# Vattenfall Wind Power Ltd

# Thanet Extension Offshore Wind Farm

## Annex 5-5: National Vegetation Classification (NVC) Survey Report

June, 2018, Revision A

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Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Annex 5-5: National Vegetation Classification (NVC) Survey Report

June, 2018

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| Drafted By: | SLR |
| Approved By: | Helen Jameson |
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# THANET EXTENSION OFFSHORE WIND FARM – ONSHORE GRID CONNECTION

**National Vegetation Classification (NVC) Survey Report**

Prepared for: GoBe Consultants

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# BASIS OF REPORT

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# 1.0 Introduction

## 1.1 Background

SLR Consulting was commissioned by GoBe Consultants (on behalf of Vattenfall Wind Power Ltd) in July 2017 to carry out a range of ecological surveys along the route of the onshore grid connection for the proposed Thanet Extension Offshore Wind Farm (TEOW). The purpose of the surveys was to provide baseline data to inform an Environmental Impact Assessment (EIA).

## 1.2 Site Location and Description

The site is located in east Kent, to the north of Sandwich and southwest of Ramsgate. The route of the proposed onshore grid connection extends from the proposed landfall within Pegwell Bay Country Park, south to the proposed substation location, at the north end of the former Richborough Port site. The route then continues under the A256 to a connection at an under-construction National Grid substation within the former Richborough Power Station site. The site boundaries (henceforth referred to as the Red Line Boundary (RLB)) are shown in Drawing 1. It is important to note that at the time of survey the boundaries used were those being considered at the time of Preliminary Environmental Information, which have subsequently been subject to minor changes. The initial RLB and associated study areas considered at that time have been retained within this report for the purpose of illustration, with the refined RLB illustrated in the relevant chapters of the Environmental Statement (ES).

Within the RLB, access has not been granted to the former Richborough Power Station site, to the west of the A256, beyond an initial Phase 1 walkover. This area is subject to existing ecological monitoring, data from which have been provided to inform the EIA. This area is therefore not considered within this report.

The area within the part of the RLB considered by this report includes a range of habitat types including semi-improved, improved and amenity grassland, dense and scattered scrub, small blocks of broad-leaved woodland, scattered trees and areas of hardstanding. The part of the RLB considered by this report is bordered to the east by an extensive area of mudflats, coastal saltmarsh, coastal sand dune and floodplain grazing marsh. The Stonelees golf course lies to the west and north, to the west of Sandwich Road, with the remainder of the former Richborough Port site lying to the south.

The area within the RLB includes, in part, land forming part of the Sandwich and Pegwell Bay National Nature Reserve (NNR), Sandwich Bay to Hacklinge Marshes Sites of Special Scientific Interest (SSSI), Thanet Coast and Sandwich Bay Ramsar, and Thanet Coast and Sandwich Bay Special Protection Area (SPA). Sandwich Bay Special Area of Conservation (SAC) lies approximately 90m east of the RLB. The RLB also includes land within the Pegwell Bay Country Park and Stonelees Nature Reserve, managed by Kent Wildlife Trust.

## 1.3 Scope of Study

This report presents the findings of the National Vegetation Classification (NVC) survey.

The aims of the survey were to provide baseline data to inform the EIA and the detailed design for the project. The assessment of impacts resulting from the proposed development and the development of mitigation measures, if required, are beyond the scope of this report and are covered in the ES.

# 2.0 Methodology

## 2.1 Survey Area

At the time of survey the results of a Phase 1 habitat survey undertaken by Amec Foster Wheeler between March and July 2017 were not available and it was therefore not known whether Phase 2 botanical surveys (i.e. NVC) had been recommended for any areas within the RLB. Given that it was already relatively late in the season, as a precaution it was decided to carry out an NVC survey for all accessible semi-natural open habitats within the RLB under consideration at the time of survey, as identified during the course of an initial ecological walkover survey on 8th-9th August 2017.

The areas surveyed are shown in Drawing 1. Two areas were surveyed, one encompassing rough grassland habitat in Pegwell Bay Country Park and one including a trackway and associated disturbed ground within Stonelees Nature Reserve. Other terrestrial habitats within the RLB comprise improved and amenity grasslands, hard standing, scrub, secondary woodland and scattered trees. NVC survey was not considered necessary for any of these habitat types.

## 2.2 Phase 2 National Vegetation Classification Survey Methodology

A Phase 2 botanical survey was conducted in accordance with the methods set out in Rodwell (2006)[1] and with reference to JNCC (1992)[2] and JNCC (2000)[3].

In summary, each of the areas surveyed was first assessed for homogeneity by assessing the uniformity of the vegetation present in the area being surveyed. In both cases here, the open habitat within each of the survey areas shown in Drawing 1 was considered to be broadly homogenous. This time was also used to have a general look over the survey areas for rare or interesting species. For each survey area the surveyor then identified five randomly located quadrat sampling locations that were considered to be representative of the whole habitat patch. Quadrat locations are shown in Drawing 1. A detailed census was then taken of the plant species found within each 2x2m quadrat. The census included a measure of the relative frequency with which each given plant species was recorded within the sample, using the Domin scale.

On return to the office the survey data were fed into the MAVIS data analysis tool[4] to assign the habitat patches to the relevant NVC habitat types. This gives 10 suggested communities with an indication of how well they match the corresponding communities (as a percentage). The results given were then checked against the floristic tables and descriptions in the relevant British Plant Communities volumes.

## 2.3 Survey Dates, Times and Weather Conditions

The site was visited on 3rd September 2017 to survey the trackway /disturbed ground community and on 12th October 2017 to survey the grassland community. The surveys were both undertaken during daylight in dry and calm weather conditions.

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[1] Rodwell (2006). *National Vegetation Classification: Users' Handbook.* Joint Nature Conservation Committee (JNCC).

[2] JNCC (1992). *British Plant Communities Volume 3: Grasslands and Montane Communities*. Cambridge University Press.

[3] JNCC (2000). *British Plant Communities Volume 5: Maritime communities and vegetation of open habitats.* Cambridge University Press.

[4] S.Smart, A. Goodwin, H. Wallace and M. Jones (2016) *MAVIS* (Ver 1.03). www.ceh.ac.uk

## 2.4 Survey Personnel

The surveys were conducted by Eleanor Davies BSc MSc MCIEEM, a Senior Field Ecologist at SLR with over seven years' botanical survey experience.

## 2.5 Survey Limitations

Due to the timing of the commission the survey didn't take place until relatively late in the field season, with the survey of the trackway/disturbed ground community taking place in early September and the survey of the grassland area taking place in mid-October following an amendment to the RLB after the first survey had been completed. Mid-summer would be a more optimal time of year for undertaking NVC surveys for the habitat types present within the survey area, when the majority of higher plants are in full growth. However, given the nature of the vegetation communities present the dominant species are considered unlikely to have changed substantially by the time the surveys were carried out and the timing of the surveys is considered unlikely to have significantly affected the identification of the relevant NVC communities.

The fenced field at the northern end of Stonelees Nature Reserve, a small part of which lies within the RLB, was not surveyed for health and safety reasons (presence of Highland cattle). This area was mapped as semi-improved neutral grassland by the AFW Phase 1 habitat survey[5] and the lack of NVC data for this field is therefore not considered to represent a significant limitation.

[5] Amec Foster Wheeler (2017). T*hanet Extension Offshore Wind Farm: Extended Phase 1 Habitat Survey Report*. November 2017.

# 3.0 Results

MAVIS outputs and quadrat data are provided in Appendices 01 and 02 respectively. A summary description of the vegetation communities present within the areas surveyed is provided below.

## 3.1 Grassland Communities

The grassland survey area is located relatively close to the sea with scattered scrub consisting of hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, elder *Sambucus nigra*, bramble *Rubus fruticosus agg.* and occasional apple trees *Malus sp*. Footpaths of short grassland have been cut between the areas of rough grassland. The rough grassland was dominated by false oatgrass *Arrhenatherum elatius* and cocks-foot *Dactylis glomerata*, with sea couch *Elytrigia atherica* also dominant closer to the sea but not present further west. Frequent species included common mallow *Malva neglecta*, hogweed *Heracleum sphondylium*, red clover *Trifolium pratense*, ribwort plantain *Plantago lancelota,* common nettle *Urtica dioica*, yarrow *Achillea millefolium*, dandelion *Taraxacum agg.*, field bindweed *Convolvulus arvensis*, oxeye daisy *Leucanthemum vulgare,* agrimony *Agrimonia eupatoria* and creeping thistle *cirsium arvense*. Rarely individuals of dove's-foot crane's-bill *Geranium molle and* daisy *Bellis perennis* were found. No rare or notable plant species were recorded. A typical view of the grassland survey area is shown in Plate 1.

Using MAVIS, MG1 *Arrhenatherum elatius* grassland provided the top two results, although the percentage fit was relatively low at 48.22%. There are various sub-communities within MG1, the best fit given was sub-community MG1b *Urtica dioica* sub-community. OV24 *Urtica dioica - Galium aparine* community was also shown as a reasonable fit with a percentage fit score of 38.41%. This is described in the NVC as a tall-herb weed community where common nettle and cleavers are constant.

The MG1 community contains false oat grass and cock's foot as constant species and is therefore considered to be the best fit across the majority of the grassland survey area, despite the relatively low percentage fit score. The match with sub-community MG1b is likely to be due to scrub encroachment across the grassland in places. The identification of the OV24 community is likely to be due to encroachment of nettles and brambles into some of the quadrat locations. The description of OV24 as a tall-herb weed community would only fit relatively small areas of grassland which are in more advanced succession to scrub however. In practice some areas within the grassland survey area may be best regarded as mosaic of MG1 and OV24 communities.

There were few marine species within the grassland and the NVC does not include enough community types for the presence of sea couch to make a difference to the NVC classification given the rest of the species composition found. The presence of locally dominant sea couch could partly explain the relatively low percentage fit scores however.

**Plate 1: Typical View within the Grassland Survey Area**

## 3.2 Trackway and Disturbed Ground Communities

The survey of this area covered the trackway and associated linear area of disturbed ground with a tree line to the west and woodland and scrub to the east. There were no dominating species overall although some patches were dominated by common reed *Phragmites australis* or bramble. Species frequently present were Yorkshire fog *Holcus lanatus*, annual meadow grass *Poa* annua, perennial ryegrass *Lolium* perenne, white campion *Silene latifolia*, red clover, lesser stitchwort *Stellaria graminea*, ribwort plantain, broad-leaved plantain *Plantago major*, spear thistle *Cirsium vulgare*, common nettle, fleabane *Pulicaria dysenterica*, dandelion, lesser burdock *Artium minus*, moss spp, creeping thistle, Canadian goldenrod *Solidago Canadensis*, agrimony, hogweed, ragwort *Senecio jacobaea*, white clover *Trifolium repens*, curly dock *Rumex crispus* and knotgrass *Polygonum aviculare*. No rare or notable plant species were recorded. A typical view of the grassland survey area is shown in Plate 2.

Using MAVIS the main communities identified were OV or open habitat communities, although the percentage fit was relatively low for all communities. The best fit was the OV10 *Poa annua – Senecio vulgaris* community with a percentage fit of 44.04%. This is one of eight arable weed and wasteland communities of fertile loams and clays. No groundsel *Senecio vulgaris* was found during the NVC survey although its presence cannot be ruled out. The next best fits were both communities characteristic of gateways, tracksides and courtyards; OV21 *Poa annua – Plantago major* community and OV22 *Poa annua – Taraxacum officinale* community. The OV22b *Cirsium vulgare – Circium arvense* sub-community was given as the second best fit with a percentage fit score of 43.52%.

The field evidence indicated disturbance and use of the area as a trackway, with most of the NVC plots taken at the side to avoid larger areas of bare ground. One of the OV open habitat communities would therefore be a fitting description. In practice, the survey area probably forms a mosaic of OV communities, which is perhaps to be expected given the recently disturbed nature of the ground.

**Plate 2: Typical View of the Trackway**

# 4.0 Conclusions

Both areas surveyed contain vegetation communities which are common and widespread. No rare or notable plant species were found during the pre-survey walkover or NVC surveys.

## 4.1 Grassland Communities

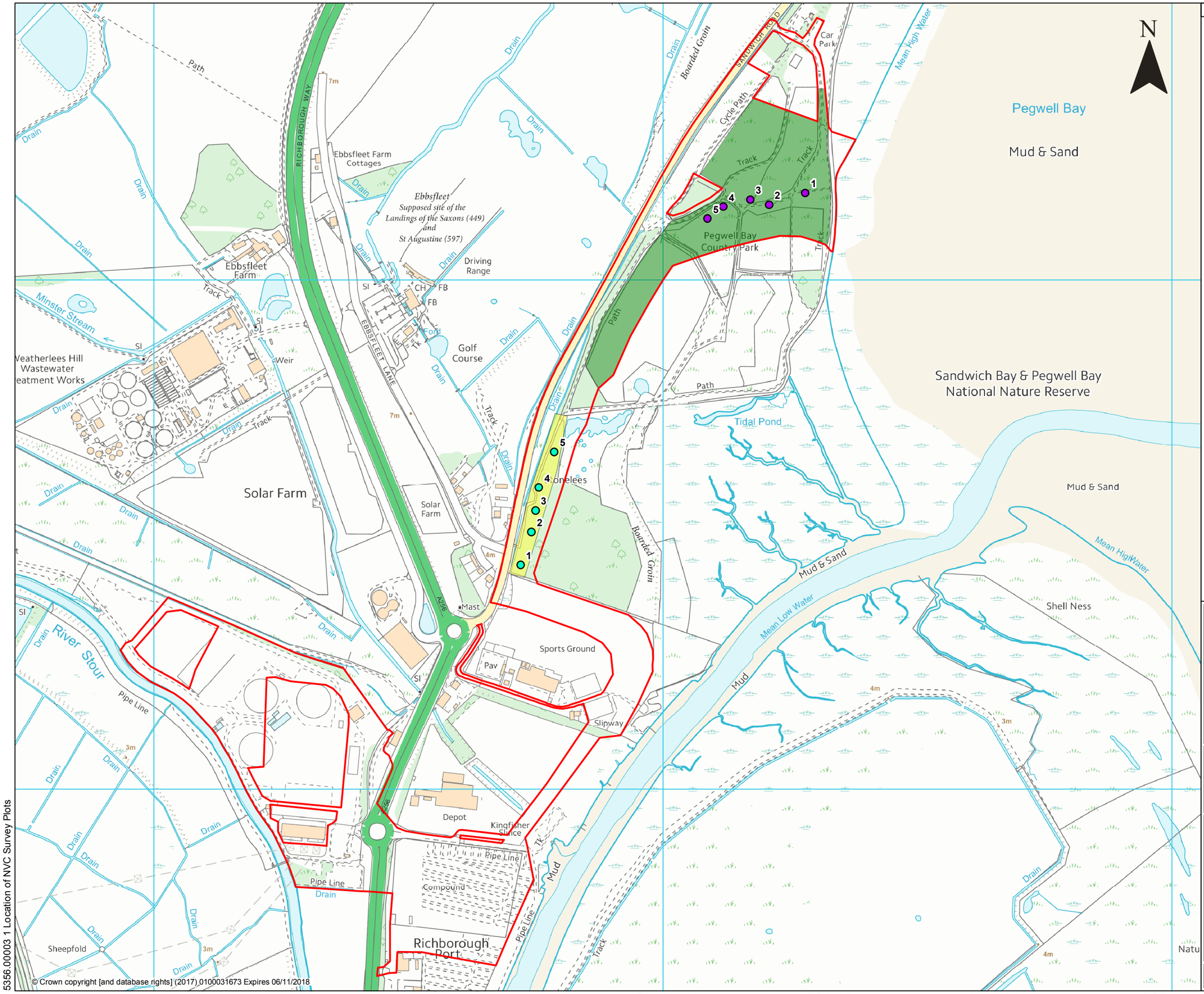
The best fit to the NVC was the MG1b *Arrhenatherum elatius* grassland, *Urtica dioica* sub-community with some other MG1 habitats also fitting reasonably. The OV24 *Urtica dioica - Galium aparine* community was also shown as a reasonable fit and this is likely to be due to encroachment of nettles and brambles into some of the quadrat locations. In practice the grassland survey area is probably best regarded as mosaic of MG1 and OV24 communities. MG1 and OV24 communities are common and widespread across lowland England[2,3].

## 4.2 Trackway and Disturbed Ground Communities

Using MAVIS for the trackway survey area identified a number of OV or open habitat communities, although the percentage fit was relatively low for all communities. The best fit was the OV10 *Poa annua – Senecio vulgaris* community, although the OV21 *Poa annua – Plantago major* and OV22 *Poa annua – Taraxacum officinale* communities were also a reasonable fit. In practice, the survey area probably forms a mosaic of these communities, which is perhaps to be expected given the recently disturbed nature of the ground. OV10, OV21 and OV 22 are all widespread throughout Britain[3].

# DRAWINGS

Drawing 1: Location of NVC Survey Plots




LEGEND

- SITE BOUNDARY
- GRASSLAND COMMUNITY QUADRAT LOCATIONS
- TRACKWAY COMMUNITY QUADRAT LOCATIONS
- GRASSLAND SURVEY AREA
- TRACKWAY AND DISTURBED GROUND SURVEY AREA


SLR global environmental solutions

4/5 LOCHSIDE VIEW
EDINBURGH PARK
EDINBURGH
EH12 9DH

T: +44 (0)131 335 6830
www.slrconsulting.com


THANET EXTENSION OFFSHORE WIND FARM
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NVC SURVEY REPORT

**NVC SURVEY AREAS AND QUADRAT LOCATIONS**

**1**

Scale 1:7,000 @ A3

Date NOVEMBER 2017

5356.00003 1 Location of NVC Survey Plots

# APPENDIX 01

## MAVIS NVC Output Tables

**Group 1: Grassland**

MAVIS output with % match to each community

NVC: MG1b *Arrhenatherum elatius* subcommunity *Urtica dioica* (48.22%)
NVC: MG1a *Arrhenatherum elatius* subcommunity *Festuca rubra* (42.92%)
NVC: OV24 *Urtica dioica – Galium aparine* (38.41%)
NVC: MG1 *Arrhenatherum elatius* (37.70%)
NVC: MG9b *Holcus lanatus – Deschampsia cespitosa* subcommunity *Arrhenatherum elatius* (37.50%)
NVC: OV24b *Urtica dioica – Galium aparine* subcommunity *Arrhenatherum elatius – Rubus fruticosus agg* (36.99%)
NVC: MG1c *Arrhenatherum elatius* subcommunity *Filipendula ulmaria* (36.79%)
NVC: OV26d *Epilobium hirsutum* subcommunity *Heracleum sphondylium* (34.87%)
NVC: OV25b *Urtica dioica – Cirsium arvense* subcommunity *Rumex obtusifolius – Artemisia vulgaris* (34.83%)
NVC: OV23d *Lolium perenne – Dactylis glomerata* subcommunity *Taraxacum officinale agg.* (34.11%)

**Group 2: Trackside**

MAVIS output with % match to each community

NVC: OV10 *Poa annua –Senecio vulgaris* (44.04%)
NVC: OV22b *Poa annua – Taraxacum officinale* subcommunity *Cirsium vulgare – C. arvense* (43.52%)
NVC: OV10d 41.04 *Poa annua –Senecio vulgaris* subcommunity *Dactylis glomerata – Agrostis capillaris* (41.04%)
NVC: OV21 40.96 *Poa annua – Plantago major* (40.96%)
NVC: MG1a *Arrhenatherum elatius* subcommunity *Festuca rubra* (40.78%)
NVC: MG1b *Arrhenatherum elatius* subcommunity *Urtica dioica* (40.64%)
NVC: OV23 *Lolium perenne – Dactylis glomerata* (39.51%)
NVC: OV22 *Poa annua – Taraxacum officinale* (38.92%)
NVC: OV24 *Urtica dioica – Galium aparine* (38.81%)
NVC: OV24a *Urtica dioica – Galium aparine* typical subcommunity (38.27%)

# APPENDIX 02

## Quadrat Data

| NVC | Grassland Community | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | 12/10/2017 | | | | | | |
| NGR | 1 - TR34280 63170, 2 - TR34209 63147, 3 - TR34172 63157, 4 - TR34119 63143, 5 - TR34088 63120 | | | | | | |
| Notes | MG1 | | | | | | |
| | | | Quadrat number and Domin value | | | | |
| No. | Species | Common name | 1 | 2 | 3 | 4 | 5 |
| 1 | *Arrhenatherum elatius* | false oatgrass | 7 | 5 | | 6 | 5 |
| 2 | *Dactylis glomerata* | cocks-foot | 5 | 6 | 7 | 7 | 8 |
| 3 | *Elytrigia atherica* | sea couch | 6 | 6 | 7 | | |
| 4 | *Malva neglecta* | common mallow | 4 | | | 4 | 4 |
| 5 | *Heracleum sphondylium* | hogweed | 3 | | | 4 | 4 |
| 6 | *Trifolium pratense* | red clover | 1 | 3 | 3 | 4 | 4 |
| 7 | *Plantago lancelota* | ribwort plantain | 1 | | | | 2 |
| 8 | *Urtica dioica* | common nettle | | 4 | | | |
| 9 | *Achillea millefolium* | yarrow | | 3 | 3 | | |
| 10 | *Taraxacum agg.* | dandelion | | 1 | | | |
| 11 | *Convolvulus arvensis* | field bindweed | | 3 | | | |
| 12 | *Leucanthemum vulgare* | oxeye daisy | | | 4 | | |
| 13 | *Agrimonia eupatoria* | agrimony | | | 4 | | |
| 14 | *cirsium arvense* | creeping thistle | | | 2 | | |
| 15 | *Geranium molle* | dove's-foot crane's-bill | | | 2 | | |
| 16 | *Bellis perennis* | daisy | | 1 | | | |
| 17 | *Rubus fruticosus agg.* | bramble | | 4 | | | |

| NVC | Trackway and Disturbed Ground Community | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | 13/09/2017 | | | | | | | |
| NGR | 1 - TR33721 62440, 2 - TR33742 62505, 3 - TR33750 62547, 4 - TR33757 62592, 5 - TR33787 62662 | | | | | | | |
| Notes | Mosaic of OV open habitat communities | | | | | | | |
| No. | Species | Common name | Quadrat number and Domin value | | | | | |
| | | | 1 | 2 | 3 | 4 | 5 | |
| 1 | *Phragmites australis* | common reed | | 5 | 8 | 4 | 5 | |
| 2 | *Rubus fruticosus agg.* | bramble | 5 | 7 | 4 | 5 | | |
| 3 | *Holcus lanatus* | Yorkshire fog | 3 | | | | | |
| 4 | *Poa annua* | annual meadow grass | 3 | 4 | | | 5 | |
| 5 | *Lolium perenne* | perennial ryegrass | 2 | | | | 4 | |
| 6 | *Trifolium pratense* | red clover | 1 | | | | | |
| 7 | *Silene latifolia* | white campion | 5 | | | | | |
| 8 | *Stellaria graminea* | lesser stitchwort | 1 | | | | | |
| 9 | *Plantago lancelota* | ribwort plantain | 1 | 4 | 1 | 4 | | |
| 10 | *Plantago major* | broadleaved plantain | | | | | | |
| 11 | *Cirsium vulgare* | spear thistle | 1 | 4 | | 1 | 4 | |
| 12 | *Urtica dioica* | common nettle | 4 | | | | | |
| 13 | *Pulicaria dysenterica* | fleabane | 1 | 3 | 3 | 3 | 6 | |
| 14 | *cirsium arvense* | creeping thistle | | 4 | | 4 | 4 | |
| 15 | *Artium minus* | lesser burdock | 1 | | | | | |
| 16 | *Taraxacum agg.* | dandelion | 1 | | | | | |
| 17 | *Bryophyte spp* | Moss species | 5 | | | | | |
| 18 | *Solidago Canadensis* | Canadian goldenrod | | | 4 | | | |
| 19 | *Agrimonia eupatoria* | agrimony | | | 1 | | | |
| 20 | *Heracleum sphondylium* | hogweed | | | | 4 | | |
| 21 | *Senecio jacobaea* | ragwort | | | | 5 | | |
| 22 | *Trifolium repens* | white clover | | | | 4 | | |
| 23 | *Rumex crispus* | curly dock | | | | | 1 | |
| 24 | *Polygonum aviculare* | knotgrass | | | | | 1 | |
| 25 | *Dactylis glomerata* | cocks-foot | | | | | 4 | |

## EUROPEAN OFFICES

### United Kingdom

**AYLESBURY**
T: +44 (0)1844 337380

**BELFAST**
T: +44 (0)28 9073 2493

**BRADFORD-ON-AVON**
T: +44 (0)1225 309400

**BRISTOL**
T: +44 (0)117 906 4280

**CAMBRIDGE**
T: + 44 (0)1223 813805

**CARDIFF**
T: +44 (0)29 2049 1010

**CHELMSFORD**
T: +44 (0)1245 392170

**EDINBURGH**
T: +44 (0)131 335 6830

**EXETER**
T: + 44 (0)1392 490152

**GLASGOW**
T: +44 (0)141 353 5037

**GUILDFORD**
T: +44 (0)1483 889800

**LEEDS**
T: +44 (0)113 258 0650

**LONDON**
T: +44 (0)203 691 5810

**MAIDSTONE**
T: +44 (0)1622 609242

**MANCHESTER**
T: +44 (0)161 872 7564

**NEWCASTLE UPON TYNE**
T: +44 (0)191 261 1966

**NOTTINGHAM**
T: +44 (0)115 964 7280

**SHEFFIELD**
T: +44 (0)114 245 5153

**SHREWSBURY**
T: +44 (0)1743 23 9250

**STAFFORD**
T: +44 (0)1785 241755

**STIRLING**
T: +44 (0)1786 239900

**WORCESTER**
T: +44 (0)1905 751310

### Ireland

**DUBLIN**
T: + 353 (0)1 296 4667

### France

**GRENOBLE**
T: +33 (0)4 76 70 93 41