absent. Much of the broad-leaved woodland was relatively young and the ground-flora here tended to be rough grassland with species such as Yorkshire-fog often dominant.

The ground flora in the woodland at Cemaes Bay village was species-rich but was heavily managed with areas set aside for amenity use, including an area of “flower-rich annuals” (Photograph 6). This included cornflower (*Centaurea cyanus*) which is a Welsh priority plant species (Appendix B).

Photograph 6: Planted flower-rich area in woodland in Cemaes Bay village.

3.3.7 Coastal heath

Coastal dwarf shrub heath was largely confined to an area on the western side of the Wylfa Newydd Development Area (Target note 16), although small patches occurred elsewhere particularly at Wylfa Head. Dwarf shrubs were a distinctive feature of the habitat comprising mainly heather and bell heather with cross-leaved heath in the damper areas. Western gorse was also prominent in parts although some clearance of this had clearly taken place. Within the coastal heath vegetation were patches of acid grassland, bracken, and wet flush areas. Towards the coast, the heath transitioned into coastal grassland.

A broad range of species was recorded in the heathland; as well as dwarf shrub species, flea sedge (*Carex pulicaris*), long-bracted sedge (*Carex extensa*), creeping willow (*Salix repens*), devil’s-bit scabious (*Succisa pratensis*), spring squill, heath milkwort (*Polygala serpyllifolia*), northern marsh-orchid and wild thyme (*Thymus praecox*).

The heather varied in its state and growth form; in some locations the plant had taken on a “carpet” growth form which can be indicative of heavy-grazing. However, in this location, it is likely to be a result of exposure and thin soils.

3.3.8 Saltmarsh

Saltmarsh vegetation was limited to small fragmented patches at Porth y Felin (Photograph 7) and due to its extent could not be included in the list of mapped habitats. It transitioned into scattered shingle vegetation towards the top of the beach which formed a narrow band. The vegetation was dominated by a small number of species with sea arrowgrass (*Triglochin maritima*), saltmarsh rush

(*Juncus gerardii*) and sea plantain (*Plantago maritima*) prominent, at least in parts. Thrift and sea aster (*Aster tripolium*) were also distinctive features.

Photograph 7: Saltmarsh vegetation at Porth y Felin.

3.3.9 Boundaries

Field boundaries comprised a number of different types including hedges, mortared walls, dry stone walls, post and wire fences and cloddiau. No hedges were species rich. Cloddiau are traditional boundary features and comprise a dry stone outer face with a compacted earth, or earth/rubble core. They may often have a hedge or ditch associated with them.

Within the study area, the cloddiau varied in their extent, form and condition. At some locations, the walls appeared intact but with little or no vegetation elsewhere the walls were in poor condition but vegetation growth was extensive. Some walls also featured lines of over-mature scrub, mainly hawthorn (*Crataegus monogyna*) or blackthorn (*Prunus spinosa*) (Photographs 8 and 9).

Due to the complex nature of many field boundaries, interpretation and application of the standard Phase 1 habitat mapping codes was problematic. The Phase 1 habitat maps shown on Figures 2 – 5 therefore frequently show combined habitat features. These have been done according to the following rules:

- Cloddiau have been classified as walls.
- Where there are cloddiau with tall scrub present in the earth bank these are represented as walls with overlaid scattered scrub.
- Where there are cloddiau with fences, this is recorded as a wall only as fences are generally of little ecological value.
- The determination of a boundary as being a species-poor defunct/gappy hedge or a line of scattered scrub was frequently very difficult. Where this is the case the species-poor defunct/gappy hedge classification was used in preference. This is due to scattered scrub not being a true Phase 1 habitat boundary classification. However, there are some linear sections of scattered

scrub that cannot be classified as any form of hedge and so have been recorded as such.

Photograph 8: Example of a traditional field boundary. The wall is partly dilapidated and mature blackthorn and hawthorn are distinctive features.

Photograph 9: Example of a traditional field boundary. The wall is in good condition with some turf remaining. Scrub (hedge) vegetation is sparse.

3.3.10 Invasive plants

The invasive non-native species, Japanese knotweed, was found at four locations across the study area; two sites were on road sides (Target notes 18, 21, 25 and 30). Montbretia and giant rhubarb were found at one location each in and around Cemaes Bay village (Target notes 4 and 2 respectively).

4 Discussion

4.1 Phase 1 Habitats

The majority of land within the study area comprised low quality agricultural habitats (arable, improved grassland, poor semi-improved grassland 479.3 ha, 78.3%). However, there was 37 ha of semi-improved neutral grassland (6.1% of the study area) which was mainly herb-rich hay meadows.

A number of the habitats recorded during the Phase 1 habitat survey are listed as priority habitats in Wales or Anglesey (Table 5). Not all of the habitats were of good quality and/or of a great extent. For instance, outwith the SSSIs and coastal edge, rock outcrops were mainly encountered in low quality grassland habitats and were subsequently of limited quality themselves.

Reedbed habitat was limited to a small area of common reed within the Tre'r Gof SSSI. Fen habitat occurred as small isolated patches in wetland areas such as at Tre'r Gof SSSI or Caerdegog Isaf. The saltmarsh vegetation was also limited in its extent being recorded only at Porth y Felin and not large enough to map.

Coastal vegetated shingle occurred wherever there were shingle beaches. However, much of the shingle is often unvegetated and the plants are scattered across a relatively wide area (Photograph 1). These habitats are inherently unstable due to the action of tides and storms resulting in a dynamic habitat.

Some of the semi-improved neutral grassland would be covered by the lowland meadows national priority habitat, whilst the coastal heath and dwarf shrub heath areas would be covered by the lowland dwarf shrub heath/lowland heath national/local priority habitats.

Table 5: Priority habitats recorded within the study area. The saline lagoon at Cemlyn Bay was not formally surveyed during this Phase 1 habitat survey.

Broad Habitat	Priority Habitat	
	Wales (National)	Anglesey (Local)
n/a	n/a	Gardens
Arable and horticultural	Arable field margins	Field edges
Boundary and linear features	Hedgerows	Hedgerows
Dwarf shrub heath	Lowland dwarf shrub heath	Lowland heathland
Fen, marsh and swamp	Lowland fens	Lowland fen
	Reedbeds	Wet reedbed
Inland rock	Inland rock outcrop and scree habitats	n/a
Neutral grassland	Lowland meadows	n/a
Rivers and streams	Rivers	River and stream
Standing open waters and canals	Ponds	Ponds
Woodland	Wet woodland	Woodland
	n/a	Plantations
Supralittoral rock	Maritime cliff and slopes	Maritime cliff and slope
Supralittoral sediment	Coastal vegetated shingle	n/a
Littoral sediment	Coastal saltmarsh	n/a
Sublittoral sediment	Saline lagoons	Coastal saline lagoons

Outwith those communities and habitat areas assessed in 2013, it is possible to tentatively allocate NVC community types to some habitats within the study area.

The sea kale dominated vegetation, the coastal vegetated shingle priority habitat, is likely to be the SD1 *Rumex crispus-Glaucium flavum* shingle community (Rodwell, 2000) as sea kale is found only in a very few communities of SD1.

Some of the grasslands are likely to be variants of MG5 *Cynosurus cristatus-Centaurea nigra* grassland. It is typical of grazed meadows but is becoming increasingly rare due to agricultural improvement (Rodwell, 1992); it is still widespread though often fragmented.

4.2 Species recorded within the study area

No rare species or species listed as national or local priority species were recorded during the survey except for cornflower in woodland at Cemaes Bay. However, as this species was planted (as part of a species-rich mix), it will not be discussed further. A number of other species of conservation interest were recorded including two plants classed as “uncommon” (sea kale and yellow bartsia).

Three invasive non-native species, Japanese knotweed, montbretia and giant rhubarb, were also recorded.

4.2.1 Great fen-sedge

Great fen-sedge was recorded only within Tre’r Gof SSSI. It is scattered across the British Isles but with a locally common distribution (Stace, 2010). In England and Wales it is largely restricted to calcareous sites (Preston *et al.*, 2002), and in Wales the majority of its known sites are in the north, especially on Anglesey. It has declined as a result of drainage, eutrophication and scrub invasion (Preston *et al.*, 2002).

4.2.2 Sea kale

Sea-kale (Photograph 1 and 10) occurred around the coasts of the study area on shingle but only in significant amounts at Cemlyn Bay. It has declined across its range probably due to habitat loss as a result of the construction of sea-defence works. However, it has increased elsewhere possibly as a result of reduced collection for culinary use (Preston *et al.*, 2002).

Although the plant does not have any formal conservation status it is classed as “uncommon” by Stace (2010) and nationally rare by Rodwell (2000). In the UK, the plant occurs mainly on the south and north-west coasts of England, the south-west coast of Scotland and the coast of north Wales and Anglesey (Preston *et al.*, 2002).

Photograph 10: Sea kale on a shingle beach.

4.2.3 Sheep's-bit

Sheep's-bit (Photograph 11) was recorded on the cliffs and steep banks around the coasts, and occasionally inland, within the study area. The plant generally has a westerly distribution in the British Isles occurring on maritime cliffs, grasslands and heaths, and inland on heathland and other habitats (Preston *et al.*, 2002). However, the plant is believed to be declining due to the loss of heaths and other habitats, including as a result of the growth of coarser vegetation from a decline in rabbit grazing.

Photograph 11: Sheep's-bit on coastal cliff habitat.

4.2.4 Spring squill

Spring squill occurred, often at a high frequency, in short coastal grassland vegetation within the study area. Spring squill has no conservation status and is not threatened as its sites are usually too exposed for any major threat from land-use change or vegetation succession (Preston *et al.*, 2002). The plant has a strong oceanic distribution occurring on western coasts and, in Wales, mainly around Anglesey, the Lleyn Peninsula and Pembrokeshire.

Photograph 12: Spring squill in coastal grassland

4.2.5 Yellow bartsia

Yellow bartsia (Photograph 4) was found scattered across parts of the Wylfa Head candidate Wildlife Site and the adjacent grassland. It has been found previously in the area. In 2010 it was found on the western edge of the Wylfa Head candidate Wildlife Site (SH 353 942) and again in 2011 when *c.* 200 plants were found scattered over an area of 12m x 10m (Bonner, 2012).

Although the plant does not have any formal conservation status it is classed as “uncommon” by Stace (2010). Yellow bartsia is also only known from one other location on Anglesey being recorded in 2004 on the banks of the A55 near Caergeiliog (SH 3079) (Bonner, 2012), indeed the most recent national botanical survey did not record it in the area (Preston *et al.*, 2002). However, the plant is known to be increasing northwards and eastwards in Britain, largely through introductions from seed mixtures (Preston *et al.*, 2002).

Like yellow-rattle, yellow bartsia is a hemiparasitic annual (it invades the roots of a variety of other plants) and reproduces entirely from seed. The species is often included in the seed mix for enhancing species richness of grassland areas as it inhibits grass species domination.

4.2.6 Invasive non-native species

All three species recorded, Japanese knotweed, giant rhubarb and montbretia are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to plant or otherwise cause these species to grow in the wild. The giant rhubarb and montbretia were adjacent to domestic properties in Cemaes Bay and are most likely to be garden escapes.

5 Recommendations

It is recommended that additional detailed surveys be undertaken, targeted at specific habitats. The two SSSIs wholly within the study area and the candidate Wildlife Site have been assessed in this way and would not require further assessment.

The areas of semi-improved neutral grassland (grazing and hay meadows) should be assessed in further detail. They can be very diverse and species-rich. In particular, the two small fields at Porth y Felin (Target note 15) and the horse-grazed fields (Target note 22) would benefit from additional survey to determine their conservation value. It is possible that they are good examples of Welsh priority habitats. Some of the other grasslands between Wylfa Head and Cemaes Bay also showed a high species-richness although, in general, they appeared to be of a lesser quality due to agricultural improvement.

The coastal heathland at Trwyn Pencarreg (Target note 16) and at Wylfa Head candidate Wildlife Site was subject to a detailed assessment (Jacobs, 2013). Lowland heath (of which coastal heath is an example) is a priority habitat at both the national and local level, but the vegetation at both sites is subject to scrub invasion from gorse, bracken and bramble. Wylfa Head candidate Wildlife Site also suffers from areas of agricultural improvement. Detailed mapping using hand-held data loggers could be undertaken in these habitats to assist in the determination of future management options and potential mitigation. This could also include mapping of the locally uncommon plant yellow bartsia as the available information indicates that Wylfa Head is an important site for this species on Anglesey. This information would allow a baseline assessment of the sites' condition to be undertaken for future monitoring.

Should it be considered likely that areas of shingle at Cemlyn Bay and saltmarsh vegetation at Porth y Felin could be affected by future development work, it would be appropriate to monitor changes in these communities. The saltmarsh vegetation, although limited, is uncommon in the immediate area. Sea kale is an important constituent of shingle vegetation and is at risk from habitat loss. Accurate mapping of these habitats would therefore be necessary to ensure the potential for loss could be assessed.

Cloddiau and hedgerows are an important landscape feature of the wider area and, as indicated, they occur in variable condition across the study area. Good quality examples also provide important wildlife habitat and serve as important wildlife corridors. A survey could be undertaken to map their presence more effectively, recording specific features such as height, width, degree of degradation, vegetation presence etc. indicating those which may provide biodiversity benefits.

Those areas which it was indicated could not be fully assessed (see Section 2.4) could be formally surveyed should the potential for adverse effects from development be determined. In particular, the small area of dwarf shrub heath (Target note 29) could be surveyed. Due to its proximity to Cae Gwyn SSSI there is a possibility that this site is ecologically significant.

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Appendix A Phase 1 habitat maps

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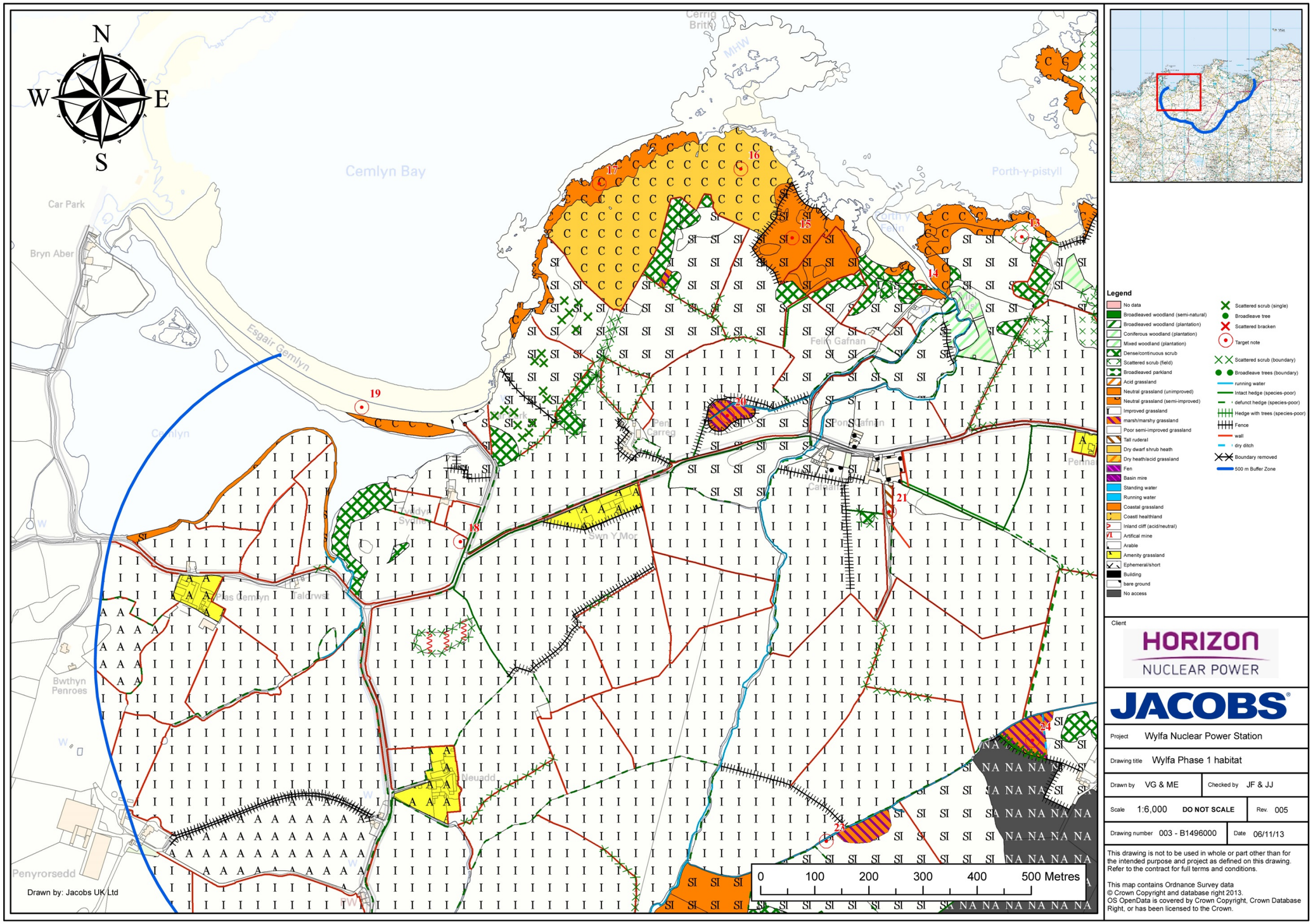

Figure 3: Phase 1 habitat map of study area

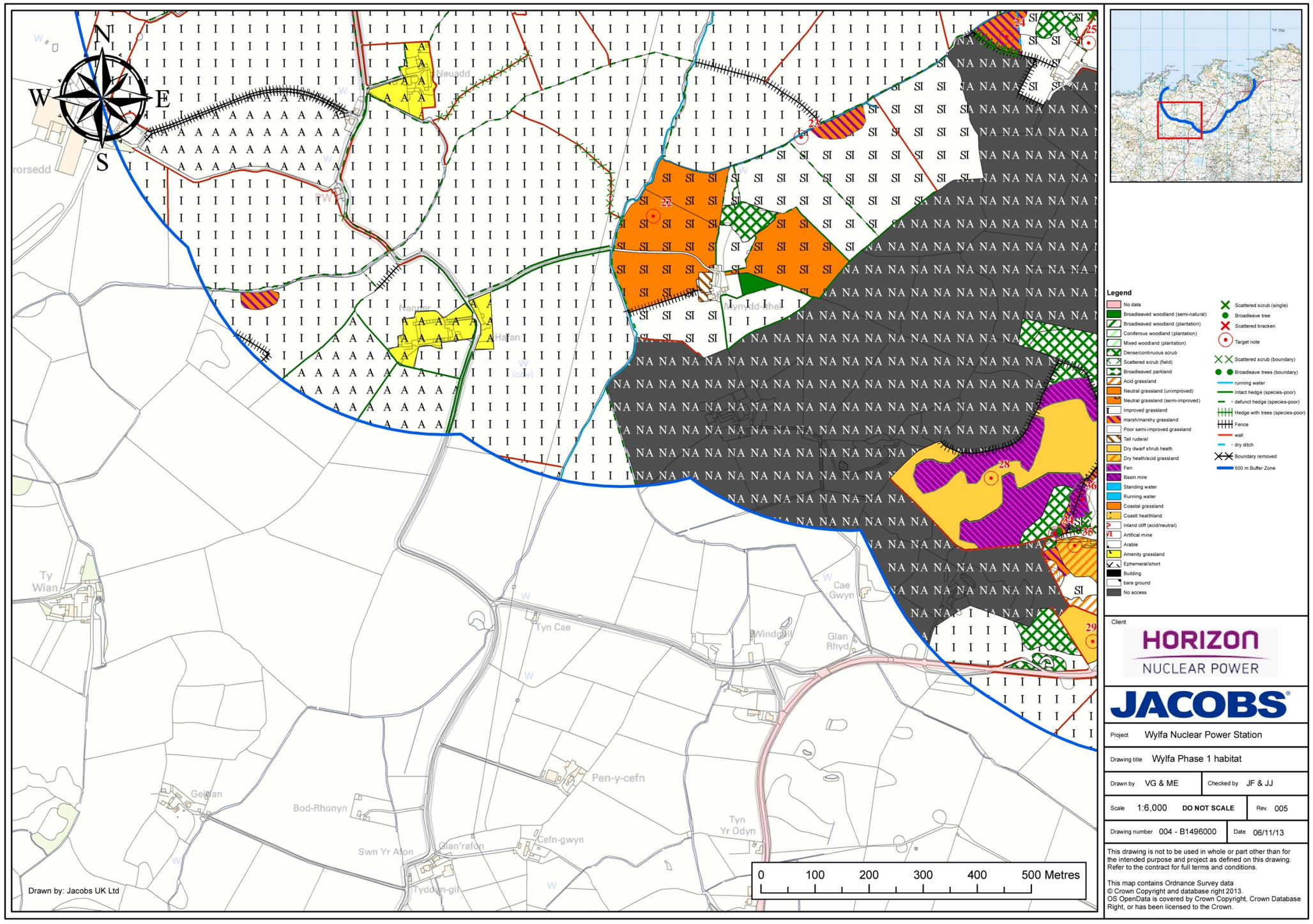

Figure 4: Phase 1 habitat map of study area

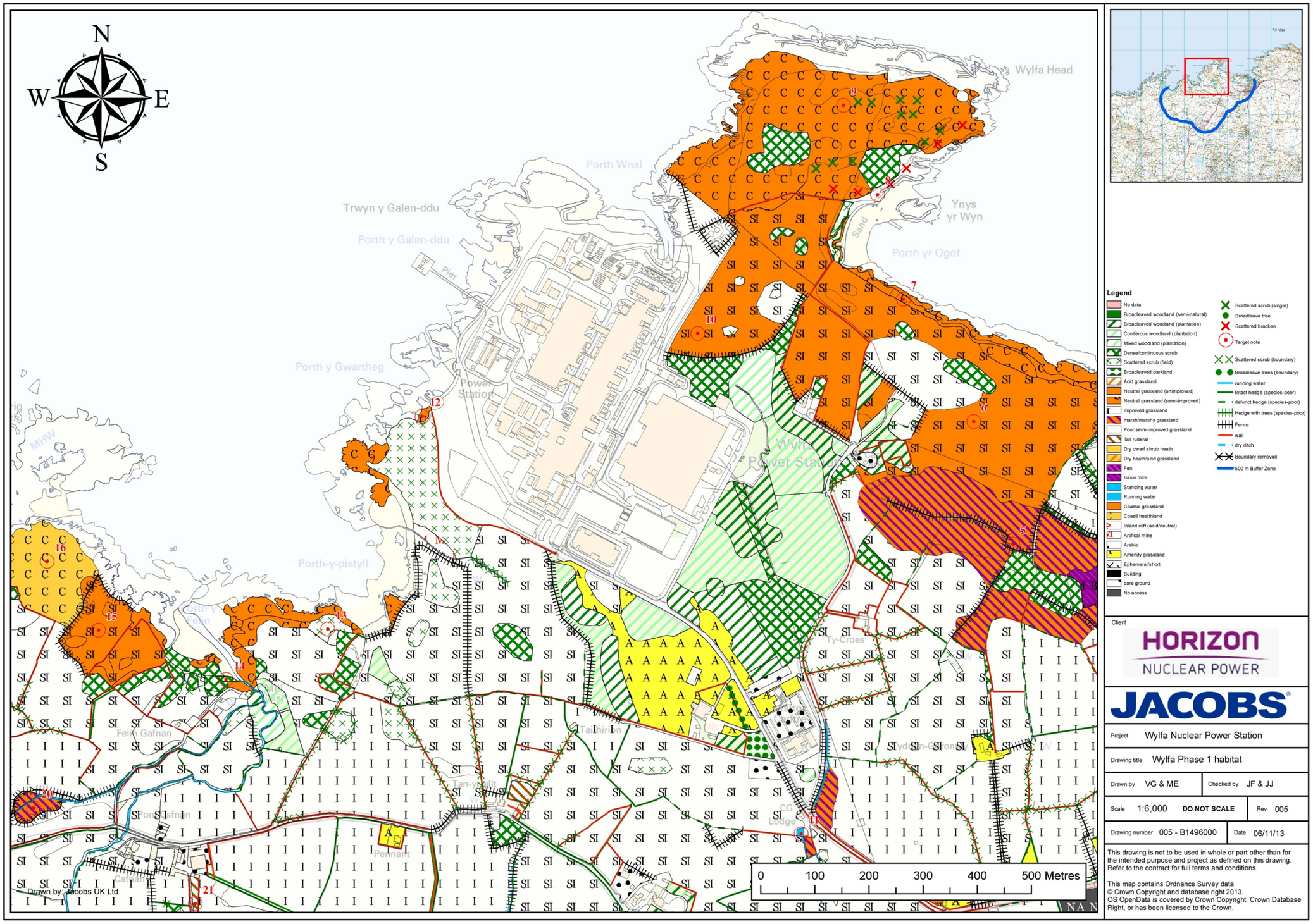

Figure 5: Phase 1 habitat map of study area

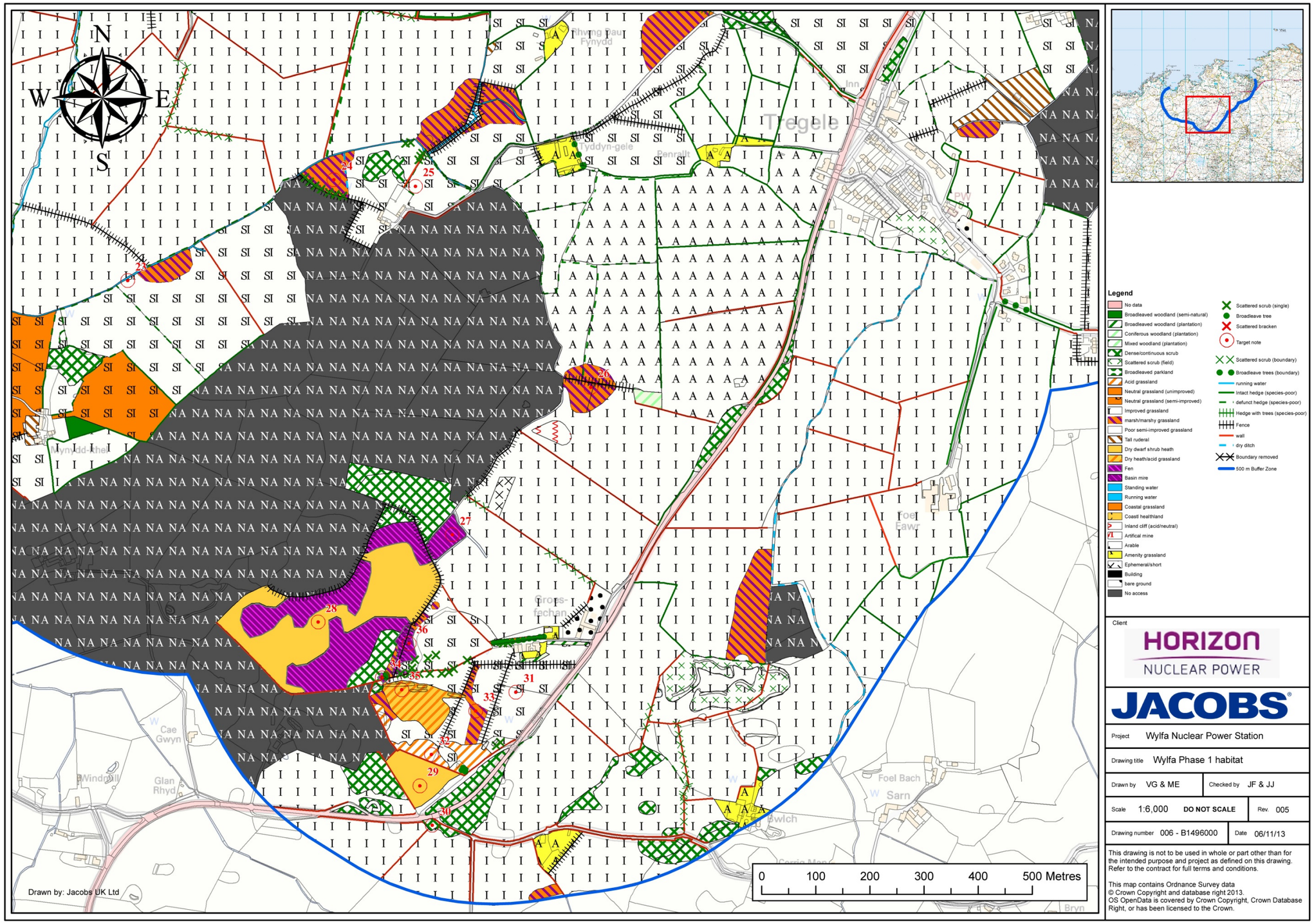

Figure 6: Phase 1 habitat map of study area

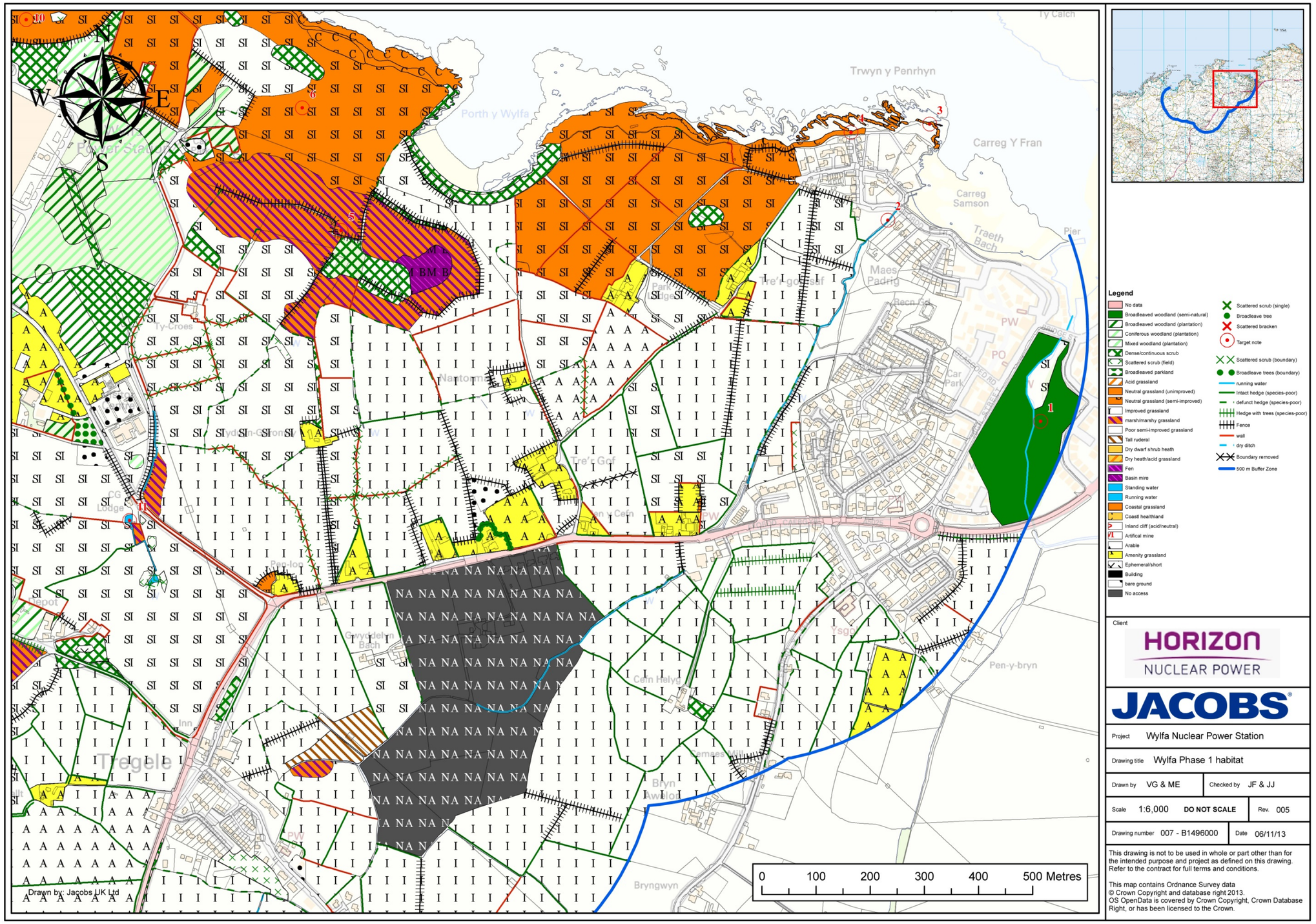

Figure 7: Phase 1 habitat map of study area

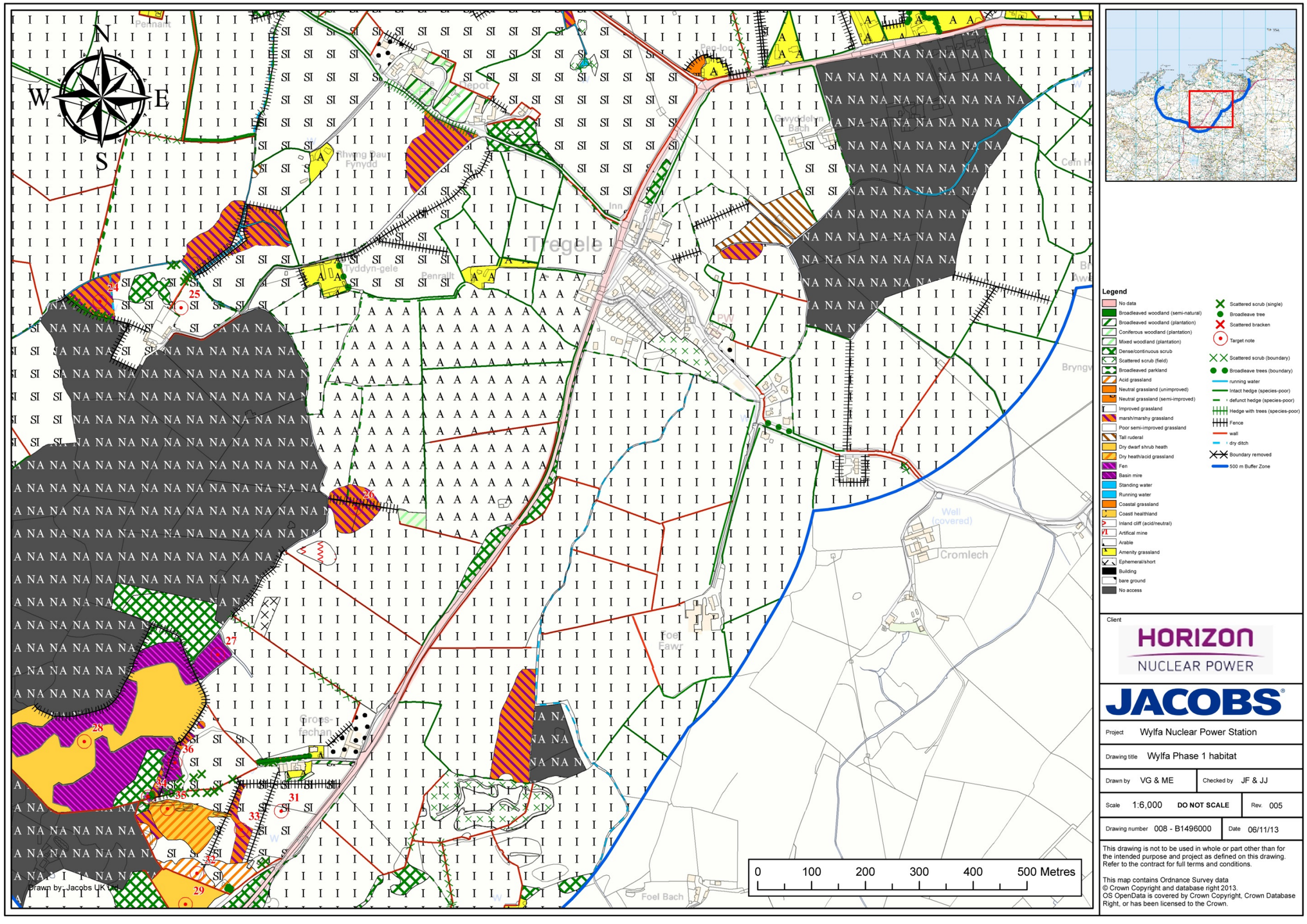

Figure 8: Phase 1 habitat map of study area

Appendix B Priority Plant Species in Wales

Vascular Plants

Scientific Name	Common Name
Artemisia campestris ssp. *maritima*	Field wormwood
Asparagus prostratus	Wild asparagus
Asplenium trichomanes ssp. *pachyrachis*	A maidenhair spleenwort
Blysmus compressus	Flat-sedge
Bupleurum tenuissimum	Slender hare's-ear
Campanula patula	Spreading bellflower
Carex divisa	Divided sedge
Centaurea cyanus	Cornflower
Centaurium scilloides	Perennial centaury
Cephalanthera longifolia	Narrow-leaved helleborine
Cerastium nigrescens (=*Cerastium arcticum*)	Arctic mouse-ear
Chamaemelum nobile	Chamomile
Cicendia filiformis	Yellow centaury
Clinopodium acinos	Basil thyme
Cotoneaster cambricus	Wild cotoneaster
Dactylorhiza purpurella var. *cambrensis* (=*Dactylorhiza purpurella* ssp. *cambrensis*)	A marsh orchid
Dactylorhiza viridis	Frog orchid
Dianthus armeria	Deptford pink
Euphrasia cambrica	An eyebright
Euphrasia officinalis ssp. *anglica* (=*Euphrasia anglica*)	Glandular eyebright
Euphrasia ostenfeldii	An eyebright
Euphrasia pseudokerneri	Chalk eyebright
Euphrasia rivularis	An eyebright
Euphrasia officinalis ssp. *monticola* (=*Euphrasia rostkoviana* ssp. *montana*)	An eyebright
Fumaria purpurea	Purple ramping-fumitory
Galeopsis angustifolia	Red hemp-nettle
Galeopsis segetum	Downy hemp-nettle
Galeopsis speciosa	Large-flowered hemp-nettle
Gentianella anglica	Early gentian
Gentianella campestris	Field gentian
Gentianella uliginosa	Dune gentian
Gymnadenia borealis	Northern fragrant orchid
Gymnadenia conopsea	Fragrant orchid
Gymnadenia densiflora	Marsh fragrant orchid
Hammarbya paludosa	Bog orchid
Hieracium spp. *Hieracium angustatiforme* *Hieracium breconicola* *Hieracium reticulum* *Hieracium radyrense* *Hieracium snowdoniense* *Hieracium subminutidens*	Six threatened endemic species
Hordeum marinum	Sea barley
Hypopitys monotropa (=*Monotropa hypopitys*)	Yellow bird's-nest
Hypopitys monotropa ssp. *hypophegea* (=*Monotropa hypopitys* ssp. *hypophegea*)	A bird's-nest
Hypopitys monotropa ssp. *monotropa*	A bird's-nest

Scientific Name	Common Name
(=*Monotropa hypopitys* ssp. *hypopitys*)	
Juniperus communis	Juniper
Juniperus communis ssp. *hemisphaerica*	A juniper
Liparis loeselii	Fen orchid
Luronium natans	Floating water plantain
Lycopodiella inundata	Marsh clubmoss
Lycopodium clavatum	Stag's-horn clubmoss
Matthiola sinuate	Sea stock
Melittis melissophyllum	Bastard balm
Mentha pulegium	Pennyroyal
Neotinea ustulata	Burnt orchid
Oenanthe fistulosa	Tubular water-dropwort
Ophrys insectifera	Fly orchid
Pilularia globulifera	Pillwort
Platanthera bifolia	Lesser butterfly-orchid
Poa glauca	Glaucous meadow-grass
Polystichum lonchitis	Holly-fern
Potamogeton compressus	Grass-wrack pondweed
Potentilla rupestris	Rock cinquefoil
Pseudorchis albida	Small-white orchid
Pulicaria vulgaris	Small fleabane
Ranunculus arvensis	Corn buttercup
Ranunculus tripartitus	Three-lobed water-crowfoot
Rumex rupestris	Shore dock
Salsola kali ssp. *kali*	Prickly saltwort
Saxifraga cespitosa	Tufted saxifrage
Scandix pecten-veneris	Shepherd's needle
Scleranthus annuus	Annual knawel
Scleranthus annuus ssp. *annuus*	Annual knawel
Silene gallica	Small-flowered catchfly
Sorbus eminens	A whitebeam
Sorbus leptophylla	A whitebeam
Sorbus leyana	Ley's whitebeam
Sorbus minima	A whitebeam
Stellaria palustris	Marsh stitchwort
Trollius europaeus	Globe-flower
Vicia orobus	Wood bitter-vetch
Viola lactea	Pale dog-violet
Woodsia ilvensis	Oblong woodsia

Lichens and lichen assemblages

Scientific Name	Common Name
Anaptychia ciliaris ssp. *ciliaris*	A lichen
Arthonia atlantica	A lichen
Bacidia circumspecta	A lichen
Bacidia incompta	A lichen
Biatoridium monasteriense	A lichen
Blarneya hibernica	A lichen
Bryoria smithii	A lichen
Buellia hyperbolica	A lichen
Calicium adspersum	A lichen
Caloplaca atroflava	A lichen
Caloplaca flavorubescens	A lichen
Caloplaca herbidella	A lichen
Caloplaca lucifuga	A lichen
Caloplaca luteoalba	Orange-fruited elm lichen
Chaenotheca phaeocephala	A lichen

Scientific Name	Common Name
Cladonia peziziformis	A lichen
Collema dichotomum	River-jelly lichen
Collema fasciculare	A lichen
Collema fragile	A lichen
Collema fragrans	A lichen
Cryptolechea carneolutea	A lichen
Endocarpon adscendens	A lichen
Fulgensia fulgens	A lichen
Fuscopannaria sampaiana	A lichen
Gomphillus calycioides	A lichen
*Graphina paucilocula*ta	A lichen
Gyalecta flotowii	A lichen
Heterodermia leucomela	Ciliate strap-lichen
Lecania chlorotiza	A lichen
Lecanographa amylacea	A lichen
Lecanora achariana	Tarn lecanora
Lecanora quercicola	A lichen
Lecanora sublivescens	A lichen
Leptogium brebissonii	A lichen
Leptogium cochleatum	A lichen
Lobarion community	A lichen community
Megalospora tuberculosa	A lichen
Melaspilea lentiginosa	A lichenicolous fungus
Mine site community	A lichen community
Opegrapha prosodea	A lichen
Parmelina carporrhizans (=Parmelina quercina)	A lichen
Parmeliella testacea	A lichen
Parmelinopsis horrescens	A lichen
Parmotrema robustum	A lichen
Peltigera venosa	A lichen
Pertusaria velata	A lichen
Physcia tribacioides	Southern grey physcia
Porina effilata	A lichen
Porina hibernica	A lichen
Pseudocyphellaria intricata	A lichen
Pseudocyphellaria lacerata	Ragged pseudocyphellaria
Pseudocyphellaria norvegica	A lichen
Pyrenula hibernica	A lichen
Pyrenula nitida	A lichen
Ramonia chrysophaea	A lichen
Ramonia dictyospora	A lichen
Rinodina isidioides	A lichen
Schismatomma graphidioides	A lichen
Stereocaulon delisei	A lichen
Stereocaulon symphycheilum	A lichen
Sticta canariensis	A lichen
Strangospora microhaema	A lichen
Strigula stigmatella var. *stigmatella*	A lichen
Synalissa symphorea	A lichen
Teloschistes flavicans	Golden hair-lichen
Toninia sedifolia	A lichen
Usnea articulata	A lichen
Usnea florida	A lichen
Wadeana dendrographa	A lichen

Bryophytes (mosses and liverworts)

Scientific Name	Common Name
Aloina rigida	Rigid Aloe-moss
Anomodon longifolius	Long-leaved tail-moss
Barbilophozia kunzeana	Bog paw-wort
Bartramia stricta	Rigid apple-moss
Bryum calophyllum	Matted bryum
Bryum gemmiparum	Welsh thread-moss
Bryum intermedium	Many seasoned thread-moss
Bryum knowltonii	Knowlton's thread-moss
Bryum marratii	Baltic bryum
Bryum muehlenbeckii	Muehlenbeck's thread-moss
Bryum warneum	Sea bryum
Buxbaumia aphylla	Brown shield-moss
Cephaloziella calyculata	Entire threadwort
Cephaloziella nicholsonii	Greater copperwort
Cephaloziella massalongii	Lesser copperwort
Daltonia splachnoides	Irish Daltonia
Dendrocryphaea lamyana (=Cryphaea lamyana)	Multi-fruited river moss
Dicranodontium asperulum	Orange bow-moss
Dicranum undulatum (=Dicranum bergeri)	Waved fork-moss
Didymodon tomaculosus	Sausage beard-moss
Ditrichum plumbicola	Lead-moss
Ditrichum subulatum	Awl-leaved ditrichum
Entosthodon pulchellus (=Funaria pulchella)	Pretty cord-moss
Fissidens curvatus	Portuguese pocket-moss
Fossombronia fimbriata	Fragile frillwort
Fossombronia foveolata	Pitted frillwort
Grimmia arenaria	Nodding Donn's Grimmia
Habrodon perpusillus	Lesser squirrel-tail moss
Leiocolea fitzgeraldiae	Fitzgerald's notchwort
Leptodon smithii	Prince of Wales feather-moss
Meesia uliginosa	Broadnerved hump-moss
Micromitrium tenerum	Millimetre moss
Oceanic Ravine Assemblage	A bryophyte assemblage
Orthotrichum obtusifolium	Blunt leaved Bristle-moss
Orthotrichum pumilum	Dwarf bristle-moss
Pallavicinia lyellii	Veilwort
Paraleptodontium recurvifolium	Drooping leaved beard-moss
Petalophyllum ralfsii	Petalwort
Pseudocalliergon lycopodioides	Large hookmoss
Radula voluta	Pale scalewort
Riccia canaliculata	Channelled crystalwort
Riccia nigrella	Black crystalwort
Scopelophila cataractae	Tongue-leafed copper-moss
Seligeria oelandica	Irish rock-bristle
Sematophyllum demissum	Prostrate signal-moss
Sphagnum balticum	Baltic bog-moss
Tomentypnum nitens	Woolly feather-moss
Tortula canescens	Dog screw-moss
Tortula cuneifolia	Wedge-leaved screw-moss
Tortula wilsonii	Wilson's pottia
Weissia levieri	Levier's beardless-moss
Weissia multicapsularis	Many-fruited Beardless-moss
Weissia squarrosa	Spreading-leaved beardless-moss

Appendix C Phase 1 Target Notes

Target Note	Grid Reference	Description
1	SH 37184 93302	Semi-natural Broad-leaved Woodland Amenity woodland along the Afon Wygyr with paths, mown and unmanaged grassland areas, man-made pools and sown wildflower mix areas. Areas of dense scrub and tall ruderal vegetation were also recorded, as well as garden escapes including snowberry (*Symphoricarpus albus*) (R) and green alkanet (*Pentaglottis sempervirens*) (R). The woodland canopy was dominated by sycamore (*Acer pseudoplatanus*) and oak (*Quercus* sp.), with alder (*Alnus glutinosa*) (O), ash (*Fraxinus excelsior*) (O), beech (*Fagus sylvatica*) (F), blackthorn (*Prunus spinosa*) (O), cherry (*Prunus* sp.) (O), elm (*Ulmus* sp.) (O), hawthorn (F), holly (*Ilex aquifolium*) (R), horse chestnut (*Aesculus hippocastanum*) (R) and rowan (*Sorbus aucuparia*) (R). An area of species-poor rough grassland of perennial rye-grass (F), false oat-grass (LD), common couch (*Elytrigia repens*) (F) and Yorkshire-fog (A) featured towards the northern parts of the woodland. Other species recorded: Alexanders (*Smyrnium olusatrum*) (O), bramble (*Rubus fruticosus*) (O), common nettle (O), creeping thistle (O), curled dock (O), foxglove (*Digitalis purpurea*) (O), great willowherb (*Epilobium hirsutum*) (LF), hard fern (*Blechnum spicant*) (O), hart's-tongue (*Phyllitis scolopendrium*) (LF), herb-Robert (*Geranium robertianum*) (F), hogweed (F), honeysuckle (*Lonicera periclymenum*) (O), ivy (*Hedera helix*) (LF), meadowsweet (O-R), navelwort (*Umbilicus rupestris*) (LF), nipplewort (*Lapsana communis*) (R), reed canary-grass (*Phalaris arundinacea)* (LA), red campion (*Silene dioica*) (O), tutsan (*Hypericum androsaemum*) (R) and wood avens (*Geum urbanum*) (O).
2	SH 36899 93651	Invasive non-native plant Giant rhubarb (*Gunnera sp.*) on side of small watercourse in Cemaes Bay. Probable escape from adjacent garden.
3	SH 36980 93819	Coastal grassland Coastal and cliff grassland with a wide range of herb species. More species-rich on the steeper cliffs and banks further west of the village. Species recorded: common bird's-foot trefoil (F), common sorrel (F), sweet vernal-grass (F), thrift (F), yarrow (F), glaucous sedge (*Carex flacca*) (LF), alexanders (O), buck's-horn plantain (*Plantago coronopus*) (O), cat's-ear (*Hypochaeris radicata*) (O), common knapweed (O), English scurvygrass (*Cochlearia anglica*) (O), kidney vetch (*Anthyllis vulneraria*) (O), orpine (*Sedum telephium*) (O), oxeye daisy (O), sea campion (O), sea plantain (O), sheep's-bit (R), spring squill (O) and English stonecrop (O).
4	SH 36831 93813	Invasive non-native plant

Target Note	Grid Reference	Description
	SH 36823 93815	Montbretia on cliffs by gardens at two locations. Likely to be garden escapes.
5	SH 35910 93654	Tre'r Gof SSSI Area of marshy grassland, basin mire and associated wetland habitats including wet woodland. Full details of the NVC survey can be found in Budd (2013).
6	SH 35885 93890	Semi-improved Neutral Grassland Species-rich grassland probably for hay making. Transitions into species-poor grassland but with species indicative of the adjacent SSSI and coastal grassland/cliff habitats colonising at various locations. Generally tall vegetation, but shorter nearer the coast and rocky outcrops. Farmyard manure had been spread. Grass species recorded: sweet vernal-grass (F), perennial rye-grass (F-LA), Yorkshire-fog (F), crested dog's-tail (F-LA), red fescue (*Festuca rubra*) (F). Herb species included: common bird's-foot trefoil (F), common knapweed (F), common sorrel (F), meadow buttercup (F), red clover (F), ribwort plantain (F), white clover (F), yellow-rattle (F), bulbous buttercup (O-F), pignut (O-LF), common mouse-ear (O), common vetch (O) (*Vicia sativa*), dandelion (O), hogweed (O), lesser trefoil (O), yarrow (O), bluebells (*Hyacinthoides non-scripta*) (R), curled dock (R), creeping thistle (R), daisy (*Bellis perennis*) (R) and foxglove (R). In shorter grassy areas associated with stone outcrops spring squill and English stonecrop were common. Bluebells (F), cock's-foot (F). common sorrel (F), pignut (F) Yorkshire-fog (F), and yellow-rattle (R) were also recorded. On the thinner soils there was noticeably less Yorkshire-fog. Western gorse and bramble were also common.
7	SH 35686 94093	Coastal grassland Grassland with some scrub, bracken and tall ruderal above Porth y Ogof and adjacent to semi-improved neutral grassland. Species recorded: bulbous buttercup (F), spring squill (F), sweet vernal-grass (F) yarrow (F), yellow-rattle (F), Yorkshire-fog (F), common knapweed (O), tormentil (*Potentilla erecta*) (O), mouse-ear hawkweed (O), sea plantain (O), thrift (O), bluebell (R), common restharrow (*Ononis repens*) (R), eyebright (R), primrose (*Primula vulgaris*) (R) and purple-loosestrife (*Lythrum salicaria*) (R).
8	SH 35644 94279	Maritime cliff vegetation Steep rocky cliffs with a variety of herb species and also bramble, ivy, western gorse and hawthorn scrub. Other species recorded: thrift (A-F), oxeye daisy (LA), sea campion (F), common bird's-foot trefoil (O), English scurvygrass (O), foxglove (O), great wood-rush (*Luzula sylvatica*) (O), red campion (O), red fescue (O), sheep's-bit (O), honeysuckle (R) and primrose (R).
9	SH 35569 94428	Wylfa Head cWS

Target Note	Grid Reference	Description
		Complex area of grassland and heath, including areas dominated by small sedge species, bracken and western gorse, with rocky outcrops with maritime cliff-type vegetation and flush areas. Also, near the dividing wall to the south, the grassland becomes more improved with perennial rye-grass dominant. Unimproved grassland areas tend to be very short. Species recorded include: common nettle (LA), common bird's-foot trefoil (LA-LF), ribwort plantain (F), sweet vernal-grass (F), bluebells (LF), bulbous buttercup (LF), English stonecrop (LO), heather (LF), red clover (LF), spring squill (LF), white clover (LF), cock's-foot (O), common ragwort (O), common sorrel (O), Yorkshire-fog (O), yarrow (O), cat's-ear (LO), creeping thistle (LO), common knapweed (LO), sea campion (LO), sea plantain (LO), sheep's-bit (LO), wood sage (*Teucrium scorodonia*) (LO), buck's-horn plantain (R), foxglove (R), ground ivy (*Glechoma hederacea*) (R), heath bedstraw (*Galium saxatile*) (R), eyebright (R), hogweed (R), lousewort (*Pedicularis sylvatica*) (R), sheep's sorrel (R), tormentil (R), trailing St John's-wort (*Hypericum pulchrum*) (R) and violet sp. (R).
10	SH 35330 94011	Semi-improved Neutral Grassland Grassland with scrub (mainly western gorse) invading. Grass is on often thin soils and has a tendency to be short. It varies between species-rich, especially on the thin soil areas, to species-poor and dominated by agricultural grasses and weeds. Species recorded include: perennial rye-grass (LA), sweet vernal-grass (LA), Yorkshire-fog (LA-F), common bird's-foot trefoil (F), yarrow (F), common knapweed (LF), creeping cinquefoil (*Potentilla reptans*) (O), crested dog's-tail (F), common ragwort (F), ribwort plantain (F), yellow bartsia (LF), yellow-rattle (O-F), buck's-horn plantain (O), common mouse-ear (O), hogweed (O), red bartsia (*Odontites vernus*) (LO), common centaury (R), field wood-rush (*Luzula campestris*) (R), lady's bedstraw (*Galium verum*) (R) and sheep's sorrel (R).
11	SH 35498 93097	Pond Small pond near visitor centre heavily overgrown. Species-poor. Soft-rush (*Juncus effusus*) (A), articulated rush (*J. articulatus*) (F), cuckooflower (*Cardamine pratensis*) (O), sedge species (*Carex* spp.) (O), sweet-grass (*Glyceria* sp.) (O), watercress (*Nasturtium officinale*) (O) and common figwort (*Scrophularia nodosa*) (R).
12	SH 34786 93898	Shingle beach vegetation Small areas of shingle beach with specimens of sea-kale, sea beet and a number of small yellow sedges. These occur almost wherever there is shingle and transition to maritime cliff and/or grassland. Occasional wet flushes. Also on shingle, rocks and developing patches of coastal grassland: buck's-horn plantain (F), common

Target Note	Grid Reference	Description
		sorrel (F), fat-hen (*Chenopodium album*) (F), silverweed (*Potentilla anserina*) (F), sea campion (F), sea plantain (F), spring squill (F), thrift (F), Yorkshire-fog (F), sea milkwort (*Glaux maritima*) (O-F), annual sea-blite (*Suaeda maritima*) (O), common bird's-foot trefoil (O), common mouse-ear (O), common ragwort (O), creeping cinquefoil (O), cuckooflower (O), ribwort-plantain (O), sea sandwort (*Honckenya peploides*) (O), bramble (O-R), cat's-ear (R), crested dog's-tail (R), English stonecrop, (R), kidney vetch (R), lesser trefoil (R), sheep's-sorrel (R). Bell heather (*Erica cinerea*), common centaury, common knapweed, common restharrow and wild thyme, were scattered on rocky cliffs nearby.
13	SH 34641 93488	Marshy grassland and heath Complex area of marshy grassland, heath and acid grassland with some characteristic coastal species. Transitions into small patches of scrub and tall ruderal vegetation. Species recorded: common reed (*Phragmites australis*) (LA), jointed rush (LA), silverweed (LA), rough meadow-grass (O-F), common bird's-foot trefoil (F), common sedge (*Carex nigra*) (F), crested dog's-tail (F), meadow buttercup (F), red fescue (F), sweet vernal-grass (F), Yorkshire-fog (F), bell heather (LF), devil's-bit scabious (LF), heather (LF), sea plantain (LF), spring squill (LF), thrift (LF), tormentil (LF), water horsetail (*Equisetum fluviatile*) (LF), common sorrel (O-F), cat's-ear (O), common mouse-ear (O), English stonecrop (O), red campion (O), ribwort plantain (O), white clover (O), bramble (LO), English scurvygrass (LO), fat-hen (LO), foxglove (LO), goat willow (LO), western gorse (LO), bluebells (R), bur-reed (*Sparganium* sp.) (R), daisy (R), false fox-sedge (*Carex otrubae*) (R), field wood-rush (R), heath milkwort (R), lousewort (R), red clover (R) and sheep's sorrel (R).
14	SH 34413 93475	Saltmarsh Saltmarsh vegetation at Porth Y Felin in small clumps and patches, fragmented. Species recorded: sea arrowgrass (*Triglochin maritima*) (A), saltmarsh rush (*Juncus gerardii*) (LA), sea plantain (LA), thrift (F), sea aster (*Aster tripolium*) (O), sea beet (O), sea milkwort (O), sea sandwort (O) and annual sea-blite (R). The vegetation transitions to shingle vegetation.
15	SH 34208 93483	Semi-improved Neutral Grassland Two adjacent herb-rich hay-meadows. Species recorded: meadow buttercup (A), crested dog's-tail (F-A), ribwort plantain (F-A), cat's-ear (F), common bird's-foot trefoil (F), common knapweed (F), common sorrel (F), red clover (F),sweet vernal-grass (F), yellow rattle (F), Yorkshire-fog (F), common mouse-ear (O) and tufted vetch (*Vicia cracca*) (O).
16	SH 34084 93585	Coastal Heath Area of dwarf shrub heath with wet flushes and transitions to coastal grassland (see Target note 17). Some areas show evidence of management with gorse clearance and regeneration of acid grassland occurring. Heather, bell heather and western gorse

Target Note	Grid Reference	Description
		dominate in some areas. Bracken invading elsewhere. A variety of small sedge species were present. Other species recorded: bell heather (LA), rush spp. (LA), common bird's-foot trefoil (F), Yorkshire-fog (F), devil's-bit scabious (LF), sweet vernal-grass (LF), thrift (LF), common sedge (O-F), creeping willow (O-F), red fescue (O-F), common knapweed (O), heath bedstraw (O), milkwort (O), silverweed (O), spring squill (O), tormentil (O), wild thyme (O), common sorrel (LO), English stonecrop (LO), foxglove (LO), marsh cinquefoil (*Comarum palustris*) (LO), red campion (LO), flea sedge (O-R), red clover (O-R), sheep's-sorrel (O-R), violet sp. (*Viola* sp.) (O-R), common spotted orchid (*Dactylorhiza fuschii*) (R), eyebright (R), lady's-bedstraw (R), lesser spearwort (*Ranunculus flammula*) (R), long-bracted sedge (R), lousewort (R), marsh willowherb (*Epilobium palustre*) (R), northern marsh orchid (R), marsh pennywort (*Hydrocotyle vulgaris*) (R) and purple moor-grass (F).
17	SH 33838 93576	Coastal grassland Grassland with maritime influence on the edge of heathland and agriculturally improved grasslands. Particularly herb-rich in rocky (cliff) areas and locations where grazing is absent. Species spread a short distance into the agriculturally improved grasslands. Species recorded: common bird's-foot trefoil (F), thrift (F), buck's-horn plantain (LF), crested dog's-tail (LF), sea plantain (O-F), sheep's-bit (LF), spring squill (LF), sweet vernal-grass (O-F), white clover (O-F), Yorkshire-fog (O-F), bell heather (O), cat's-ear (O), cock's-foot (O), common knapweed (O), common mouse-ear (O), common ragwort (O), English scurvygrass (O), English stonecrop (O), heather (O), perennial rye-grass (O), red fescue (O), sea campion (O), wavy hair-grass (*Deschampsia flexuosa*) (O), western gorse (O), wild thyme (O), yarrow (O), heath bedstraw (O-R), sheep's-sorrel (O-R), common centaury (R), daisy (R), lesser trefoil (R) and ribwort plantain (R).
18	SH 33597 92896	Invasive Non-native Plant Japanese knotweed in hedge, three stands up to 1.5 m.
19	SH 33429 93142	Shingle beach vegetation and rough grassland. Shingle beach with sea-kale (F), sea beet (O) and sea campion (O). Adjacent on ridge of shingle is rough grassland, most of which could not be accessed due to limitations to prevent disturbance to breeding terns. The area surveyed, at the eastern end, was species poor. False oat-grass and Yorkshire-fog were the most distinctive species. By the adjacent saline lagoon, Sea club rush (*Bolboschoenus maritimus*) and false fox-sedge were present in small patches.
20	SH 34095 93150	Wetland with Poor Semi-improved Grassland Wetland area with swamp and marshy grassland areas in originally agriculturally improved grassland reverting to wet grassland. Large monoculture stands of some wetland species such as: bogbean (*Menyanthes trifoliata*), common

Target Note	Grid Reference	Description
		cottongrass (*Eriophorum angustifolium*), meadowsweet. Other wetland species recorded: bottle sedge (*Carex rostrata*) (LA), redshank (*Persicaria maculosa*) (LA), water horsetail (F), marsh marigold (*Caltha palustris*) (LF), greater bird's-foot-trefoil (*Lotus pedunculatus*) (O-F), marsh thistle (*Cirsium palustre*) (O-F), soft-rush (O-F), bulrush sp. (*Typha* sp.) (O), great willowherb (O), jointed rush (O), water mint (*Mentha aquatica*) (O), marsh cinquefoil (LO), marsh willowherb (O-R), unbranched bur-reed (*Sparganium emersum*) (O-R), cuckooflower (R), marsh bedstraw (*Galium palustre*) (R), marsh foxtail (R) and yellow iris (*Iris pseudacorus*) (R). Grassland species recorded: creeping buttercup (A), crested dog's-tail (F-A), Yorkshire-fog (F-A), common bird's-foot trefoil (F), common sorrel (F), perennial rye-grass (F), silverweed (F), white clover (F), red clover (O), tufted vetch (O), yellow rattle (O) and northern marsh orchid (R).
21	SH 34378 92968	Invasive Non-native Species Two small stands of Japanese knotweed adjacent to a farm track south of Cafnan.
22	SH 34013 92186	Semi-improved Neutral Grassland Two horse-grazed fields, one extremely short and the other long. Some degradation with creeping thistle and other tall species invading. Species recorded: common knapweed (LA), Yorkshire-fog (LA), common bird's-foot-trefoil (F), creeping buttercup (F), crested dog's-tail (F), meadow buttercup (F), ribwort plantain (F), sweet vernal-grass (F), creeping thistle (LF), yellow rattle (LF), white clover (O-F), yarrow (O-F), common mouse-ear (O), creeping cinquefoil (O), common sorrel (O), hogweed (O), red clover (O), selfheal (*Prunella vulgaris*) (O), common ragwort (O-R), cat's-ear (R) and oval sedge (*Carex leporina*) (R).
23	SH 34294 92382	Dense riparian vegetation Riparian vegetation often dense along many of the watercourses in the area – some clearly get occasionally managed. Species recorded: great willowherb (A), meadowsweet (A), purple-loosestrife (F), water mint (F), bittersweet (*Solanum dulcamara*) (O), bur-reed (O), greater bird's-foot-trefoil (O), soft-rush (O), silverweed (LO) and water horsetail (R).
24	SH 34643 92546	Marshy grassland Wet field at Caerdegog Isaf Mosaic of small patches of wetland habitat, including patches of yellow iris, meadowsweet with areas of abundant sweet-grass sp. Other species recorded: creeping buttercup (A), common sedge (LA), jointed rush (LA), soft-rush (A-F), sweet vernal-grass (F), wild angelica (*Angelica sylvestris*) (F), water mint (LF), cuckooflower (O), lesser spearwort (O), marsh cinquefoil (O), marsh foxtail (O), redshank (O), tufted hair-grass (*Deschampsia cespitosa*) (O), water horsetail (O), marsh bedstraw (R) and water forget-me-not (*Myosotis scorpioides*) (R). Along adjacent ditch, dense riparian vegetation (in parts) and in water including meadowsweet (A), great

Target Note	Grid Reference	Description
		willowherb (A), water cress (F), water mint (O), yellow iris (O) and water forget-me-not (R). Some parts are almost entirely meadowsweet.
25	SH 34791 92512 SH 34801 92526 SH 34794 92534	Invasive Non-native Plant Three stands (at least) of Japanese knotweed mixed in with scrub and tall ruderal vegetation. Stands are approximately 1m x 1m, 2m x 2m and 9m x 6m.
26	SH 35123 92160	Marshy Grassland Dominated mainly by soft-rush, but around drain more species-rich and rather swampy. Species recorded: meadowsweet (F), purple-loosestrife (F), sweet-grass (F), water-cress (F), bulrush (O), bur-reed (O), greater bird's-foot-trefoil (R), lesser spearwort (O), water horsetail (O), water mint (O), water forget-me-not (R), and water plantain (*Alisma plantago-aquatica*) (R).
27	SH 34857 91879	Marshy Grassland Large areas dominated by soft-rush but with other areas where purple moor-grass becomes abundant. Patches of meadowsweet and common cottongrass. On slightly higher (and drier) ground, areas of bramble and western gorse occur. A series of ditches create wetter areas with characteristic species. Species recorded: bottle sedge (LA), jointed rush (F-A), common sorrel (F), creeping buttercup (F), greater bird's-foot-trefoil (F), marsh thistle (F), Yorkshire-fog (F), pennywort (LF), sweet vernal-grass (LF), marsh bedstraw (O), ragged-robin (*Silene flos-cuculi*) (O), red clover (O), sweet-grass (O), water-cress (O), water mint (O), marsh cinquefoil (O-R), marsh willowherb (O-R), bulrush (R), selfheal (R), star sedge (*Carex echinata*) (R), tormentil (R), tufted vetch (R) and water forget-me-not (R).
28	SH 34700 91800	Cae Gwyn SSSI Complex area of scrub, acid grassland and rock outcrops, with mires and heath. Full details of the NVC survey can be found in Budd (2013).
29	SH 34802 91439	Dry dwarf shrub heath Area of dense heath and scrub. Access not possible
30	SH 34825 91355	Invasive Non-native Plant Large stand (10m x 5m) of Japanese knotweed at the junction of the A5025 road and the minor road to Bwlch.
31	SH 34978 91600	Semi-improved grassland Species-poor grassland. Species recorded: perennial rye-grass (LD), crested dog's-tail (LA), creeping buttercup (LA), common mouse-ear (LF), creeping bent (LF), marsh foxtail (LF), white clover (LF), Yorkshire-fog (LF), black medick (*Medicago lupulina*) O, wall speedwell (*Veronica arvensis*) (O), Timothy (*Phleum pratense*) (R), soft-rush (R) and spear thistle (R).
32	SH 34856 91475	Rock-outcrop/grassland mosaic Habitat mosaic with rock outcrops, species-poor semi-improved grassland and acid grassland. Species recorded: Yorkshire-fog (A), creeping bent (*Agrostis stolonifera*) (LA), English stonecrop (LA), red fescue

Target Note	Grid Reference	Description
		(LA), sweet vernal-grass (LA), sheep's sorrel (LF), cat's-ear (O), common bent (*Agrostis capillaris*) (O), foxglove (O), bracken (R), heath bedstraw (R), heath wood-rush (*Luzula multiflora*) (R), tormentil (R) and wood sorrel (R).
33	SH 34908 91563	Marshy grassland Species recorded: soft-rush (LD), creeping bent (LF), jointed rush (LF), marsh foxtail (LF), Yorkshire-fog (LF), creeping buttercup (O), crested dog's-tail (O), cuckooflower (O), greater bird's-foot-trefoil (O), hairy sedge (*Carex* hirta) (O) and small sweet-grass (*Glyceria declinata*) (O)
34	SH 34734 91626	Pond Species recorded: bogbean (LA), marsh cinquefoil (LA), marsh bedstraw (LF), soft-rush (LF), water horsetail (LF), common cottongrass (O), lesser spearwort (O), ragged robin (O), tufted forget-me-not (*Myosotis laxa*) (O) and wild angelica (O).
35	SH 34760 91616	Rock outcrop and dry dwarf shrub heath Fields with a mosaic of acid grassland, dry dwarf shrub heath and rock outcrops. Species recorded: creeping bent (LF), sweet vernal-grass (LF), tormentil (LF), bell heather (O), cat's-ear (O), English stonecrop (O), heath milkwort (O), purple moor-grass (O), sheep's sorrel (O), spring squill (O) and western gorse (O).
36	SH 34790 91718	Fen Extension of fen habitat in Cae Gwyn SSSI. Species recorded: bulrush (LA), common cottongrass (LA), soft-rush (LA), greater bird's-foot-trefoil (LF), false fox-sedge (LF), heath wood-rush (LF), jointed rush (LF), lesser spearwort (LF), marsh pennywort (LF), marsh thistle (LF), ragged robin (LF), tufted forget-me-not (LF), marsh bedstraw (O), water horsetail (O), wild angelica (O) and northern marsh-orchid (R).