



**Priority Habitat Assessment
and Scarce Plant Survey**

**Proposed Solar Farm,
Barry Docks**

For

Associated British Ports

Project No.: AABP103/005

September 2014

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FIGURE 1 SITE LOCATION

FIGURE 2 SURVEY AREAS

FIGURE 3 A+B PRIORITY HABITAT ASSESSMENT SURVEY RESULTS

FIGURE 4 SITE PHOTOGRAPHS

1. Summary

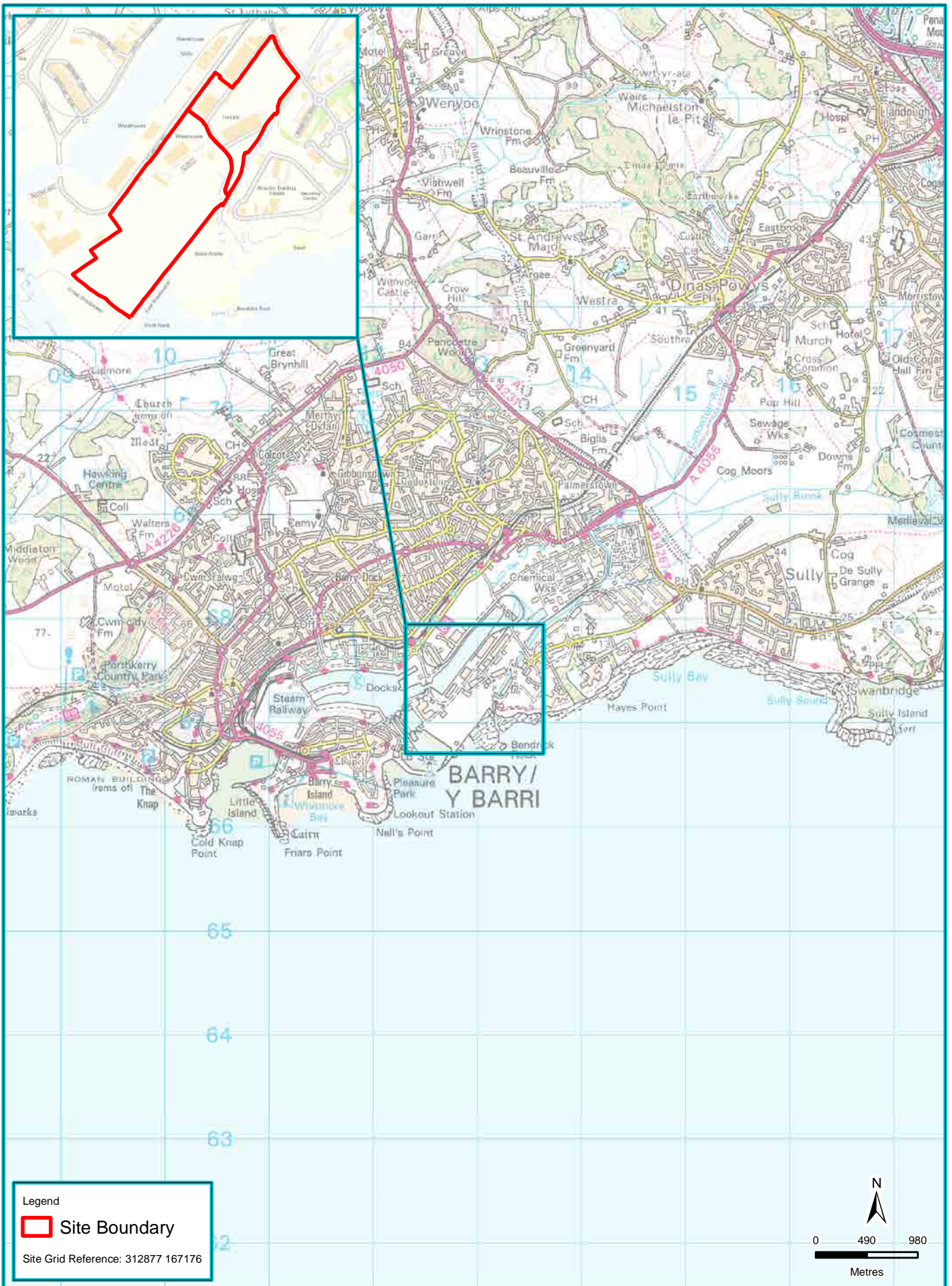
1.1 Summary

- 1.1.1** Associated British Ports is proposing to construct a solar farm on a brownfield site in Barry Docks, South Wales. An extended Phase 1 habitat survey was undertaken by Thomson Ecology in April 2014. This survey identified habitats on the site that could support important plant assemblages or scarce plants. Thomson Ecology was then commissioned to undertake a Stage 2 evaluation for Open Mosaic Habitat on Previously Developed Land (OMH) as well as further assessment of potential coastal grassland and recording designated or protected plant species on site.
- 1.1.2** Three distinct areas, Blocks 1, 2 and 3 (see Figure 2), were defined at the site in order to survey and assess the potential to support OMH.
- 1.1.3** Block 1 comprised OMH community types (as defined by the OMH Survey Handbook) annuals and ruderals, with the additional community type scrub, with a large area in active use. The annuals and ruderals formed mosaics with bare ground and met the criteria for OMH. The Stage 2 evaluation shows that the communities are of low conservation value.
- 1.1.4** Block 2 comprised mosses/liverworts, annuals, ruderals, open grassland and flower rich grassland with additional scrub. Mosaics with bare ground of mosses/liverworts, annuals and ruderals were present which met the criteria of OMH but the Stage 2 evaluation shows that they are of low to moderate conservation value.
- 1.1.5** Block 3 comprised annuals, ruderals, open grassland and flower rich grassland with additional communities of scrub and woodland. Bare ground was only present in mosaic with annual and ruderal vegetation and this area met the criteria for OMH but other areas did not. This block is also of low to moderate conservation value.
- 1.1.6** The classification of Blocks, 1, 2 and 3 as either low or low-moderate conservation value have the potential to increase in value depending on the outcome of on going invertebrate surveys. If invertebrate species classified as priority species or listed as local biodiversity action plan (LBAP) species are identified then the conservation value could increase to moderate. The conservation value will not increase to a high conservation value as the drivers in the calculation for the level of conservation value in OMH areas will not be altered.
- 1.1.7** OMH is a priority habitat under Section 42 of the Natural Environment and Rural Communities Act (NERC) 2006 and any loss of this habitat will need to be replaced on a like-for-like basis.
- 1.1.8** The grassland along the south-western and south-eastern boundary of the site does not qualify as coastal grassland and no scarce plants were recorded during the survey.

1.2 Main Recommendations

- 1.2.1 It is recommended that early successional habitat is created on the site to compensate for the loss of OMH. This can be achieved by using recycled aggregate material, seeding with appropriate species, and maintaining through planned frequent disturbance.
- 1.2.2 Wild parsnip was recorded in high densities in several places across the site. Wild parsnip has phototoxic sap therefore extra caution during site clearance is advised.

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Legend

-  Block Location
-  Potential Coastal Grassland
-  Site Boundary

Site Grid Reference: 312877 167176

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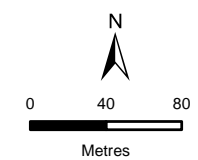
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Client
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Figure Number
2

Figure Title
Survey Areas










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
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-  Photograph Location and Direction
-  Target Note
-  Block Location
-  Site Boundary

OMH Communities

-  Annuals and bare ground mosaic
-  Annuals and ruderals mosaic
-  Bare ground
-  Flower rich grassland
-  Moss and annuals mosaic
-  Mosses/liverworts and annuals and ruderal mosaic
-  Open grassland and scrub mosaic
-  Ruderal/scrub mosaic
-  Scrub

Phase 1 Habitats

-  Semi-improved neutral grassland
-  Ephemeral/short perennial

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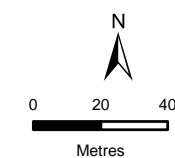
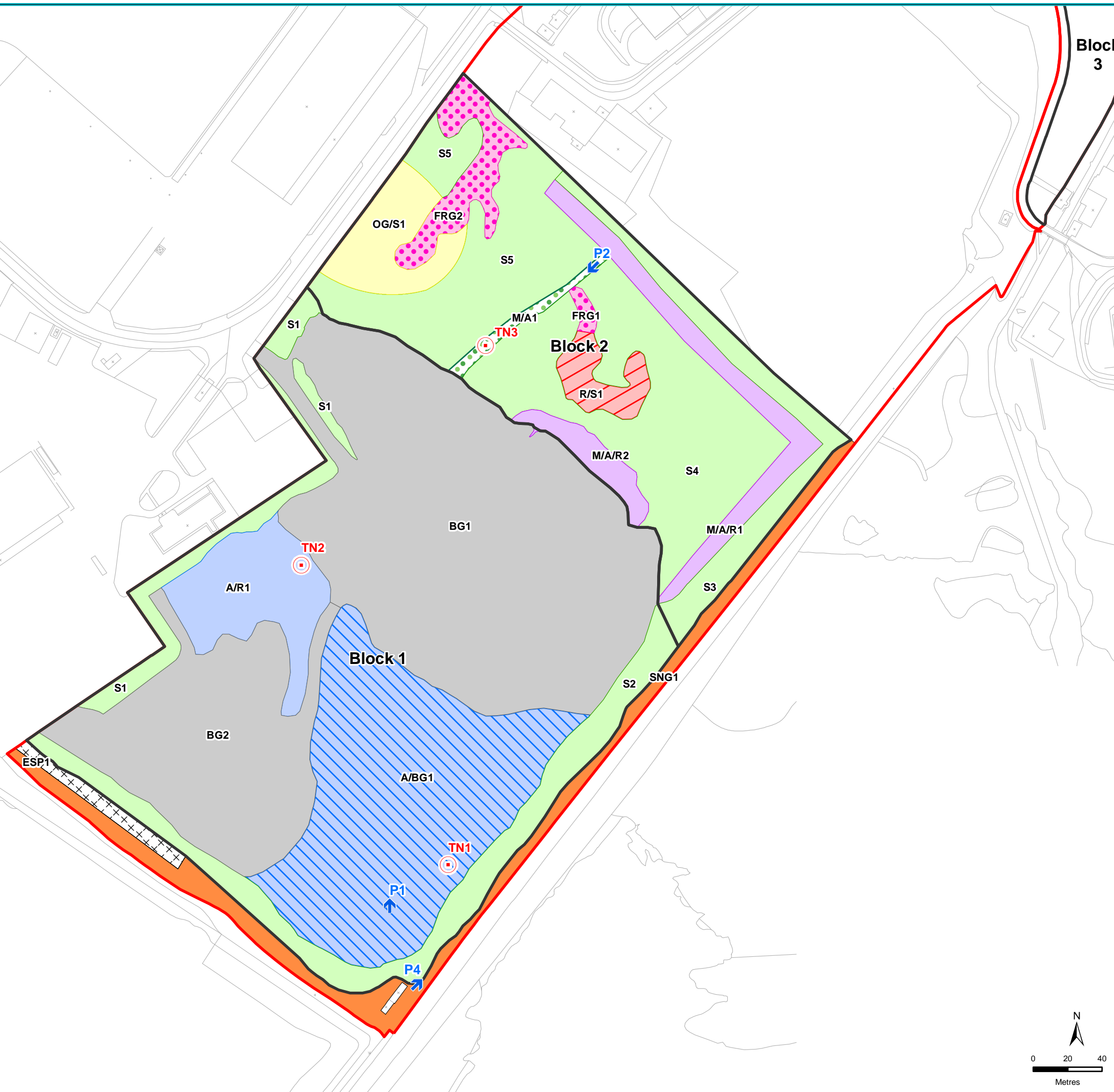
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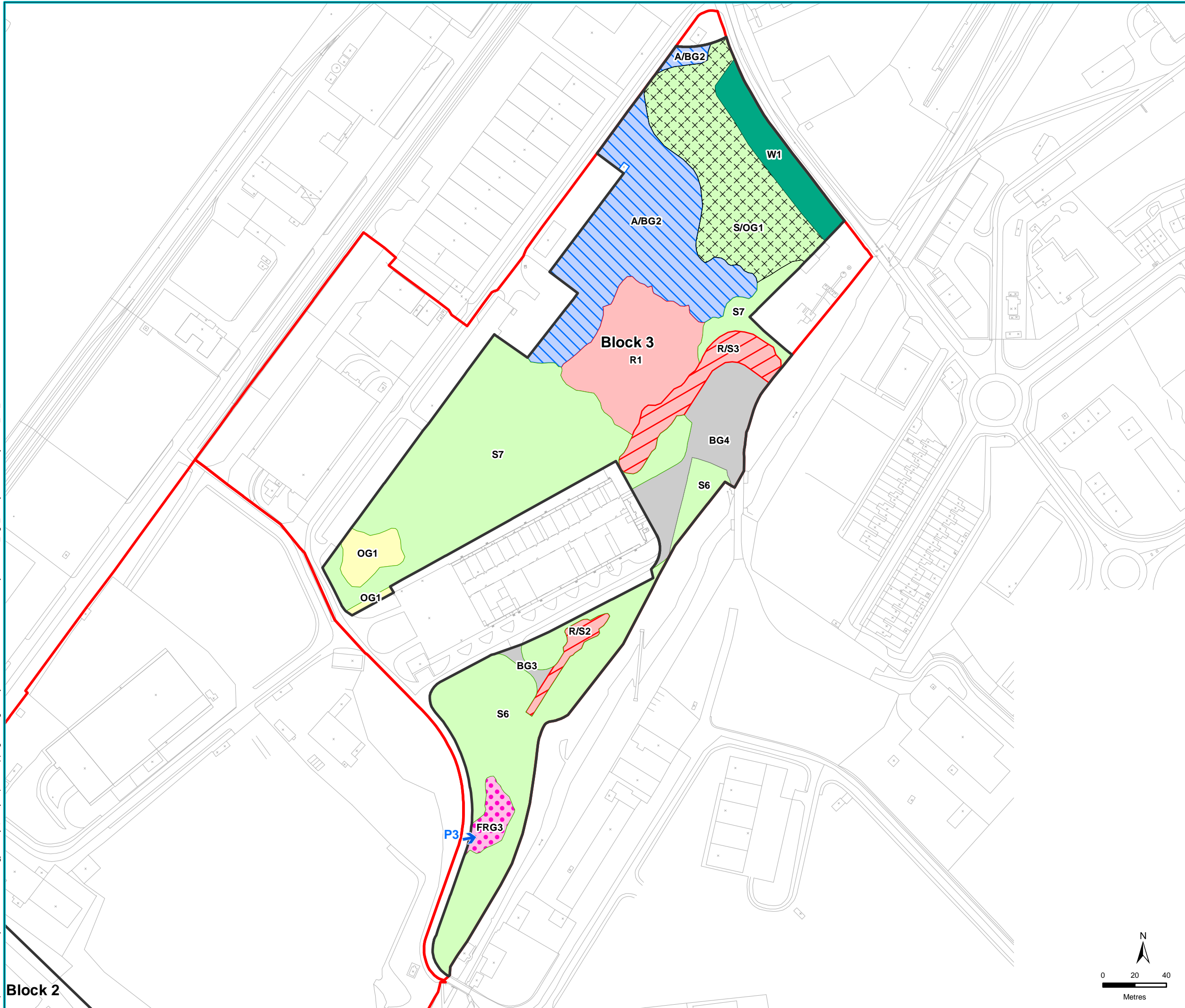
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

Figure Title
Priority Habitat Assessment Survey Results



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Legend

-  Photograph Location and Direction
-  Block Location
-  Site Boundary
- OMH Communities**
-  Annuals and bare ground mosaic
-  Bare ground
-  Flower rich grassland
-  Open grassland and scrub mosaic
-  Ruderal
-  Ruderal/scrub mosaic
-  Scrub
-  Scrub and open grassland mosaic
-  Woodland

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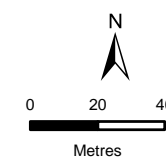
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Figure Title
Priority Habitat Assessment Survey Results



Block 2



Photograph 1:
Annual vegetation and bare ground mosaic in the south-east of Block 1.



Photograph 2:
Moss and annuals mosaic central of Block 2.




Photograph 3:
Flower-rich grassland and scrub mosaic in south of Block 3.



Photograph 4:
Potential coastal grassland along boundary of Block 1.

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	 www.thomsonecology.com enquiries@thomsonecology.com				
Photographs of the Site					

2. Introduction

2.1 Development Background

2.1.1 Associated British Ports (ABP) proposes to construct a solar farm on previously-developed land on two sites at Barry Dock. There are no definitive plans to date, but the current proposal includes the clearance of most of the habitats and all of the buildings that fall within the finalised area selected for development to enable construction of the solar farm.

2.1.2 The proposals described above are hereafter referred to collectively as 'the development'.

2.1.3 The development will be located on two adjacent areas within Barry Docks; Site 1 (central grid reference ST128671) is 21.44 ha and Site 2 (central grid reference ST132675) is 9.81 ha. Within this report the two areas are considered within one survey area (see Figure 1), hereafter referred to as 'the sites'.

2.2 Ecology Background

2.2.1 Thomson Ecology undertook a desk study and extended Phase 1 habitat survey of the sites (Thomson Ecology report reference AABP103/001/002) on 10th and 11th April 2014. The report identified that the sites supported habitat which could fit the description of Open Mosaic Habitat on Previously Developed Land (OMH), which is a priority habitat under Section 42 of the Natural Environment and Rural Communities (NERC) Act 2006, and a further survey of the sites was recommended to assess this habitat.

2.2.2 A limitation of the earlier Phase 1 habitat survey was that it was conducted at an unsuitable time of year to identify Phase 1 habitat type "coastal grassland" indicator species. Coastal grassland is a threatened habitat type that is included within the Maritime Cliff and Slopes priority habitat type and is also protected under the NERC Act. In addition, the desk study identified Childing pink (*Petrorhagia nanteuilli*), a Schedule 8 protected plant under the Wildlife and Countryside Act 1981, as amended, had been recorded 275 m north-west of the site in a different area of Barry Docks.

2.3 The Brief and Objectives

2.3.1 ABP Marine Environmental Research Limited on behalf of ABP commissioned Thomson Ecology on 15th July 2014 to undertake a priority habitat assessment and scarce plant survey of the development site. The brief was to:

- Carry out a Stage 2 evaluation of two to three blocks of potential OMH;
- Carry out a botanical assessment of potential coastal grassland along the boundary of Site 1 (SNG1);
- Record the location of any Schedule 8 plants recorded on site with a GPS device;
- Provide a report including methodology, results, discussion of any relevant legislation and planning policy issues and how they may be overcome; and
- Provide appropriate digitised mapping.

2.4 Limitations

2.4.1 The survey was carried out 21st to 23rd July 2014 which is within the optimal time for botanical surveys, and also within the usual flowering period of Childing pink.

2.5 Surveyors

2.5.1 The survey was undertaken by Sali Palmer BSc (Hons) MSc MCIEEM.

3. Methodology

3.1 General Approach

3.1.1 Four distinct survey areas were identified within the site; three that could potentially support OMH (Blocks 1 to 3 on Figure 2) and one area of potential coastal grassland (see Figure 2). The methods used in this survey provide a comprehensive record of the species and vegetation communities found within the survey areas and the survey is more detailed than the extended Phase 1 habitat survey. It allows for fuller description of the vegetation communities present and is more likely to detect plant species of conservation concern.

3.2 Stage 2 Evaluation for Open Mosaic Habitat on Previously Developed Land

3.2.1 The Joint Nature Conservancy Council (JNCC, 2011) defines OMH as “...*generally primary successions, and as such unusual in the British landscape, especially the lowlands. The vegetation can have similarities to early/pioneer communities (particularly grasslands) on more ‘natural’ substrates but, due to the edaphic conditions, the habitat can often persist (remaining relatively stable) for decades without active management (intervention). Stands of vegetation commonly comprise small patches and may vary over relatively small areas, reflecting small-scale variation in substrate and topography.*”

3.2.2 JNCC has specified that, in order for a habitat to be OMH, certain criteria must be met, as described in Table 1.

Table 1: Open Mosaic Habitat Criteria

	Criterion	Requirements
1	The area of open mosaic habitat is at least 0.25 ha in size.	All potential OMH sites should be at least 0.25 ha.
2	Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added.	One or more of the following have been recorded on the sites: <ul style="list-style-type: none"> • Known history of disturbance; • Severely modified by previous use; or • Extraneous material or substrates added.

	Criterion	Requirements
3	The site contains some vegetation. This will comprise early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a) annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland.	One or more vegetation type from the groups listed in the criteria are present.
4	The site contains unvegetated, loose bare substrate and pools may be present.	Bare ground or sparse vegetation has been recorded.
5	The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a)-(h) above (criterion 3) plus bare substrate, within 0.25 ha.	See 3 and 4 above.

3.2.3 The extended Phase 1 survey could not conclusively establish if the five criteria were met, and so a Stage 2 Evaluation of three distinct areas within the site (Blocks 1 to 3, see Figure 2) was undertaken to ascertain if the criteria were met and, if so, to evaluate the conservation importance the habitat. The survey was undertaken using a methodology based on the Open Mosaic Survey Handbook (Lush *et al*, 2013) and guidance published by Riding *et al* (2010) on behalf of DEFRA.

Field survey methodology

3.2.4 Each block was walked systematically and communities of similar vegetation were identified and mapped, with boundaries drawn where the vegetation clearly changed from one community to another. A full list of plant species for the communities in each block was compiled along with their abundance using the DAFOR scale:

- D - Dominant
- A - Abundant
- F - Frequent
- O - Occasional
- R - Rare

3.2.5 These scores represent the abundance within the defined area only and do not reflect national or regional abundances. Plant species nomenclature follows Stace (2010).

3.2.6 In addition, the following characteristics were recorded for each block and compared against the guidance given in the OMH Survey Handbook:

- OMH community type;
- Additional communities/habitats;
- Conditions;
- Substrate; and
- Negative indicators.

3.2.7 The nomenclature of communities follows the titles given in the OMH Survey Handbook. A general species list for scrub (not an OMH community) across the site was compiled rather than individual parcels. Parcels of scrub over 0.25 ha should be excluded from the OMH site. The vegetation communities present are not assigned to National Vegetation Classification (Rodwell, 1991 *et seq.*) as this system is not suitable for habitats commonly found on OMH sites (Rodwell et al., 2000).

3.2.8 The soil conditions of the site (fertility, acidity *etc.*) are calculated using Ellenberg indicator values, as modified by Hill *et al* (1999) to reflect conditions in Great Britain. These values are used to assess soil conditions present within each block. Three of the five Ellenberg values are given for each plant species identified on the sites (see Appendix 1) and these are used to predict soil fertility (N), soil acidity (R) and moisture (F).

3.2.9 The information collected was then compared against the five criteria for OMH. If they are met, the drivers and indicators listed below were compared in order to assess the conservation value of the block. The block must exceed 50% in both categories to be considered to be of high conservation value.

3.2.10 The drivers which create the conditions on the sites, and thus sites of high conservation value include:

- Ephemeral water on site;
- Topographic variation;
- Substrate variation;
- Variation in aspect;
- Size of patch;
- Extremes of particle size of substrate;
- Connectivity;
- Disturbance;
- Hard cover;
- Extremes of drainage;
- Periodic inundation;
- Run-off from contaminated spoil;
- Management;
- Extremes of climate; and
- Extremes of pH.

3.2.11 Indicators which can be used to demonstrate the quality of a site's conservation value, and include:

- Minimal amount of scrub;
- Invertebrate species assemblages;
- Priority Species or LBAP invertebrate species;
- Nectar resources;
- Reptiles;
- Birds (Priority Species);
- Absence of invasive species;
- Any other non-dominant habitats;
- Vegetation composition;
- Diversity of plant community types;
- Spatial heterogeneity of vegetation types at a number of spatial scales; and
- Age of site (*i.e.* if it is old but still at an early stage of succession).

3.3 Other Habitat Assessment

3.3.1 The Phase 1 habitat type coastal grassland is a threatened habitat type that is included within the priority habitat types of Maritime cliffs and slopes. The JNCC definition of this habitat is extensive (JNCC, 2011) and includes the following : “*Maritime cliffs and slopes comprise sloping to vertical faces on the coastline.... Maritime grasslands occur on cliffs and slopes in less severely exposed locations; a maritime form of red fescue Festuca rubra is a constant component, together with maritime species such as thrift Armeria maritima, sea plantain Plantago maritima, buck's-horn plantain Plantago coronopus and sea carrot Daucus carota ssp. gummifer. Species of inland grasslands which also commonly occur in maritime grasslands include ribwort plantain P. lanceolata, bird's-foot trefoil Lotus corniculatus, common restharrow Ononis repens and several species of grass...*” .

3.3.2 The potential coastal grassland area (see Figure 2) was walked systematically with the aim of covering all parts of the survey area to record a full species list for this habitat and confirm whether it meets the Phase 1 habitat type of coastal grassland. Areas of similar vegetation were identified and mapped, with the boundaries drawn where the vegetation clearly changed from one type to another. A full list of plant species recorded along with their abundance using the DAFOR scale (given in Section 3.2.4).

3.3.3 Plant species and characteristics of the potential coastal grassland were compared against the Phase 1 habitat description of coastal grassland and the habitat requirements of Maritime Cliffs and Slopes. The habitat communities' nomenclature used follows the Phase 1 habitat types (JNCC, 2010).

3.4 Scarce Plant Survey

3.4.1 During the walkover of each survey area to assess their suitability to meet either the OMH or coastal grassland community, plant lists of each plant community were recorded and a constant observation made for scarce or priority species of plants. The distribution of any scarce plant species was mapped, including those listed in the following:

- Habitats Directive (1992) - Annex II and Annex IV species;
- Wildlife and Countryside Act, as amended (1981) - Schedule 8 species;
- Red listed species based on IUCN criteria;
- Rare and scarce species not based on IUCN criteria;
- Natural Environment and Rural Communities Act (2006) - Section 42 species; and
- Local Biodiversity Action Plan Species.

3.4.2 As the desk study (Thomson Ecology report reference AABP103/001/002) identified records of a Schedule 8 species, Childing pink, within 300 m of the site, particular attention was paid to the possibility of the presence of this species at the sites.

3.5 Dates of Survey

3.5.1 The surveys were undertaken on 21st to 23rd July 2014.

4. Results

4.1 Background

4.1.1 The contents of the results section are the factual results of the surveys undertaken at the sites.

4.2 Stage 2 Evaluation for Open Mosaic Habitat on Previously Developed Land

Block 1

4.2.1 Parts of Block 1 are currently in use for the storage and sorting of inert soil and rubble. Bare ground in the north-east of the block (BG1 on Figure 3a) comprises large soil/rubble piles that are in a constant state of flux, moved around the site by heavy machinery which creates disturbed ground tracks across annual vegetation in the centre of the block to another area of intermittent storage and disturbed ground in the south-west of the site (BG2 on Figure 3a).

4.2.2 The annuals and bare ground mosaic (A/BG1 on Figure 3a, Photograph 1 on Figure 4) in this block supports abundant chamomile (*Chamaemelum nobile*) and frequent bristly oxtongue (*Helminthotheca echioides*) and greater plantain (*Plantago major*) with other species being recorded only occasionally or rarely including autumn hawkbit (*Scorzoneroides autumnalis*) and red bartsia (*Odontites vernus*). Bare ground in this area is about 40-50%. During wet periods water appears to collect in the tracks caused by machinery along the south-east boundary of the block (TN1 on Figure 3a).

4.2.3 To the north of Block 1 is an area comprising annuals and ruderals mosaic (A/R1 on Figure 3a) which has locally abundant wild parsnip (*Pastinaca sativa*), hoary mustard (*Hirschfeldia incana*) and ribbed melilot (*Melilotus altissimus*) with areas of bare ground cover < 10%, and areas with of bare ground of 40-50% where species such as chamomile and common ragwort (*Senecio jacobaea*) are frequent.

4.2.4 Along the south-west, south-east and north-west boundaries of the Block 1, scrub dominated by butterfly-bush (*Buddleia davidii*) is present (S1 and S2 on Figure 2).

4.2.5 The OMH characteristics recorded are summarised in Table 2 and the characteristic species are provided in Table 3. A full species list along with the estimated abundance recorded in the communities within Block 1 and the Ellenberg values used to calculate conditions on the site are given in Appendix 1.

4.2.6 The comparison of the results compared with the OMH criteria are summarised in Table 4. Two of the areas within block 1 (A/R1 and A/BG1) meet the five criteria and therefore the further evaluation was undertaken. These results are summarised in Table 5 with the results of invertebrate priority species or LBAP species from ongoing invertebrate surveys to be confirmed (TBC) .

Table 2: Characteristics of Block 1

Supported OMH communities	<ul style="list-style-type: none"> • Annuals and ruderals mosaic (0.5 ha) • Annuals and bare ground mosaic (2 ha) 	
Additional communities	<ul style="list-style-type: none"> • Scrub (1 ha) • Bare ground (4.6 ha) 	
Conditions indicated	Nutrient status	Intermediate to rich fertility.
	pH	Overall moderately acid, with species assemblage indicating areas of much higher acidity (bird's-foot trefoil, <i>Lotus corniculatus</i>) and more basic areas (broad-leaved dock, <i>Rumex obtusifolius</i>).
	Moisture	Moist to damp.
Substrate	Variable; particle size variable between silt and coarse sand with some gravel.	
Negative indicators	Scrub areas dominated by butterfly-bush (<i>Buddleia davidii</i>) and some areas of Japanese knotweed (<i>Fallopia japonica</i>). Large areas in light industrial use.	

Table 3: Species Characteristic of OMH present in Block 1

Common name	Scientific name	Community
Wild teasel	<i>Dipsacus fullonum</i>	A/R1
Sheep's fescue	<i>Festuca ovina</i>	A/R1
Bird's-foot trefoil	<i>Lotus corniculatus</i>	A/R1
Bristly oxtongue	<i>Helminthotheca echioides</i>	A/R1; A/BG1
Flattened meadow-grass	<i>Poa compressa</i>	A/BG1
Hop trefoil	<i>Trifolium campestre</i>	A/R1
Colt's-foot	<i>Tussilago farfara</i>	A/R1

Table 4: Assessment of the OMH Criteria for Block 1

	OMH Criterion	Results	Criteria Met?
1	Size	The total area of Block 1 is 8.1 ha, which includes 1 ha scrub and 4.6 ha bare ground that is unsuitable for inclusion within the OMH as it is in current industrial use and constantly changing. The remaining area is 2.5 ha and meets the required size for OMH priority habitat.	Yes

	OMH Criterion	Results	Criteria Met?
2	History	There is a history of disturbance at site, it has been severely modified and extraneous materials have been added.	Yes
3	Vegetation	Two typical OMH vegetation communities are present on site. These are annual and ruderal mosaic (A/R1) and annual and bare ground mosaic (A/BG1).	Yes
4	Bare substrate	Bare substrate is present in most areas between individual plants in the A/BG1 and A/R1. communities	Yes
5	Spatial variation	There are a mosaic of annual vegetation with bare ground (A/R1) and a mosaic of annual and ruderal vegetation (A/BG1) with bare ground present.	Yes

Table 5: Drivers and indicators of high conservation value habitat in Block 1

Drivers		Indicators	
Ephemeral water on site	Yes	Minimal amount of scrub	Yes
Topographic variation	No	Invertebrate species assemblages	TBC
Substrate variation	No	Priority Species or LBAP invertebrate species	TBC
Variation in aspect	No	Nectar resources	Yes
Size of patch	Yes	Reptiles	No
Extremes of particle size of substrate	No	Birds (Priority Species)	No
Connectivity	Yes	Absence of invasive species	No
Disturbance	Yes	Any other non-dominant habitats	No
Hard cover	No	Vegetation composition	Yes
Extremes of drainage	No	Diversity of plant community types	No

Drivers		Indicators	
Periodic inundations	No	Spatial heterogeneity of vegetation types at a number of spatial scales	No
Run-off from contaminated spoil	No	Age of site	No
Management	No	Percentage of criteria met	25 -41 %
Extremes of climate	No		
Extremes of pH	Yes		
Percentage of criteria met	33 %		

4.2.7 There are areas in Block 1 which meet the criteria for OMH priority habitat type in the form of annuals and bare ground mosaic (A/BG1) and annuals and ruderals mosaic (A/R1). These areas meet 33% of the drivers and 25 - 41 % (dependant on the outcome of the invertebrate survey) of the indicators for habitat of high conservation value. Therefore, Block 1 is assessed as supporting OMH of low conservation value, depending on the outcome of the invertebrate survey.

Block 2

4.2.8 Block 2 has the least human disturbance as most of the open areas present are difficult to access due to the dense scrub (S3, S4 and S5 on Figure 3a), dominated by butterfly-bush and bramble (*Rubus fruticosus* agg.) with stands of Japanese knotweed, which covers the majority of the block,. A community with dominant rough-stalked feather-moss (*Brachythecium rutabulum*) and other mosses including yellow feather-moss (*Homalothecium lutescens*) along with annuals and ruderals (M/A/R1 on Figure 3a), is present on a track on the top of a bund along the north-east and south-east boundaries of the block, with abundant annual and ruderal species such as wild teasel (*Dipsacus fullonum*) and perforate St John's-wort (*Hypericum perforatum*). Variance in the drainage of the soil is apparent along this track with much drier areas indicated by biting stonecrop (*Sedum acre*) and wetter areas by hoary willowherb (*Epilobium parviflorum*).

4.2.9 Another moss, annuals and ruderals community (M/A/R2) was recorded in the south-west of the Block 2, which had lower moss dominance with abundant wild teasel and oxeye daisy (*Leucanthemum vulgare*). The species diversity here was lower than in community M/A/R1.

4.2.10 Central within Block 2, a community of moss and annual species is present (M/A1 on Figure 3a and Photograph 2 on Figure 4), dominated by rough-stalked feather-moss, with some wet areas with seasonal standing water and rare clumps of soft rush (*Juncus effusus*). Abundant ribbed melilot was present along the edge of the community with the scrub boundary.

- 4.2.11** Areas of grassland that were identified during the extended Phase 1 habitat survey (Thomson Ecology report reference AABP103/001/002) had increased levels of scrub and/or ruderal species present since that survey. Semi-improved neutral grassland (SNG2 on Figure 2a of Thomson Ecology report reference AABP103/001/002) has reduced in size to a small area, less than 0.1 ha, of flower rich grassland (FRG1 on Figure 3a) with the remaining area currently a mix of ruderal vegetation and scrub (R/S1 on Figure 3a) with abundant ribbed melilot and bramble. The flower rich grassland FRG1 has abundant red fescue (*Festuca rubra*) and frequent eyebright (*Euphrasia officinalis* agg.) and selfheal (*Prunella vulgaris*).
- 4.2.12** A larger area of flower rich grassland (FRG2 on Figure 3a) was present in the north of block with abundant red fescue and tansy (*Tanacetum vulgare*), frequent species include red valerian (*Centranthus ruber*), bird's-foot trefoil (*Lotus corniculatus*) and ribwort plantain (*Plantago lanceolata*). More rarely recorded species include common broomrape (*Orobanche minor*), oxeye daisy, sea campion (*Silene uniflora*) and autumn hawkbit (*Scozonerooides autumnalis*). During the reptile survey bee orchid (*Ophrys apifera*) was recorded in this area, but the presence was not apparent during the botanical survey as the flowering season had ended.
- 4.2.13** Open grassland and scrub mosaic (OG/S1 on Figure 3a) was contiguous with the flower rich grassland (FRG2) and similar species were recorded, including tansy, red valerian and oxeye daisy, however the species diversity was much lower due to an increased level of bramble.
- 4.2.14** The OMH characteristics recorded are summarised in Table 6 and the characteristic species are provided in Table 7. A full species list along with the estimated abundance recorded in the communities within the block and the Ellenberg values used to calculate conditions on site are given in Appendix 1.
- 4.2.15** The comparison of the results against the OMH criteria are summarised in Table 8. Some of the areas within the block (M/A1, M/A/R1 and M/A/R2), meet the five criteria and therefore the further evaluation was undertaken. These results are summarised in Table 9 with the results of invertebrate priority species or LBAP species from ongoing invertebrate surveys to be confirmed (TBC).

Table 6: Characteristics of Block 2

Supported OMH communities	<ul style="list-style-type: none"> • Moss/liverworts and annuals mosaic (<0.1 ha) • Moss/liverworts and annuals and ruderals mosaic (0.5 ha) • Ruderals and scrub mosaic (0.2 ha) • Open grassland and scrub mosaic (0.3 ha) • Flower rich grassland (0.3 ha) 	
Additional communities	<ul style="list-style-type: none"> • Scrub (2.6 ha) 	
Conditions indicated	Nutrient status	Intermediate
	pH	Overall acidic, and weakly acidic in area M/A/R1
	Moisture	Damp

Substrate	Variable; particle size variable between silt and coarse sand with some gravel, colour sandy.
Negative indicators	Scrub includes Japanese knotweed.

Table 7: Species characteristic of OMH present in Block 2

Common name	Scientific name	Community
Tansy	<i>Tanacetum vulgare</i>	FRG2
Yellow-wort	<i>Blackstonia perfoliata</i>	M/A1; M/AR1, M/AR2; FRG1; FRG2
Common broomrape	<i>Orobanche minor</i>	FRG2
Bird's-foot trefoil	<i>Lotus corniculatus</i>	M/A1; M/AR1; M/AR2; FRG1; FRG2
Hop trefoil	<i>Trifolium campestre</i>	M/AR1; M/AR2; OG/S1; FRG1

Table 8: Assessment of the OMH criteria for Block 2

	OMH Criterion	Results	Criteria Met?
1	Size	The total area of Block 2 is 4 ha, which includes 2.6 ha of scrub. The remaining communities are fragmented by the scrub, and several do not meet Criteria 4 (see below) the remaining area is 0.6 ha.	Yes
2	History	There is a history of disturbance at site, it has been severely modified and extraneous materials have been added.	Yes
3	Vegetation	Five typical OMH vegetation communities are present on site, although two are eligible for inclusion (see Criteria 4 below).	Yes
4	Bare substrate	Bare substrate is present only in areas of where the mosses/liverwort mosaic communities (M/A1, M/A/R1 and M/A/R2) are recorded. The other communities are closed swards indicating a more advanced stage of succession and should not be included within the OMH area, thus reducing the area suitable for inclusion to 0.6 ha.	Yes, partially
5	Spatial variation	As described in Criteria 4 above, mosaic with bare ground is only present in communities with mosses/liverworts (M/A1, M/A/R1 and M/A/R2).	Yes, partially

Table 9: Drivers and indicators of high conservation value habitat in Block 2

Drivers		Indicators	
Ephemeral water on site	Yes	Minimal amount of scrub	No
Topographic variation	No	Invertebrate species assemblages	TBC
Substrate variation	No	Priority Species or LBAP invertebrate species	TBC
Variation in aspect	No	Nectar resources	Yes
Size of patch	Yes	Reptiles	Yes
Extremes of particle size of substrate	No	Birds (Priority Species)	Yes
Connectivity	Yes	Absence of invasive species	No
Disturbance	No	Any other non-dominant habitats	No
Hard cover	No	Vegetation composition	Yes
Extremes of drainage	No	Diversity of plant community types	No
Periodic inundations	No	Spatial heterogeneity of vegetation types at a number of spatial scales	No
Run-off from contaminated spoil	No	Age of site	No
Management	No	Percentage of criteria met	33 - 58 %
Extremes of climate	No		
Extremes of pH	Yes		
Percentage of criteria met	26 %		

4.2.16 There are areas in Block 2 which meet the criteria for OMH priority habitat type in the form of mosses/liverworts and annuals mosaic (M/A1) and mosses/liverworts, annuals and ruderals mosaic (M/A/R1 and M/A/R2). These areas meet 26 % of the drivers and 33 - 58 % (depending on outcome of invertebrate survey) of the indicators for habitat of high conservation value. Therefore, Block 2 supports OMH of low to moderate conservation value, depending on the outcome of the invertebrate survey.

Block 3

- 4.2.17** The south-western part of Block 3 comprises scrub dominated by bramble, with small clearings supporting species-poor open grassland (OG1 on Figure 3b) with abundant cock's-foot (*Dactylis glomerata*) and Yorkshire-fog (*Holcus lanatus*), or flower rich grassland (FRG3 on Figure 3b and Photograph 3 on Figure 4). The flower-rich grassland has abundant common bent (*Agrostis capillaris*) and red fescue (*Festuca rubra*) with many rarely recorded species including agrimony (*Agrimonia eupatoria*), long-stalked crane's-bill (*Geranium colimbina*), hawkweed oxtongue (*Picris hieracioides*) and common vetch (*Vicia sativa*). Pyramidal orchid (*Anacamptis pyramidalis*), common spotted-orchid (*Dactylorhiza fuchsii*) and southern marsh-orchid (*Dactylorhiza praetermissa*) were recorded during the reptile survey.
- 4.2.18** The northern part of the block is more open with a large area of annual and bare ground mosaic (A/BG2 on Figure 3b). Percentage cover of bare ground is high (greater than 50% in some areas) and there is a high amount of fly tipping from adjacent businesses. Species present include vervain (*Verbena officinalis*), Canadian fleabane (*Conyza Canadensis*), blue fleabane (*Erigeron acris*) and red bartsia.
- 4.2.19** A large area (0.5 ha) of ruderal vegetation (R1 on Figure 3b) in the centre of the Block 3 are dominated by wild teasel and ribbed melilot. Woodland (W1 on Figure 3b) dominated by grey poplar (*Populus alba x tremula*) is present along the north-eastern boundary of the site. An area of patchy scrub with open grassland (S/OG1 on Figure 3b) has locally dominant bramble and frequent hawthorn. Grass species include dominant cock's foot and Yorkshire-fog.
- 4.2.20** The OMH characteristics recorded are summarised in Table 10 and the characteristic plant species are provided in Table 11. A full species list, DAFOR, and the Ellenberg values used to calculate conditions on the site are given in Appendix 1.
- 4.2.21** The comparison of the results with the OMH criteria are summarised in Table 12. Part of the area within Block 3 (A/BG2) meets the five criteria and therefore further evaluation was undertaken. These results are summarised in Table 13 with the results of invertebrate priority species or LBAP species from ongoing invertebrate surveys to be confirmed (TBC) .

Table 10: Characteristics of Block 3

Supported OMH communities	<ul style="list-style-type: none"> • Annual and bare ground mosaic (1 ha) • Ruderals (0.5 ha) • Ruderal and scrub mosaic (0.3 ha) • Open grassland (0.1 ha) • Flower rich grassland (0.8 ha)
Additional communities	<ul style="list-style-type: none"> • Scrub (2.5 ha) • Scrub and open grassland mosaic (0.7 ha) • Woodland (0.2 ha)

Conditions indicated	Nutrient status	Intermediate, with much lower fertility in area of annuals and bare ground mosaic.
	pH	Variable between acidic and weakly acidic.
	Moisture	Damp.
Substrate	Fine, compacted soil with high amount of man-made materials, e.g. brick.	
Negative indicators	High levels of fly tipping.	

Table 11: Species characteristic of OMH present in Block 3

Common name	Scientific name	Communities
Scarlet pimpernel	<i>Anagallis arvensis</i>	A/BG1; FRG3
Yellow-wort	<i>Blackstonia perfoliata</i>	A/BG1
Common broomrape	<i>Oenothera biennis</i>	A/BG1
Tansy	<i>Tanacetum vulgare</i>	A/BG1; FRG3

Table 12: Assessment of the OMH criteria for Block 3

	OMH Criterion	Results	Criteria Met?
1	Size	The total area of Block 3 is 6.4 ha, which includes 2.5 ha of scrub. Some of the smaller parcels are fragmented from the main area by the scrub and do not meet Criteria 4. The suitable area is therefore 1 ha.	Yes
2	History	There is a history of disturbance at site, it has been severely modified and extraneous materials have been added.	Yes
3	Vegetation	Four typical OMH vegetation communities are present on the sites.	Yes
4	Bare substrate	Bare substrate is only present when in mosaic with annual vegetation. Absent from other habitat types.	Yes, partially
5	Spatial variation	As described in Criteria 4 above, mosaic with bare ground is only present in communities with annuals (A/BG2).	Yes, partially

Table 13: Drivers and indicators of high conservation value habitat in Block 3

Drivers		Indicators	
Ephemeral water on site	Yes	Minimal amount of scrub	No
Topographic variation	No	Invertebrate species assemblages	TBC
Substrate variation	No	Priority Species or LBAP invertebrate species	TBC
Variation in aspect	No	Nectar resources	Yes
Size of patch	Yes	Reptiles	Yes
Extremes of particle size of substrate	No	Birds (Priority Species)	Yes
Connectivity	Yes	Absence of invasive species	No
Disturbance	Yes	Any other non-dominant habitats	No
Hard cover	No	Vegetation composition	Yes
Extremes of drainage	No	Diversity of plant community types	No
Periodic inundations	No	Spatial heterogeneity of vegetation types at a number of spatial scales	No
Run-off from contaminated spoil	No	Age of site	No
Management	No	Percentage of criteria met	33 - 50 %
Extremes of climate	No		
Extremes of pH	Yes		
Percentage of criteria met	33 %		

4.2.22 There are areas in Block 3 which meet the criteria for OMH priority habitat type in the form of annuals and bare ground mosaic (A/BG2). These areas meet 33 % of the drivers and 33 - 50 % (dependant on the outcome of the invertebrate survey) of the indicators for habitat of high conservation value. Therefore, Block 3 is assessed as supporting OMH of low to moderate conservation value, depending on the outcome of the invertebrate survey.

4.3 Other Habitat Assessment

Potential coastal grassland

4.3.1 Semi-improved grassland SNG1 (see Figure 3a), also potential coastal grassland (see Photograph 4 on Figure 4), is located along the south-west and south-east boundaries of the sites. On the south-east it is located at the bottom of a steep, scrub-covered bund, and on top of the sea wall in a narrow strip. A wider area runs along the top of the harbour wall on the south-west boundary. The most abundant grass is red fescue which is usually the dominant species in ungrazed coastal grassland. Plants associated with coastal habitats that are present on the sites include sand spurrey (*Spergularia rubra*) and seaside centaury (*Centaureum littorale*), however, most of the plant species recorded are associated with a wide range of habitats and indicator species of both neutral and calcareous grassland were also recorded. Over fifty species were identified during the botanical survey, listed in full in Appendix 1. In addition, pyramidal orchid and bee orchid were recorded during the reptile survey undertaken between 12th May 2014 and 5th June 2014 (Thomson Ecology report reference AABP103/003/002).

4.3.2 At the gated entrance to the potential coastal grassland, in the south-west corner of the site, disturbed ground supports an ephemeral/short perennial vegetation community including scarlet pimpernel (*Anagallis arvensis*), scentless mayweed (*Tripleurospermum inodorum*) and bird's foot trefoil.

4.3.3 Although two indicators of coastal grassland were recorded during the survey, the number of other species recorded indicates that the grassland surveyed would be better defined as calcareous grassland with elements of neutral grassland and is not considered to fit the Phase 1 habitat category of coastal grassland.

4.4 Scarce Plant Survey

4.4.1 No scarce plants were recorded during the survey.

5. Legal and Planning Policy Issues

5.1.1 Within the sites a total of 4.1ha meet the criteria for the priority habitat OMH. These areas are:

- 2.5 ha in Block 1;
- 0.6 ha in Block 2; and
- 1 ha in Block 3.

5.1.2 The Stage 2 evaluation confirmed that these areas of OMH are of low conservation value as the habitat quality in each area is low with high levels of scrub encroachment, invasive species and a lack of habitat diversity. Blocks may increase to having moderate conservation values depending on the outcome of ongoing invertebrate surveys. However none of the blocks will result in having high conservation values as the drivers in the areas of OMH will not change as a result of the invertebrate surveys.

5.1.3 Under the NERC Act local authorities have a duty to have regard to the purpose of conserving biodiversity and therefore the Vale of Glamorgan Council must have regard to conserving this habitat type of OMH. Furthermore, TAN5 states that habitats of principal importance for the conservation of biodiversity should be protected from the adverse effects of development.

5.1.4 In order to comply with national legislation, replacement habitat should be provided as detailed in Section 6, where OMH habitat is lost.

5.1.5 The potential coastal grassland on the boundary of the sites did not meet the criteria of coastal grassland and is more accurately defined as calcareous grassland with elements of neutral grassland. No scarce plants were found during the survey, therefore there should be no legal and planning policy issues with respect to the development and OMH or coastal grassland.

6. Recommendations

6.1 Mitigation

- 6.1.1** The total area of Open Mosaic Habitat on Previously Developed Land on the sites covers 4.1 ha. The habitat should be replaced on a like-for-like basis on the sites in order to compensate for this loss of habitat. The habitat creation could be incorporated in to the receptor site required for reptiles (Thomson Ecology report reference AABP103/004/001) and should include plant species that reflect those in the areas of habitat to be lost. Similar habitat could be created using recycled aggregate materials such as broken bricks, soil and chalk, and it would be beneficial to use soil and aggregate taken from the site in order to ensure some transference of the seed bank. Additional seeding may encourage further development of the habitat carried out using seeds collected from the plants currently present on the sites. The early successional stage should then be maintained through frequent disturbance of the ground.
- 6.1.2** Wild parsnip was recorded in most habitats on site and was locally abundant in Block 1 at TN2 (see Figure 3a). The sap of wild parsnip is phototoxic, therefore extra caution should be used when undertaking site clearance to avoid its effects on skin.

7. Conclusion

- 7.1.1** Areas of each of the Blocks 1-3 on the sites qualify as Open Mosaic Habitat on Previously Developed Land. In order to replace the habitat that is lost it is recommended to create new habitat on site and maintain it to allow it to support early succesional plant species.
- 7.1.2** The area of grassland along the south-west and south-east boundary of the site does not meet the criteria for this habitat type and no scarce plants were recorded during the survey. Therefore no mitigation for these elements are required.
- 7.1.3** Wild parsnip has been recorded on site which has phototoxic sap, and so extra caution should be undertaken during site clearance.

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Appendix 1 - Species Lists

Block 1

Annuals and bare ground mosaic (ABG1)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Chamomile	<i>Chamaemelum nobile</i>	A		4	6	4
Bristly oxtongue	<i>Helminthotheca echioides</i>	F	✓	5	7	6
Greater plantain	<i>Plantago lanceolata</i>	F		5	6	7
Yellow-wort	<i>Blackstonia perfoliata</i>	O		5	8	2
Canadian fleabane	<i>Conyza canadensis</i>	O		4	7	6
Flattened meadow-grass	<i>Poa compressa</i>	O	✓	4	7	4
Creeping cinquefoil	<i>Potentilla reptans</i>	O		5	7	5
Common sedge	<i>Carex nigra</i>	R		8	4	2
Spear thistle	<i>Cirsium vulgare</i>	R		5	6	6
Hoary willowherb	<i>Epilobium parviflorum</i>	R		9	7	5
Soft rush	<i>Juncus effusus</i>	R		7	4	4
Red bartsia	<i>Odontites vernus</i>	R		5	6	5

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Selfheal	<i>Prunella vulgaris</i>	R		5	6	4
Broad-leaved dock	<i>Rumex obtusifolius</i>	R		5	7	9
Autumnal hawkbit	<i>Scorzonerooides autumnalis</i>	R		6	6	4
Ragwort	<i>Senecio jacobaea</i>	R		4	6	4
Average				5.38	6.25	4.81

Annuals and ruderals mosaic (A/R1)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Common vetch	<i>Vicia sativa</i>	LA		4	7	4
Ribbed melilot	<i>Melilotus officinalis</i>	A/O		5	7	5
Wild teasel	<i>Dipsacus fullonum</i>	A/R	✓	7	7	7
Hoary mustard	<i>Hirschfeldia incana</i>	A/R		3	7	5
Wild parsnip	<i>Pastinaca sativa</i>	A/R		4	7	5
Square-stalked willowherb	<i>Epilobium tetragonum</i>	F		7	5	5
Chamomile	<i>Chamaemelum nobile</i>	F/O		4	6	4
Canadian fleabane	<i>Conyza canadensis</i>	F/O		4	7	6

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Bristly oxtongue	<i>Helminthotheca echioides</i>	F/R	✓	5	7	6
Ragwort	<i>Senecio jacobaea</i>	F/R		4	6	4
Creeping cinquefoil	<i>Potentilla reptans</i>	O		5	7	5
Bramble	<i>Rubus fruticosus agg.</i>	O		6	6	6
Hop trefoil	<i>Trifolium campestre</i>	O	✓	4	6	4
Yorkshire-fog	<i>Holcus lanatus</i>	O/R		6	6	5
Common bent	<i>Agrostis capillaris</i>	R		5	4	4
Scarlet pimpernel	<i>Anagallis arvensis</i>	R		4	6	5
Mugwort	<i>Artemisia vulgaris</i>	R		4	8	7
Creeping thistle	<i>Cirsium arvense</i>	R		6	7	6
Spear thistle	<i>Cirsium vulgare</i>	R		5	6	6
Hoary willowherb	<i>Epilobium parviflorum</i>	R		9	7	5
Buckwheat	<i>Fagopyrum esculentum</i>	R		6	7	7
Sheep's fescue	<i>Festuca ovina</i>	R	✓	5	4	2
Purple toadflax	<i>Linaria purpurea</i>	R		5	7	6
Bird's-foot trefoil	<i>Lotus corniculatus</i>	R	✓	4	6	2
Musk mallow	<i>Malva moschata</i>	R		3	7	4
Common mallow	<i>Malva sylvestris</i>	R		4	8	7
Common evening-primrose	<i>Oenothera biennis</i>	R		4	6	4

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Redshank	<i>Persicaria maculosa</i>	R		6	6	7
Ribwort plantain	<i>Plantago lanceolata</i>	R		5	6	4
Greater plantain	<i>Plantago major</i>	R		5	6	7
Creeping buttercup	<i>Ranunculus repens</i>	R		7	6	7
Lesser stitchwort	<i>Stellaria graminea</i>	R		6	5	4
Red clover	<i>Trifolium pratense</i>	R		5	7	5
White clover	<i>Trifolium repens</i>	R		5	6	6
Colt's-foot	<i>Tussilago farfara</i>	R		6	6	6
Common nettle	<i>Urtica dioica</i>	R		6	7	8
Butterfly-bush	<i>Buddleia davidii</i>	YR		5	7	5
Average				5.08	6.38	5.27

Block 2

Mosses/liverworts and annuals mosaic (M/A1)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Perforate St John's-wort	<i>Hypericum perforatum</i>	F		4	7	5
Selfheal	<i>Prunella vulgaris</i>	F		5	6	4
Autumnal hawkbit	<i>Scorzonerooides autumnalis</i>	F		6	6	4
Yellow feather-moss	<i>Homalothecium lutescens</i>	LF				
Yellow-wort	<i>Blackstonia perfoliata</i>	O	✓	5	8	2
Bramble	<i>Rubus fruticosus agg.</i>	O		6	6	6
Procumbent pearlwort	<i>Sagina procumbens</i>	O		6	6	5
Ribbed melilot	<i>Melilotus officinalis</i>	O/EA		5	7	5
Agrimony	<i>Agrimonia eupatoria</i>	R		4	7	4
Chamomile	<i>Chamaemelum nobile</i>	R		4	6	4
Creeping thistle	<i>Cirsium arvense</i>	R		6	7	6
Wild teasel	<i>Dipsacus fullonum</i>	R		7	7	7
Viper's bugloss	<i>Echium vulgare</i>	R		4	7	4
Eyebright	<i>Euphrasia officinalis agg.</i>	R		5	5	3
Bird's-foot trefoil	<i>Lotus corniculatus</i>	R		4	6	2
Ribwort plantain	<i>Plantago lanceolata</i>	R		5	6	4
Greater plantain	<i>Plantago major</i>	R		5	6	7

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Creeping cinquefoil	<i>Potentilla reptans</i>	R		5	7	5
Common fleabane	<i>Pulicaria dysenterica</i>	R		7	7	4
Hedge mustard	<i>Sisymbrium officinale</i>	R		4	7	7
Soft rush	<i>Juncus effusus</i>	CR		7	4	4
Average				5.24	6.41	7

Mosses/liverworts, annuals and ruderals mosaic (M/A/R1)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Rough-stalked feather-moss	<i>Brachythecium rutabulum</i>	LA				
Wild teasel	<i>Dipsacus fullonum</i>	A/O	✓	7	7	7
Oxeye daisy	<i>Leucanthemum vulgare</i>	A/O		4	7	4
Yellow feather-moss	<i>Homalothecium lutescens</i>	LF				
Yellow-wort	<i>Blackstonia perfoliata</i>	F		5	8	2
Ragwort	<i>Senecio jacobaea</i>	F/O		4	6	4
Scentless mayweed	<i>Tripleurospermum inodorum</i>	F/O		5	6	6
Perforate St John's-wort	<i>Hypericum perforatum</i>	F/R		4	7	5
Scarlet pimpernel	<i>Anagallis arvensis</i>	O		4	6	5

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Viper's bugloss	<i>Echium vulgare</i>	O		4	7	4
Hoary willowherb	<i>Epilobium parviflorum</i>	O		9	7	5
Square-stalked willowherb	<i>Epilobium tetragonum</i>	O		7	5	5
Eyebright	<i>Euphrasia officinalis agg.</i>	O		5	5	3
Greater plantain	<i>Plantago lanceolata</i>	O		5	6	4
Annual meadow-grass	<i>Poa annua</i>	O		5	6	7
Creeping cinquefoil	<i>Potentilla reptans</i>	O		5	7	5
Bramble	<i>Rubus fruticosus agg.</i>	O		6	6	6
Biting stonecrop	<i>Sedum acre</i>	O		2	7	2
Vervain	<i>Verbena officinalis</i>	O		5	7	6
Common centaury	<i>Centaurium erythraea</i>	R		5	6	3
Red valerian	<i>Centranthus ruber</i>	R		4	8	5
Chamomile	<i>Chamaemelum nobile</i>	R		4	6	4
Rosebay willowherb	<i>Chamerion angustifolium</i>	R		5	6	5
Creeping thistle	<i>Cirsium arvense</i>	R		6	7	6
Hoary mustard	<i>Hirschfeldia incana</i>	R		3	7	5
Bird's-foot trefoil	<i>Lotus corniculatus</i>	R	✓	4	6	2
Pineapple weed	<i>Matricaria discoidea</i>	R		5	7	7
Common evening-primrose	<i>Oenothera biennis</i>	R		4	6	4
Wild parsnip	<i>Pastinaca sativa</i>	R		4	7	5

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Selfheal	<i>Prunella vulgaris</i>	R		5	6	4
Common fleabane	<i>Pulicaria dysenterica</i>	R		7	7	4
Creeping buttercup	<i>Ranunculus repens</i>	R		7	6	7
Burnet rose	<i>Rosa spinosissima</i>	R		3	6	3
Common sorrel	<i>Rumex acetosa</i>	R		5	5	4
Lesser stitchwort	<i>Stellaria graminea</i>	R		6	5	4
Hop trefoil	<i>Trifolium campestre</i>	R	✓	4	6	4
Ribbed melilot	<i>Melilotus officinalis</i>	R/EA		5	7	5
Wild strawberry	<i>Fragaria vesca</i>	CR		5	6	4
Soft rush	<i>Juncus effusus</i>	CR		7	4	4
Average				4.97	6.32	4.57

Mosaic/liverworts, annuals and ruderals mosaic (M/A/R2)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Wild teasel	<i>Dipsacus fullonum</i>	A/O	✓	7	7	7
Oxeye daisy	<i>Leucanthemum vulgare</i>	A/O		4	7	4
Yellow-wort	<i>Blackstonia perfoliata</i>	F		5	8	2

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value			
				F	N	R	
Ragwort	<i>Senecio jacobaea</i>	F/O		4	6	4	
Scentsless mayweed	<i>Tripleurospermum inodorum</i>	F/O		5	6	6	
Perforate St John's-wort	<i>Hypericum perforatum</i>	F/R		4	7	5	
Hoary willowherb	<i>Epilobium parviflorum</i>	O		9	7	5	
Square-stalked willowherb	<i>Epilobium tetragonum</i>	O		7	5	5	
Annual meadow-grass	<i>Poa annua</i>	O		5	6	7	
Creeping cinquefoil	<i>Potentilla reptans</i>	O		5	7	5	
Bramble	<i>Rubus fruticosus</i> agg.	O		6	6	6	
Common centaury	<i>Centaurium erythraea</i>	R		5	6	3	
Bird's-foot trefoil	<i>Lotus corniculatus</i>	R	✓	4	6	2	
Selfheal	<i>Prunella vulgaris</i>	R		5	6	4	
Creeping buttercup	<i>Ranunculus repens</i>	R		7	6	7	
Burnet rose	<i>Rosa spinosissima</i>	R		3	6	3	
Common sorrel	<i>Rumex acetosa</i>	R		5	5	4	
Lesser stitchwort	<i>Stellaria graminea</i>	R		6	5	4	
Hop trefoil	<i>Trifolium campestre</i>	R	✓	4	6	4	
Ribbed melilot	<i>Melilotus officinalis</i>	R/EA		5	7	5	
				Average	5.25	6.25	4.6

Ruderal and scrub mosaic (R/S1)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Ribbed melilot	<i>Melilotus officinalis</i>	D		5	7	5
Bramble	<i>Rubus fruticosus</i> agg.	F		6	6	6
Red fescue	<i>Festuca rubra</i>	O		5	6	5
Yorkshire-fog	<i>Holcus lanatus</i>	O		6	6	5
Yarrow	<i>Achillea millefolium</i>	R		5	6	4
Selfheal	<i>Prunella vulgaris</i>	R		5	6	4
Average				5.33	6.17	4.83

Open grassland and scrub mosaic (OG/S1)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Bramble	<i>Rubus fruticosus</i> agg.	A		6	6	6
Cock's-foot	<i>Dactylis glomerata</i>	O		5	7	6
Yorkshire-fog	<i>Holcus lanatus</i>	O		6	6	5
Creeping cinquefoil	<i>Potentilla reptans</i>	O		5	7	5
Yarrow	<i>Achillea millefolium</i>	R		5	6	4
Agrimony	<i>Agrimonia eupatoria</i>	R		4	7	4

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Perforate St John's-wort	<i>Hypericum perforatum</i>	R		4	7	5
Oxeye daisy	<i>Leucanthemum vulgare</i>	R		4	7	4
Ribbed melilot	<i>Melilotus officinalis</i>	R		5	7	5
Common Restharrow	<i>Ononis repens</i>	O		4	6	3
Burnet rose	<i>Rosa spinosissima</i>	R		3	6	3
Hop trefoil	<i>Trifolium campestre</i>	R	✓	4	6	4
Average				4.58	6.5	4.5

Flower rich grassland (FRG1)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Red fescue	<i>Festuca rubra</i>	A		5	6	5
Eyebright	<i>Euphrasia officinalis</i> agg.	F		5	5	3
Creeping cinquefoil	<i>Potentilla reptans</i>	F		5	7	5
Selfheal	<i>Prunella vulgaris</i>	F		5	6	4
Wild teasel	<i>Dipsacus fullonum</i>	O		7	7	7
Bird's-foot trefoil	<i>Lotus corniculatus</i>	O		4	6	2
Wild parsnip	<i>Pastinaca sativa</i>	O		4	7	5

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Autumnal hawkbit	<i>Scorzoneroides autumnalis</i>	O		6	6	4
Yarrow	<i>Achillea millefolium</i>	R		5	6	4
Agrimony	<i>Agrimonia eupatoria</i>	R		4	7	4
Yellow-wort	<i>Blackstonia perfoliata</i>	R	✓	5	8	2
Common centaury	<i>Centaureum erythraea</i>	R		5	6	3
Spear thistle	<i>Cirsium vulgare</i>	R		5	6	6
Perforate St John's-wort	<i>Hypericum perforatum</i>	R		4	7	5
Oxeye daisy	<i>Leucanthemum vulgare</i>	R		4	7	4
Ribbed melilot	<i>Melilotus officinalis</i>	R		5	7	5
Burnet rose	<i>Rosa spinosissima</i>	R		3	6	3
Ragwort	<i>Senecio jacobaea</i>	R		4	6	4
White clover	<i>Trifolium repens</i>	R		5	6	6
			Average	4.74	6.42	4.26

Flower rich grassland (FRG2)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Red fescue	<i>Festuca rubra</i>	A		5	6	5
Tansy	<i>Tanacetum vulgare</i>	A	✓	6	7	7
Yarrow	<i>Achillea millefolium</i>	F		5	6	4
Red valerian	<i>Centranthus ruber</i>	F		4	8	5
Cock's-foot	<i>Dactylis glomerata</i>	F		5	7	6
Eyebright	<i>Euphrasia officinalis</i> agg.	F		5	5	3
Long-stalked Crane's-bill	<i>Geranium columbinum</i>	F		4	7	7
Yorkshire-fog	<i>Holcus lanatus</i>	F		6	6	5
Perforate St John's-wort	<i>Hypericum perforatum</i>	F		4	7	5
Bird's-foot trefoil	<i>Lotus corniculatus</i>	F	✓	4	6	2
Ribwort plantain	<i>Plantago lanceolata</i>	F		5	6	4
Bramble	<i>Rubus fruticosus</i> agg.	F		6	6	6
Hop trefoil	<i>Trifolium campestre</i>	F	✓	4	6	4
Common Restharrow	<i>Ononis repens</i>	F/LA		4	6	3
Creeping cinquefoil	<i>Potentilla reptans</i>	F/LA		5	7	5
Yellow-wort	<i>Blackstonia perfoliata</i>	O	✓	5	8	2
Viper's bugloss	<i>Echium vulgare</i>	O		4	7	4
Ground-ivy	<i>Glechoma hederacea</i>	O		6	7	7

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Red bartsia	<i>Odontites vernus</i>	O		5	6	5
Wild parsnip	<i>Pastinaca sativa</i>	O		4	7	5
Burnet rose	<i>Rosa spinosissima</i>	O		3	6	3
Dewberry	<i>Rubus caesius</i>	O		7	7	6
Agrimony	<i>Agrimonia eupatoria</i>	R		4	7	4
Daisy	<i>Bellis perennis</i>	R		5	6	4
Hairy sedge	<i>Carex hirta</i>	R		7	7	6
Common Mouse-ear	<i>Cerastium fontanum</i>	R		5	5	4
Spear thistle	<i>Cirsium vulgare</i>	R		5	6	6
Wild teasel	<i>Dipsacus fullonum</i>	R		7	7	7
Dove's-foot Crane's-bill	<i>Geranium molle</i>	R		5	6	5
Bristly oxtongue	<i>Helminthotheca echioides</i>	R		5	7	6
Oxeye daisy	<i>Leucanthemum vulgare</i>	R		4	7	4
Field Forget-me-not	<i>Myosotis arvensis</i>	R		5	6	6
Common Broomrape	<i>Orobanche minor</i>	R	✓	4	8	6
Common sorrel	<i>Rumex acetosa</i>	R		5	5	4
Autumnal hawkbit	<i>Scorzoneroides autumnalis</i>	R		6	6	4
Ragwort	<i>Senecio jacobaea</i>	R		4	6	4
Sea Campion	<i>Silene uniflora</i>	R		6	6	4
Perennial sow-thistle	<i>Sonchus arvensis</i>	R		6	7	6

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Hare's-foot Clover	<i>Trifolium arvense</i>	R		3	5	2
Germander Speedwell	<i>Veronica chamaedrys</i>	R		5	6	5
Common vetch	<i>Vicia sativa</i>	R		4	7	4
Ribbed melilot	<i>Melilotus officinalis</i>	R/LA		5	7	5
Common Knapweed	<i>Centaurea nigra</i>	CR		5	6	5
Greater Knapweed	<i>Centaurea scabiosa</i>	CR		3	8	3
Rosebay willowherb	<i>Chamerion angustifolium</i>	CR		5	6	5
Broad-leaved Everlasting-pea	<i>Lathyrus latifolius</i>	CR		4	8	3
Common fleabane	<i>Pulicaria dysenterica</i>	CR		7	7	4
Common Valerian	<i>Valeriana officinalis</i>	CR		8	6	5
			Average	4.96	6.5	4.67

Block 3

Annual and bare ground mosaic (A/BG2)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Ribbed melilot	<i>Melilotus officinalis</i>	LA		5	7	5
Yarrow	<i>Achillea millefolium</i>	F		5	6	4
Chamomile	<i>Chamaemelum nobile</i>	F		4	6	4
Sheep's fescue	<i>Festuca ovina</i>	F		5	4	2
Selfheal	<i>Prunella vulgaris</i>	F		5	6	4
Bramble	<i>Rubus fruticosus</i> agg.	F		6	6	6
Common centaury	<i>Centaurium erythraea</i>	O		5	6	3
Eyebright	<i>Euphrasia officinalis</i> agg.	O		5	5	3
Wild strawberry	<i>Fragaria vesca</i>	O		5	6	4
Wild parsnip	<i>Pastinaca sativa</i>	O		4	7	5
Ribwort plantain	<i>Plantago lanceolata</i>	O		5	6	4
Creeping cinquefoil	<i>Potentilla reptans</i>	O		5	7	5
Autumnal hawkbit	<i>Scorzoneroides autumnalis</i>	O		6	6	4
Vervain	<i>Verbena officinalis</i>	O		5	7	6
Soft rush	<i>Juncus effusus</i>	CO		7	4	4
Scarlet pimpernel	<i>Anagallis arvensis</i>	R	✓	4	6	5
Daisy	<i>Bellis perennis</i>	R		5	6	4

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Yellow-wort	<i>Blackstonia perfoliata</i>	R	✓	5	8	2
Butterfly-bush	<i>Buddleia davidii</i>	R		5	7	5
Rosebay willowherb	<i>Chamerion angustifolium</i>	R		5	6	5
Creeping thistle	<i>Cirsium arvense</i>	R		6	7	6
Spear thistle	<i>Cirsium vulgare</i>	R		5	6	6
Canadian fleabane	<i>Conyza canadensis</i>	R		4	7	6
Wild teasel	<i>Dipsacus fullonum</i>	R		7	7	7
Viper's bugloss	<i>Echium vulgare</i>	R		4	7	4
Square-stalked willowherb	<i>Epilobium tetragonum</i>	R		7	5	5
Blue Fleabane	<i>Erigeron acris</i>	R		5	7	3
Bristly oxtongue	<i>Helminthotheca echioides</i>	R		5	7	6
Red bartsia	<i>Odontites vernus</i>	R		5	6	5
Common evening-primrose	<i>Oenothera biennis</i>	R	✓	4	6	4
Redshank	<i>Persicaria maculosa</i>	R		6	6	7
Common fleabane	<i>Pulicaria dysenterica</i>	R		7	7	4
Burnet rose	<i>Rosa spinosissima</i>	R		3	6	3
Dewberry	<i>Rubus caesius</i>	R		7	7	6
Common sorrel	<i>Rumex acetosa</i>	R		5	5	4
Broad-leaved dock	<i>Rumex obtusifolius</i>	R		5	7	9
Hedge mustard	<i>Sisymbrium officinale</i>	R		4	7	7

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Scentsless mayweed	<i>Tripleurospermum inodorum</i>	R		5	6	6
Common Valerian	<i>Valeriana officinalis</i>	R		8	6	5
Common vetch	<i>Vicia sativa</i>	R		4	7	4
Average				6.28	4.78	4

Ruderals (R1)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Wild teasel	<i>Dipsacus fullonum</i>	A		7	7	7
Ribbed melilot	<i>Melilotus officinalis</i>	A		5	7	5
Hedge mustard	<i>Sisymbrium officinale</i>	A		4	7	7
Broad-leaved dock	<i>Rumex obtusifolius</i>	F		5	7	9
Yarrow	<i>Achillea millefolium</i>	O		5	6	4
Cow Parsley	<i>Anthriscus sylvestris</i>	O		5	7	7
Canadian fleabane	<i>Conyza canadensis</i>	O		4	7	6
Wild parsnip	<i>Pastinaca sativa</i>	O		4	7	5
Perennial Sow-thistle	<i>Sonchus arvensis</i>	O		6	7	6
Average				5	6.89	6.22

Ruderal and scrub mosaic (R/S2)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Ribbed melilot	<i>Melilotus officinalis</i>	D		5	7	5
Wild teasel	<i>Dipsacus fullonum</i>	A		7	7	7
Hedge mustard	<i>Sisymbrium officinale</i>	A		4	7	7
Bramble	<i>Rubus fruticosus</i> agg.	F		6	6	6
Average				5.5	6.75	6.25

Ruderal and scrub mosaic (R/S3)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Ribbed melilot	<i>Melilotus officinalis</i>	D		5	7	5
Wild teasel	<i>Dipsacus fullonum</i>	A		7	7	7
Hedge mustard	<i>Sisymbrium officinale</i>	A		4	7	7
Bramble	<i>Rubus fruticosus</i> agg.	F		6	6	6
Canadian fleabane	<i>Conyza canadensis</i>	O		4	7	6
Wild parsnip	<i>Pastinaca sativa</i>	O		4	7	5
Average				5	6.83	6

Open grassland (OG1)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Cock's-foot	<i>Dactylis glomerata</i>	A		5	7	6
Yorkshire-fog	<i>Holcus lanatus</i>	A		6	6	5
Tall Fescue	<i>Schedonorus arundinaceus</i>	A		6	7	6
Yarrow	<i>Achillea millefolium</i>	F		5	6	4
Common Knapweed	<i>Centaurea nigra</i>	F		5	6	5
Ribwort plantain	<i>Plantago lanceolata</i>	F		5	6	4
Creeping cinquefoil	<i>Potentilla reptans</i>	F		5	7	5
Dewberry	<i>Rubus caesius</i>	F		7	7	6
Bramble	<i>Rubus fruticosus</i> agg.	F		6	6	6
Common vetch	<i>Vicia sativa</i>	F		4	7	4
Agrimony	<i>Agrimonia eupatoria</i>	O		4	7	4
Common Restharrow	<i>Ononis repens</i>	O		4	6	3
Wild parsnip	<i>Pastinaca sativa</i>	O		4	7	5
Burnet rose	<i>Rosa spinosissima</i>	O		3	6	3
Cow Parsley	<i>Anthriscus sylvestris</i>	R		5	7	7
Hairy sedge	<i>Carex hirta</i>	R		7	7	6
Spear thistle	<i>Cirsium vulgare</i>	R		5	6	6

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Wild teasel	<i>Dipsacus fullonum</i>	R		7	7	7
Fennel	<i>Foeniculum vulgare</i>	R		5	8	5
Perforate St John's-wort	<i>Hypericum perforatum</i>	R		4	7	5
Red Dead-nettle	<i>Lamium purpureum</i>	R		5	7	7
Bird's-foot trefoil	<i>Lotus corniculatus</i>	R		4	6	2
Ribbed melilot	<i>Melilotus officinalis</i>	R		5	7	5
Perennial Sow-thistle	<i>Sonchus arvensis</i>	R		6	7	6
Dandelion	<i>Taraxacum officinale</i> agg.	R		5	7	6
Hop trefoil	<i>Trifolium campestre</i>	R		4	6	4
White clover	<i>Trifolium repens</i>	R		5	6	6
Average				5.04	6.63	5.11

Flower rich grassland (FRG3)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Common bent	<i>Agrostis capillaris</i>	A		5	4	4
Red fescue	<i>Festuca rubra</i>	A		5	6	5
Annual meadow-grass	<i>Poa annua</i>	A		5	6	7

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Field Horsetail	<i>Equisetum arvense</i>	LA		6	6	6
Spear Mint	<i>Mentha spicata</i>	LA		8	7	7
Colt's-foot	<i>Tussilago farfara</i>	LA		6	6	6
Yarrow	<i>Achillea millefolium</i>	O		5	6	4
Common Knapweed	<i>Centaurea nigra</i>	O		5	6	5
Cock's-foot	<i>Dactylis glomerata</i>	O		5	7	6
Eyebright	<i>Euphrasia officinalis</i> agg.	O		5	5	3
Yorkshire-fog	<i>Holcus lanatus</i>	O		6	6	5
Bird's-foot trefoil	<i>Lotus corniculatus</i>	O		4	6	2
Ribwort plantain	<i>Plantago lanceolata</i>	O		5	6	4
Meadow buttercup	<i>Ranunculus acris</i>	O		6	6	4
Bramble	<i>Rubus fruticosus</i> agg.	O		6	6	6
Autumnal hawkbit	<i>Scorzoneroides autumnalis</i>	O		6	6	4
Agrimony	<i>Agrimonia eupatoria</i>	R		4	7	4
Daisy	<i>Bellis perennis</i>	R		5	6	4
Betony	<i>Betonica officinalis</i>	R		5	5	3
Yellow-wort	<i>Blackstonia perfoliata</i>	R	✓	5	8	2
Hairy sedge	<i>Carex hirta</i>	R		7	7	6
Common centaury	<i>Centaureum erythraea</i>	R		5	6	3
Red valerian	<i>Centranthus ruber</i>	R		4	8	5

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Common Mouse-ear	<i>Cerastium fontanum</i>	R		5	5	4
Wild teasel	<i>Dipsacus fullonum</i>	R		7	7	7
Hoary willowherb	<i>Epilobium parviflorum</i>	R		9	7	5
Sheep's fescue	<i>Festuca ovina</i>	R		5	4	2
Long-stalked Crane's-bill	<i>Geranium columbinum</i>	R		4	7	7
Ground-ivy	<i>Glechoma hederacea</i>	R		6	7	7
Perforate St John's-wort	<i>Hypericum perforatum</i>	R		4	7	5
Red Dead-nettle	<i>Lamium purpureum</i>	R		5	7	7
Oxeye daisy	<i>Leucanthemum vulgare</i>	R		4	7	4
Ribbed melilot	<i>Melilotus officinalis</i>	R		5	7	5
Common Restharrow	<i>Ononis repens</i>	R		4	6	3
Common Broomrape	<i>Orobanche minor</i>	R	✓	4	8	6
Wild parsnip	<i>Pastinaca sativa</i>	R		4	7	5
Hawkweed Oxtongue	<i>Picris hieracioides</i>	R		4	8	3
Selfheal	<i>Prunella vulgaris</i>	R		5	6	4
Common fleabane	<i>Pulicaria dysenterica</i>	R		7	7	4
Creeping buttercup	<i>Ranunculus repens</i>	R		7	6	7
Burnet rose	<i>Rosa spinosissima</i>	R		3	6	3
Dewberry	<i>Rubus caesius</i>	R		7	7	6
Common sorrel	<i>Rumex acetosa</i>	R		5	5	4

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Ragwort	<i>Senecio jacobaea</i>	R		4	6	4
Perennial Sow-thistle	<i>Sonchus arvensis</i>	R		6	7	6
Lesser stitchwort	<i>Stellaria graminea</i>	R		6	5	4
Tansy	<i>Tanacetum vulgare</i>	R	✓	6	7	7
White clover	<i>Trifolium repens</i>	R		5	6	6
Common nettle	<i>Urtica dioica</i>	R		6	7	8
Common vetch	<i>Vicia sativa</i>	R		4	7	4
			Average Ellenberg value	5.28	6.36	4.84

Scrub and open grassland mosaic (S/OG1)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Bramble	<i>Rubus fruticosus</i> agg.	LD		6	6	6
Hawthorn	<i>Crataegus monogyna</i>	F		5	7	6
Cock's-foot	<i>Dactylis glomerata</i>	A		5	7	6
Wild teasel	<i>Dipsacus fullonum</i>	O		7	7	7
Bristly oxtongue	<i>Helminthotheca echioides</i>	O		5	7	6
Yorkshire-fog	<i>Holcus lanatus</i>	A		6	6	5

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Perennial rye-grass	<i>Lolium perenne</i>	O		5	6	6
Blackthorn	<i>Prunus spinosa</i>	O		-	-	-
Broad-leaved dock	<i>Rumex obtusifolius</i>	O		5	7	9
Butterfly-bush	<i>Buddleja davidii</i>	R		5	7	5
Herb-robert	<i>Geranium robertianum</i>	R		6	6	6
			Average	5.33	6.67	6.67

Woodland (W1)

Common name	Scientific name	Abundance (DAFOR)	OMH Indicator Species	Ellenberg Value		
				F	N	R
Grey poplar	<i>Populus alba x tremula</i>	D		-	-	-
Hawthorn	<i>Crataegus monogyna</i>	A		5	7	6
Bramble	<i>Rubus fruticosus</i> agg.	A		6	6	6
Scots pine	<i>Pinus sylvestris</i>	O		6	2	2
			Average	5.67	5	4.67

Potential Coastal Grassland

Semi-improved neutral grassland (SNG1)

Common name	Scientific name	Abundance (DAFOR)
Crested dog's-tail	<i>Cynosurus cristatus</i>	A
Cock's-foot	<i>Dactylis glomerata</i>	A
Red fescue	<i>Festuca rubra</i>	A
Perforate St John's-wort	<i>Hypericum officinale</i>	F
Ribwort plantain	<i>Plantago lanceolata</i>	F
Creeping cinquefoil	<i>Potentilla reptans</i>	F
Autumnal hawkbit	<i>Scorzoneroides autumnalis</i>	F
Sand spurrey	<i>Spergularia rubra</i>	F
Bird's-foot trefoil	<i>Lotus corniculatus</i>	LF
Yarrow	<i>Achillea millefolium</i>	O
Rough-stalked feather-moss	<i>Brachythecium rutabulum</i>	O
Common knapweed	<i>Centaurea nigra</i>	O
Red valerian	<i>Centranthus ruber</i>	O
Rosebay willowherb	<i>Chamerion angustifolium</i>	O
Yorkshire fog	<i>Holcus lanatus</i>	O
Ribbed melilot	<i>Melilotus officinalis</i>	O
Common restharrow	<i>Ononis repens</i>	O
Wild parsnip	<i>Pastinaca sativa</i>	O
Hawkweed oxtongue	<i>Picris hieracioides</i>	O
Dewberry	<i>Rubus caesius</i>	O
Bramble	<i>Rubus fruticosus</i> agg.	O
Procumbent pearlwort	<i>Sagina procumbens</i>	O
Tansy	<i>Tanacetum vulgare</i>	O
Hare's-foot clover	<i>Trifolium arvense</i>	O
Viper's bugloss	<i>Echium vulgare</i>	LO
Eyebright	<i>Euphrasia officinalis</i> agg.	LO
Greater knapweed	<i>Centaurea scabiosa</i>	O/LF
Scarlet pimpernel	<i>Anagallis arvensis</i>	R
Cow parsley	<i>Anthriscus sylvestris</i>	R
Mugwort	<i>Altissima vulgaris</i>	R
Yellow-wort	<i>Blackstonia perfoliata</i>	R

Common name	Scientific name	Abundance (DAFOR)
Seaside centaury	<i>Centaureum littorale</i>	R
Common mouse-ear	<i>Cerastium fontanum</i>	R
Spear thistle	<i>Cirsium vulgare</i>	R
Herb-robert	<i>Geranium robertianum</i>	R
Smooth cat's-ear	<i>Hypochaeris glabra</i>	R
Common toadflax	<i>Linaria vulgaris</i>	R
Pale flax	<i>Linum bienne</i>	R
Red bartsia	<i>Odontites vernus</i>	R
Selfheal	<i>Prunella vulgaris</i>	R
Burnet rose	<i>Rosa spinosissima</i>	R
Biting stonecrop	<i>Sedum acre</i>	R
Hop trefoil	<i>Trifolium campestre</i>	R
White clover	<i>Trifolium repens</i>	R
Common valerian	<i>Valeriana officinalis</i>	R
Vervain	<i>Verbena officinalis</i>	R
Common vetch	<i>Vicia sativa</i>	R
Traveller's joy	<i>Clematis vitalba</i>	CR
Fennel	<i>Foeniculum vulgare</i>	CR
Crown vetch	<i>Securigera varia</i>	CR
Butterfly-bush	<i>Buddleia davidii</i>	YR

Ephemeral/Short Perennial (ESP1)

Common name	Scientific name	Abundance (DAFOR)
Scarlet pimpernel	<i>Anagallis arvensis</i>	O
Bird's-foot trefoil	<i>Lotus corniculatus</i>	O
Ribwort plantain	<i>Plantago lanceolata</i>	O
Greater plantain	<i>Plantago major</i>	O
Scentless mayweed	<i>Tripleurospermum inodorum</i>	O
Yellow-wort	<i>Blackstonia perfoliata</i>	R
Wild teasel	<i>Dipsacus fullonum</i>	R
Hoary willowherb	<i>Epilobium parviflorum</i>	R
Red fescue	<i>Festuca rubra</i>	R

Common name	Scientific name	Abundance (DAFOR)
Bristly oxtongue	<i>Helminthotheca echioides</i>	R
Perforate St John's-wort	<i>Hypericum perforatum</i>	R
Red bartsia	<i>Odontites vernus</i>	R
Creeping cinquefoil	<i>Potentilla reptans</i>	R
Procumbent pearlwort	<i>Sagina procumbens</i>	R