



# Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Environmental Statement

## Volume 3

### Appendix 20.12 - National Vegetation Classification (NVC) Survey Report

August 2022

Document Reference: 6.3.20.12

APFP Regulation: 5(2)(a)

Wild Frontier Ecology Ltd	Client details
Report produced by: Robert Yaxley BSc (Hons) CEcol CEnv MCIEEM  Report checked by: William Riddett BA ACIEEM  Authorised by: Robert Yaxley BSc (Hons) CEcol CEnv MCIEEM  Final edit authorised by: William Riddett BA ACIEEM	Equinor New Energy Limited Forusbeen 50 4035 Stavanger Norway
Unit 2 Cold Blow Farm Great Snoring Fakenham Norfolk NR21 0HF	
Tel: 01328 864633 rob@wildfrontier-ecology.co.uk	

© All rights reserved, Wild Frontier Ecology Ltd 2022. No part of this document to be copied or re-used without the permission of the copyright holder.

Company Registered in England and Wales No 4942219.

The data which we have prepared and provided are accurate, and have been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that any opinions expressed are our best and professional bona fide opinions.

This report conforms to the British Standard 42020:2013 Biodiversity - Code of practice for planning and development.



Company Registered in England and Wales No 4942219.

VAT Reg No. 887 4692 54

Registered Office: Saxon House, Hellesdon Park Road, Drayton High Road, Norwich NR6 5DR

Director: Robert Yaxley BSc (Hons) CEcol CEnv MCIEEM

**LIST OF ACRONYMS\***

CEH	Centre for Ecology and Hydrology
CWS	County Wildlife Site
DEP	Dudgeon Extension Project
EP1HS	Extended Phase 1 Habitat Survey
IUCN	International Union of the Conservation of Nature
MAVIS	Modular Analysis of Vegetation Information System
NERC	Natural Environment and Rural Communities
NPPF	National Planning Policy Framework
NVC	National Vegetation Classification
QGIS	Quantum Geographic Information System (mapping software)
SEP	Sheringham Extension Project
WFE	Wild Frontier Ecology Ltd.

\*The above table does not include technical abbreviations used in this report to define NVC communities; these abbreviations are defined in Table 1 and in the relevant sections of the main body of this report.

## GLOSSARY OF TERMS

Term	Definition
DCO boundary / Order Limits	The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP.
Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive. This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas, and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the EIA and HRA for certain topics.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Horizontal directional drilling (HDD) zones	The areas within the onshore cable route which would house HDD entry or exit points.
Jointing bays	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The point at the coastline at which the offshore export cables are brought onshore, connecting to the onshore cables at the transition joint bay above mean high water
Onshore cable corridor	The area between the landfall and the onshore substation sites, within which the onshore cable circuits will be installed along with other temporary works for construction.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substation. 220 - 230kV.
Onshore Substation	Compound containing electrical equipment to enable connection to the National Grid.
PEIR boundary	The area subject to survey and preliminary impact assessment to inform the PEIR.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP onshore site	The Sheringham Shoal Wind Farm Extension onshore area consisting of the SEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
Study area	Area where potential impacts from the project could occur, as defined for each individual Environmental Impact Assessment (EIA) topic.
The Applicant	Equinor New Energy Limited

## Contents

<b>EXECUTIVE SUMMARY .....</b>	<b>5</b>
<b>1. BACKGROUND .....</b>	<b>7</b>
<b>2. RELEVANT LEGISLATION .....</b>	<b>9</b>
<b>3. METHODOLOGY .....</b>	<b>11</b>
<b>4. FINDINGS.....</b>	<b>14</b>
<b>5. COMMUNITY DESCRIPTIONS.....</b>	<b>18</b>
<b>6. CONCLUSIONS .....</b>	<b>32</b>

## Executive Summary

Wild Frontier Ecology Ltd. (WFE) was commissioned by Equinor New Energy Ltd. to undertake a National Vegetation Classification (NVC) Survey within relevant areas of habitat within the Development Consent Order (DCO) boundary associated with the proposed Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects. The NVC survey was preceded by a screening exercise in which any habitats identified during the Extended Phase 1 Habitat Survey (EP1HS) that were considered likely to contain rare vegetation communities or vegetation communities of elevated conservation status would then be subject to NVC surveys. The EP1HS was completed from 2020 to early 2021, and covered all accessible parts of the Preliminary Environmental Information Report (PEIR) boundary. The PEIR boundary was a wider iteration of the onshore grid connection cable corridor Order Limits, which, through the site selection process that took place from 2020 to 2022, was refined to become the narrower, preliminary DCO boundary. The screening exercise, completed on the preliminary DCO boundary, identified the coastal habitats at the landfall location as the only area within the preliminary DCO boundary which warranted NVC surveys.

The NVC survey was undertaken in June 2021, a time of year suitable for identifying the majority of plant species present. The surveys were led by an experienced NVC surveyor and undertaken by competent botanists. Standard NVC survey methodologies were followed, with sampling sites selected using recent aerial photographs and then ground-truthed by surveyors.

Thirty-eight terrestrial quadrats were sampled, all of which were assigned to an NVC community.

A total of nine NVC sub-communities were recorded within the scoped area (at the landfall location part of the DCO boundary), with one mesotrophic grassland community (MG1a), two sand-dune communities (SD8d and SD19), one acid grassland community (U1d), two woodland/scrub communities (W22 and W24), two swamp communities (S4 and S28) and one open vegetation community (OV25).

Overall, two species with elevated conservation status were recorded.

The area subject to the NVC survey holds habitats that are important in a county/regional context, together with two plant species with elevated conservation status. The most important communities in this respect are:

- SD8d *Festuca rubra* - *Galium verum* fixed dune grassland, *Bellis perennis* - *Ranunculus acris* sub-community
- SD19 *Phleum arenarium* - *Arenaria serpyllifolia* dune annual community
- U1d *Festuca ovina* - *Agrostis capillaris* - *Rumex acetosella* grassland, *Anthoxanthum odoratum* - *Lotus corniculatus* sub-community
- S4 reedbed

Within the NVC surveyed area, the ongoing actions of military vehicles and the disturbance created by the previous 2015 compound have given rise to the dune annual community on parts of the site, which has unintentionally helped create more bare ground niches for invertebrates and habitats for pioneer plant species. The temporary disturbance to the SD19 community (1.3 hectares) will almost certainly result in the production of further bare sandy ground in this area, and in the minor amounts of other dune habitats. There are clearly short-term negative impacts arising from this, but the

on-site evidence (from the previous 2015 works and current survey results) is that both the vegetation and linked invertebrate communities may see a medium-term benefit and renewal, provided the balance within the NVC survey area with the continued presence of both fixed dune and disturbed areas is maintained.

Species of elevated conservation status found within the surveyed area and where works will be undertaken were as follows:

- Smooth catsear *Hypochaeris glabra*
- Common cudweed *Filago vulgaris*

Both *H. glabra* and *F. vulgaris* are not scarce in a county context, and no particular mitigation is proposed for these species. *H. glabra* in particular is common within the SD19 dune annual community and is likely to recolonise and spread within recently disturbed areas which the works at the landfall location might result in.

One non-native invasive species was found on the site:

- Pirri-pirri bur *Acaena novae-zelandae*

It is proposed that populations of this species are eliminated from the site by the developer prior to the start of works to inhibit and prevent its spread.

## 1. BACKGROUND

Equinor New Energy Limited (hereafter the Applicant) is proposing to extend the existing operational Sheringham Shoal Offshore Wind Farm and Dudgeon Offshore Wind Farm, named the Sheringham Extension Project (hereafter SEP) and Dudgeon Extension Project (hereafter DEP). SEP and DEP will consist of a number of offshore and onshore elements including the offshore wind turbines, offshore export cables and offshore substation(s). The offshore export cables will connect to shore on the North Norfolk coast, with onshore infrastructure connecting the offshore wind farms to the National Grid, which will comprise underground cables from landfall to an onshore substation and National Grid connection at Norwich Main. A full description of SEP and DEP is provided within **ES Chapter 4 Project Description** (document reference 6.1.4).

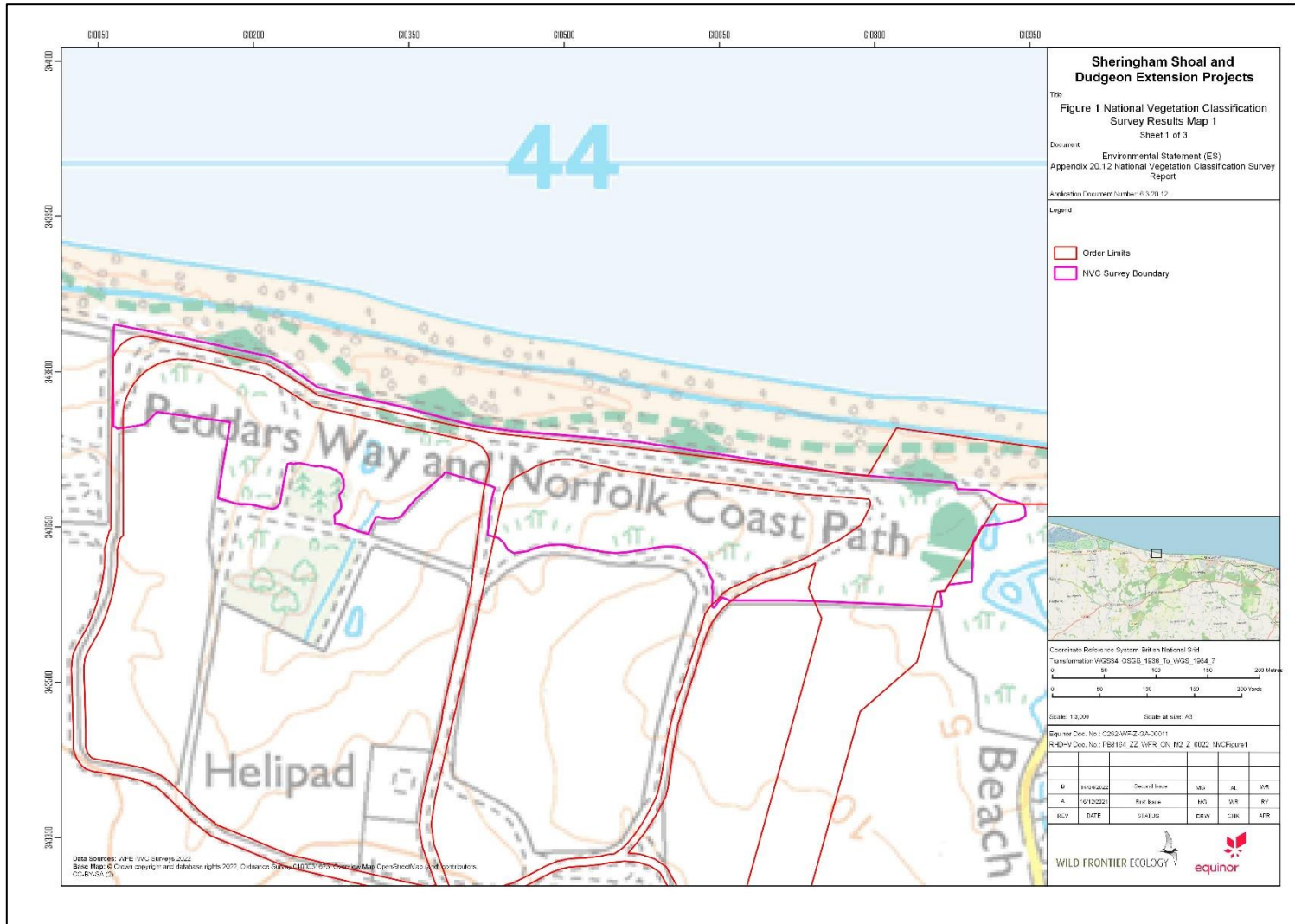
In 2021, Wild Frontier Ecology (WFE) was commissioned by Equinor to undertake NVC surveys within areas that had been assessed during the EP1HS as potentially containing rare vegetation communities, or vegetation communities of elevated conservation status. The EP1HS was completed between 2020 and early 2021, and covered all accessible parts of the PEIR boundary. The PEIR boundary was an earlier and wider iteration of the onshore grid connection cable corridor, which, through the site selection process that took place from 2020 to 2022, was refined to become the narrower DCO boundary. Full results of the EP1HS are provided in **Appendix 20.1: Extended Phase 1 Habitat Survey Technical Appendix**. NVC surveys took place in those parts of a preliminary DCO boundary which were considered likely to contain rare vegetation communities of elevated conservation status. Any such areas within the PEIR boundary but which (following the site selection process) were outside the preliminary DCO boundary were not surveyed because they were avoided.

The findings from the NVC surveys have been used to inform the ecological impact assessment of the proposed onshore grid connection for the SEP and DEP, presented in **ES Chapter 20 Onshore Ecology and Ornithology** (document reference 6.1.20), which accompanies the DCO application. The onshore components comprise a c.60km route with landfall location around Weybourne on the North Norfolk coast, with the onshore cable route then running southwards and eventually eastwards around the west and south sides of Norwich, where it is to connect with a proposed onshore electricity substation near Norwich Main Substation.

This NVC survey covers the area of the landfall (see **Figure 1**), as this was the one location where the EP1HS concluded that NVC survey was required. The objective of the survey was to map all vegetation communities to sub-community level, record the presence / absence of botanical interest features and species of elevated conservation significance. The findings were intended to inform the requirement for mitigation.



Figure 1: The 2021 NVC Survey Site



## 2. RELEVANT LEGISLATION

### 2.1 Non-Statutory County Site Designations

Local authorities may designate certain areas as being of local conservation interest. The criteria for inclusion may vary between areas. Most individual counties have a similar scheme, within Norfolk such sites are designated as County Wildlife Sites (CWS). Designation of such sites does not itself confer statutory protection, but they are a material consideration when planning applications are being determined.

### 2.2 Plants

Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) lists plant species which are afforded special protection. It is an offence to pick, uproot or destroy any species listed on Schedule 8 without prior authorisation, and all plants are protected from unauthorised uprooting (i.e. without the landowner's permission) under Section 13 of the Wildlife and Countryside Act 1981 (as amended).

A Vascular Plant Red List for England<sup>1</sup> provides a measure of the current state of England's flora measured against standardised IUCN criteria. Any taxon that is threatened - Critically Endangered (CR), Endangered (EN), Vulnerable (VU) - or Near Threatened (NT) does not have statutory protection but should be regarded as a priority for conservation in England. It should be noted that 'threat' is not synonymous with 'rarity'; some of the species concerned remain relatively common and widespread. Species of lower concern are denoted LC.

It is an offence to plant or cause to spread in the wild of certain plant species under Section 14 and Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Plant species relevant to the East of England are as follows:

- Himalayan balsam *Impatiens glandulifera*
- Variegated yellow archangel *Lamiastrum galeobdolon ssp argentatum*
- Virginia creeper *Parthenocissus quinquefolia*
- False acacia *Robinia pseudoacacia*
- Water fern *Azolla filiculoides*
- Giant hogweed *Heracleum mantegazzianum*
- Knotweed species including Japanese knotweed *Fallopia japonica*
- Parrot's feather *Myriophyllum aquaticum*
- Floating pennywort *Hydrocotyle ranunculoides*
- Rhododendron *Rhododendron ponticum*
- Giant rhubarb *Gunnera tinctoria*
- New Zealand Pigmyweed *Crassula helmsii*
- Waterweeds *Elodea* spp.

All waste containing Japanese knotweed comes under the control of Part II of the Environmental Protection Act 1990 and is classified as controlled waste.

---

<sup>1</sup> Stroh, P.A., Leach, S.J., August, T.A., Walker, K.J., Pearman, D.A., Rumsey, F.J., Harrower, C.A., Fay, M.F., Martin, J.P., Pankhurst, T., Preston, C.D. & Taylor, I. (2014). *A Vascular Plant Red List for England*. Botanical Society of Britain and Ireland, Bristol.

## 2.3 Priority Species and Habitats

Other priority species and habitats are a consideration under the National Planning Policy Framework (NPPF) 2021<sup>2</sup>, placing responsibility on decision makers to aim to conserve and enhance biodiversity and to encourage biodiversity in and around developments. There is a general biodiversity duty in the Natural Environment and Rural Communities (NERC) Act 2006 (Section 40) which requires every public body in the exercising of its functions to ‘have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity’. Biodiversity, as covered by the Section 40 duty, includes all biodiversity, not just the Habitats and Species of Principal Importance.

Section 41 of the NERC Act requires the Secretary of State to publish a list of certain species and habitats, being Species/Habitats of Principal Importance. These are species/habitats in England (also known as Priority Habitats/ Species) which had been identified as requiring action under the UK BAP, and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. The protection of either Priority Species or Habitats is not statutory, but “specific consideration”<sup>3</sup> should be afforded by decision makers when dealing with them in relation to planning and development control. Also, there is an expectation that public bodies would refer to the Section 41 list when complying with the Section 40 duty.

## 2.4 Policy

The overarching policy guidance for biodiversity is included within the NPPF and National Policy Statement EN-1 (see **ES Chapter 20 Onshore Ecology and Ornithology** for further detail). Section 15 of the NPPF (Conserving and Enhancing the Natural Environment) outlines the approach that decision makers should adopt when considering ecological issues within the planning framework, including the principles of the Mitigation Hierarchy. This espouses that in addressing impacts on valued features, avoidance should be the first option considered, followed by mitigation (minimising negative impacts). Where avoidance and mitigation are not possible, compensation for loss of features can be used as a last resort. Paragraph 180(d) of the NPPF requires opportunities to incorporate biodiversity improvements in and around development as part of the design, especially where this can secure measurable **net gains** for biodiversity or enhance public access to nature where this is appropriate. Paragraph 179 specifies that plans should identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including locally designated sites (such as CWS). It also promotes the conservation, restoration and enhancement of priority habitats and ecological networks and the protection and recovery of priority species.

---

<sup>2</sup> MHCLG (2021). National Planning Policy Framework. UK Government.

<sup>3</sup> JNCC (2015) UK BAP priority species and habitats

## 3. METHODOLOGY

### 3.1 Survey Methodology

The NVC survey fieldwork was carried out over two days on 24<sup>th</sup> and 30<sup>th</sup> June 2021. Surveys were carried out by Robert Yaxley BSc (Hons) CEcol CEnv MCIEEM (lead surveyor), Adam Stickler BSc MSc ACIEEM and Justin Parry BSc. The lead surveyor's previous experience includes NVC surveys of coastal dune habitats within the North Norfolk Coast Site of Special Scientific Interest (SSSI), and wetland habitats at Thompson Common, Water and Carr SSSI/Special Area of Conservation (SAC), Dereham Rush Meadows SSSI (all in Norfolk), and coastal habitats at Holland Haven Marshes in Essex.

Prior to the NVC field survey, a desk-based evaluation, using freely available satellite images of the site (mostly Google satellite images from 2020) was undertaken for the entire area. Using GIS imagery, the entire NVC survey area was divided into areas of homogeneous-looking stands of vegetation, and divided into GIS polygons using QGIS mapping software. In the field, these polygons were validated by visiting each one, and the boundaries re-mapped where necessary. These polygons were then used in the field to guide the locations of quadrat sampling. Overall, 38 quadrats were sampled (see **Figure 2** and **Figure 3**).

Within representative homogeneous stands, quadrats measuring 4 square metres (m<sup>2</sup>) (2 metres x 2 metres) were sampled, with selected information being taken from each quadrat. This information comprised:

- Quadrat location recorded by marking the location on an aerial photograph.
- A single photograph of the vegetation;
- A unique reference number;
- A generalised name for the stand type, to allow rapid grouping of quadrat data;
- Plant species present, with cover values (see Domin scale below); and
- Amounts of bare ground or standing water, where present.

Not all homogeneous stands (polygons) were sampled, for example where the stand was obviously similar to other sampled stands.

#### 3.1.1 Domin Scale

The percentage area of each quadrat covered by a plant species was recorded using the Domin scale, as follows:

- Cover of 91-100% = Domin 10
- Cover of 76-90% = Domin 9
- Cover of 51-75% = Domin 8
- Cover of 34-50% = Domin 7
- Cover of 26-33% = Domin 6
- Cover of 11-25% = Domin 5

- Cover of 4-10% = Domin 4
- Cover of <4% with many individuals = Domin 3
- Cover of <4% with several individuals = Domin 2
- Cover of <4% with few individuals = Domin 1

Total cover of all species within a quadrat can add up to over 100% where species vertically overlap or less than 100% where there is bare ground or standing water.

### 3.2 Data Analysis

Quadrats were mapped and classified. The statistical tool available to aid classification was the Modular Analysis of Vegetation Information System (MAVIS) devised by the Centre for Ecology and Hydrology (CEH)<sup>4</sup> specifically for use with NVC data. However, in this case the assigning of communities was largely performed using direct reference to the NVC literature; equal weight was given to the NVC written descriptions and maps in the literature, and the keys and constancy tables given in Rodwell et al. (1991-2000)<sup>5</sup>.

#### 3.2.1 Constancy

Constancy was determined in line with Rodwell et al. (1991-2000). Constancy is an expression of the frequency that a species occurs within quadrats of the same NVC community. Values are denoted in the tables as follows:

- 80-100% of quadrats = V (constant)
- 60-80% of quadrats = IV (constant)
- 40-60% of quadrats = III (frequent)
- 20-40% of quadrats = II (occasional)
- 0-20% of quadrats = I (infrequent)

Constancy and cover values are therefore expressed thus: e.g. IV(3-8), where IV indicates the species was present in 60-80% of sampled quadrats, and within those quadrats the DOMIN cover value varied between 3 and 8 (or from <4% with many individuals to 51-75% overall cover).

The number of quadrats obtained to assess each community is denoted at the top of the table by an 'n' value.

The survey findings have been used to create an NVC communities map for the survey area, which also show the precise location of all notable species recorded. Floristic tables have been generated for each community type which summarise the abundance and constancy values of constituent species among the samples.

---

<sup>4</sup> [REDACTED]

<sup>5</sup> Rodwell, J.S. ed. (1991-2000). *British plant communities, Volumes 1-5*. Cambridge University Press, Cambridge.

### 3.3 Species Conservation Status

Species' national conservation status was determined with reference to the aforementioned English Vascular Plant Red List (Stroh et al. [2016]) and the Section 41 list<sup>6</sup>. Local conservation status was determined with reference to the Norfolk Biodiversity Information Service Rare and Scarce Plants list<sup>7</sup>.

### 3.4 Survey Limitations

The survey timing and land access did not provide any constraints on the survey. The NVC survey was undertaken at the appropriate time of year, as per the NVC guidance, and that access for the entire survey area was in place. Therefore, the results from the NVC survey are considered to provide a robust baseline in terms of characterising and assigning the appropriate NVC classifications.

---

<sup>6</sup> JNCC (2015) UK BAP priority species and habitats

<sup>7</sup> Norfolk Biodiversity Information Service (2016). Revised checklist (2006) of rare & scarce plants in Norfolk, with threat status where applicable, based on *A Flora of Norfolk* (1999) & *The Vascular Plant Red Data List for Great Britain* (2005)

## 4. FINDINGS

### 4.1 Vegetation Communities

Thirty-eight terrestrial quadrats were sampled, all of which were assigned to a community. Nine communities were identified, given in **Table 1**.

NVC community maps are shown in **Figure 2** and **Figure 3**. Constancy tables for communities are given below. The two extensive dune communities (SD8d and SD19) and the small area of acid grassland community (U1d) are considered to be Priority Habitats, as is the S4a reedbed.

**Table 1. NVC Communities in the Survey Area**

<b>NVC community</b>
<b>Mesotrophic Grasslands</b>
MG1a <i>Arrhenatherum elatius</i> grassland, <i>Festuca rubra</i> sub-community (coastal grassland)
<b>Acid Grasslands</b>
U1d <i>Festuca ovina</i> - <i>Agrostis capillaris</i> - <i>Rumex acetosella</i> grassland, <i>Anthoxanthum odoratum</i> - <i>Lotus corniculatus</i> sub-community.
<b>Swamp communities</b>
S4a <i>Phragmites australis</i> reedbed, <i>Phragmites australis</i> sub-community
S28a <i>Phalaris arundinacea</i> swamp, <i>Phalaris arundinacea</i> sub-community
<b>Dune Communities</b>
SD8d <i>Festuca rubra</i> - <i>Galium verum</i> fixed dune grassland, <i>Bellis perennis</i> - <i>Ranunculus acris</i> sub-community
SD19 <i>Phleum arenarium</i> - <i>Arenaria serpyllifolia</i> dune annual community
<b>Woodland/ scrub Communities</b>
W23 <i>Ulex europaeus</i> - <i>Rubus fruticosus</i> scrub
W24 <i>Rubus fruticosus</i> - <i>Holcus lanatus</i> scrub
<b>Open Vegetation Communities</b>
OV25 <i>Urtica dioica</i> - <i>Cirsium arvense</i> community

### 4.2 Species List

The species list of all plants recorded during quadrat surveys is given in **Table 2**. Other species which were seen during surveys but not recorded in quadrats are also given where relevant. These include the invasive species pirri-pirri bur *Acaena novae-zelandiae*.


**Table 2. Full Species List**

Species Name		No of quadrats in which recorded (n=38)	Conservation Status
Scientific name	English name		
<i>Acaena novae-zelandiae</i>	Pirri-pirri bur	0 (present)	Non-native invasive (not Schedule 9)
<i>Achillea millefolium</i>	Yarrow	6	LC
<i>Agrostis capillaris</i>	Common bent	17	LC
<i>Agrostis stolonifera</i>	Creeping bent	5	LC
<i>Aira caryophyllaea</i>	Silver hair grass	10	LC
<i>Aira praecox</i>	Early hair grass	4	LC
<i>Anagallis arvensis</i>	Scarlet pimpernel	14	LC
<i>Anthoxanthum odoratum</i>	Sweet vernal grass	1	LC
<i>Aphanes arvensis</i>	Parsley piert	1	LC
<i>Arenaria serpyllifolia</i>	Thyme-leaved sandwort	7	LC
<i>Arrhenatherum elatius</i>	False oat	5	LC
<i>Bellis perennis</i>	Daisy	4	LC
<i>Bryonia dioica</i>	White bryony	1	LC
<i>Centaurea nigra</i>	Knapweed	2	LC
<i>Catapodium rigidum</i>	Fern grass	16	LC
<i>Centaurea scabiosa</i>	Greater knapweed	1	LC
<i>Centaureum erythraea</i>	Common centaury	10	LC
<i>Cerastium fontanum</i>	Common mouse-ear	16	LC
<i>Cerastium semidecandrum</i>	Little mouse-ear	17	LC
<i>Cirsium arvense</i>	Creeping thistle	6	LC
<i>Cirsium vulgare</i>	Spear thistle	5	LC
<i>Cladonia sp.</i>	Lichen	15	LC
<i>Convolvulus arvensis</i>	Field bindweed	1	LC
<i>Conyza sp.</i>	Canadian fleabane sp	6	LC
<i>Crepis capillaris</i>	Smooth hawksbeard	1	LC
<i>Dactylis glomerata</i>	Cocksfoot	5	LC
<i>Equisetum arvense</i>	Field horsetail	1	LC
<i>Erodium cicutarium</i>	Common storksbill	5	LC
<i>Eurhynchium striatum</i>	Common striated feather moss	3	LC
<i>Festuca rubra</i>	Red fescue	26	LC
<i>Filago vulgaris</i>	Common cudweed	8	RDB NT
<i>Fragaria vesca</i>	Wild strawberry	3	LC
<i>Galium aparine</i>	Cleavers	1	LC
<i>Galium verum</i>	Lady's bedstraw	1	LC
<i>Geranium molle</i>	Dovesfoot cranesbill	10	LC





Species Name		No of quadrats in which recorded (n=38)	Conservation Status
Scientific name	English name		
<i>Geranium dissectum</i>	Cut-leaved cranesbill	3	LC
<i>Glechoma hederacea</i>	Ground ivy	9	LC
<i>Heracleum sphondylium</i>	Hogweed	4	LC
<i>Holcus lanatus</i>	Yorkshire fog	30	LC
<i>Hypnum cupressiforme</i>	Cypress-leaved plait moss	1	LC
<i>Hypochaeris glabra</i>	Smooth cat's-ear	6	RDB VU
<i>Hypochaeris radicata</i>	Common cat's-ear	1	LC
<i>Jacobaea vulgaris</i>	Ragwort	26	LC
<i>Leontodon autumnalis</i>	Autumnal hawkbit	2	LC
<i>Leontodon hispidus</i>	Hairy hawkbit	9	LC
<i>Linum catharticum</i>	Fairy flax	1	LC
<i>Lolium perenne</i>	Rye grass	1	LC
<i>Lotus corniculatus</i>	Birdsfoot trefoil	17	LC
<i>Malva sylvestris</i>	Common mallow	1	LC
<i>Medicago lupulina</i>	Black medick	8	LC
<i>Myosotis ramosissima</i>	Early forget-me-not	2	LC
<i>Ononis repens</i>	Rest-harrow	3	LC
<i>Ophrys apifera</i>	Bee orchid	0	LC
<i>Orobanche minor</i>	Common broomrape	0	LC
<i>Peltigera sp.</i>	Dog lichen sp	2	LC
<i>Phleum bertolonii</i>	Small timothy grass	1	LC
<i>Pilosella officinarum</i>	Mouse-ear hawkweed	1	LC
<i>Plantago coronopus</i>	Buck's-horn plantain	30	LC
<i>Plantago lanceolata</i>	Ribwort plantain	19	LC
<i>Poa annua</i>	Annual meadow-grass	3	LC
<i>Poa trivialis</i>	Rough meadow-grass	1	LC
<i>Polytrichum juniperinum</i>	Juniper hair-cap moss	4	LC
<i>Potentilla anserina</i>	Silverweed	1	LC
<i>Potentilla reptans</i>	Creeping cinquefoil	15	LC
<i>Prunella vulgaris</i>	Self-heal	5	LC
<i>Pseudoscleropodium purum</i>	Neat feather moss	2	LC
<i>Reseda lutea</i>	Wild mignonette	1	LC
<i>Rubus fruticosus sp.</i>	Bramble sp.	14	LC
<i>Rumex acetosella</i>	Sheep's sorrel	8	LC
<i>Rumex crispus</i>	Curled dock	1	LC
<i>Rumex obtusifolius</i>	Broad-leaved dock	1	LC
<i>Sagina apetala</i>	Annual pearlwort	3	LC



Species Name		No of quadrats in which recorded (n=38)	Conservation Status
Scientific name	English name		
<i>Sagina procumbens</i>	Procumbent pearlwort	6	LC
<i>Sedum acre</i>	Biting stonecrop	22	LC
<i>Silene dioica</i>	Red campion	1	LC
<i>Silene latifolia</i>	White campion	2	LC
<i>Sonchus asper</i>	Prickly sowthistle	7	LC
<i>Trifolium campestre</i>	Hop trefoil	1	LC
<i>Trifolium dubium</i>	Lesser trefoil	3	LC
<i>Trifolium ornithopodioides</i>	Bird's foot clover	3	LC
<i>Trifolium repens</i>	White clover	8	LC
<i>Tripleurospermum inodorum</i>	Scentless mayweed	1	LC
<i>Urtica dioica</i>	Stinging nettle	4	LC
<i>Veronica arvensis</i>	Wall speedwell	3	LC
<i>Veronica chamaedrys</i>	Germander speedwell	1	LC
<i>Vicia sativa</i>	Common vetch	3	LC
<i>Vulpia bromoides</i>	Squirrel-tail fescue	8	LC

LC = Lower Concern; RDB NT = Red Data Book Near -threatened; RDB VU = Red Data Book Vulnerable



## 5. COMMUNITY DESCRIPTIONS

### 5.1 Introduction

Community descriptions are given below for each community identified. The quadrat data is given for each community. Quadrat numbers are cross-referenced below, and shown on **Figure 2** and **Figure 3**.

### 5.2 Mesotrophic Grassland

#### 5.2.1 MG1a *Arrhenatherum elatius* grassland, *Festuca rubra* sub-community

**Photograph 1: MG1a typical appearance on site:**



Data MG1: R3, R6, R7, R8, R13.

This community is present in areas of established grassland, possibly where the soil is less sandy than the SD8d fixed dune community. The length of the sward suggests that this community is not subject to a high level of grazing by rabbits as the surrounding grassland.

The community itself is not rare, being found in a variety of contexts including road verges and other infrequently grazed and mown grassland habitats. The equivalent habitat in the UKHab classification (for Biodiversity Net Gain calculation) is g3c.


**Table 3. Constancy Table for MG1a**

Quadrat number	R3	R6	R7	R8	R13	Constancy (n=5)	Domin range
Vegetation height low cm	10	40	40	70	30		
Vegetation height high cm	50	70	70	70	70		
Bare ground %	0	0	3	0	0		
Standing water %	0	0	0	0	0		
Litter %	0	0	0	0	0		
NVC	MG1a	MG1a	MG1a	MG1a	MG1a		
<i>Arrhenatherum elatius</i>	5	7	8	5	5	V	5-8
<i>Dactylis glomerata</i>	5	7	5	5	3	V	3-7
<i>Holcus lanatus</i>	7	3	3	4	5	V	3-7
<i>Plantago lanceolata</i>	4	3	3	2	4	V	2-4
<i>Rubus fruticosus</i> sp.	8	3	3	3		IV	3-8
<i>Potentilla reptans</i>		4	3	5	4	IV	3-5
<i>Heracleum sphondylium</i>	3	2	3	2		IV	2-3
<i>Ononis repens</i>		8	8	7		III	7-8
<i>Festuca rubra</i>		5	5	7		III	5-7
<i>Glechoma hederacea</i>	3			3	1	III	1-3
<i>Centaurea nigra</i>			1	5		II	1-5
<i>Cirsium arvense</i>	3			3		II	3
<i>Vicia sativa</i>	2			2		II	2
<i>Cerastium semidecandrum</i>					4	I	4
<i>Lotus corniculatus</i>					3	I	3
<i>Rumex acetosella</i>					3	I	3
<i>Centaurea scabiosa</i>	2					I	2
<i>Cerastium fontanum</i>				2		I	2
<i>Filago vulgaris</i>				2		I	2
<i>Galium aparine</i>				2		I	2
<i>Sonchus asper</i>		2				I	2
<i>Trifolium repens</i>					2	I	2
<i>Acrocarpous moss</i>		1				I	1
<i>Bryonia dioica</i>	1					I	1
<i>Convolvulus arvensis</i>	1					I	1
<i>Geranium dissectum</i>	1					I	1
<i>Jacobaea vulgaris</i>	1					I	1
<i>Poa trivialis</i>	1					I	1
<i>Silene dioica</i>	1					I	1
<i>Silene latifolia</i>	1					I	1



## 5.3 Dune Grasslands

### 5.3.1 SD8d *Festuca rubra* - *Galium verum* fixed dune grassland, *Bellis perennis* - *Ranunculus acris* sub-community

Data SD8d: R1, R2, R4, R5, R12, R17, R18, R26, R27, J1, J2, J3, J6.

Mixed quadrats: none

**Photograph 2: SD8d typical appearance on site:**



This community was the predominant grassland at the landfall location, where there has been little ground disturbance for a long period and was widespread across the NVC survey area. It is species-rich and restricted to dune habitats. Within the habitat, there are many inclusions of bramble thickets, mapped as W24. This community has been patchily grazed by rabbits, and their continued presence is likely to be important for its maintenance, with ungrazed swards shifting towards an MG1 community. The species richness is maintained by the short sward. Where the ground has previously been disturbed, for example by vehicular movements, the recolonising community initially has more affinity to the SD19 dune annual community, with SD8 presumably taking a longer time to re-establish.



The UKHab category into which this community falls is s3a7. This is in the list of communities included in the Coastal Sand Dunes Priority Habitat<sup>8</sup>.

---

<sup>8</sup> NVC | JNCC - Adviser to Government on Nature Conservation

**Table 4: SD8d Constancy Table**

Quadrat number	R17	R18	R26	R1	R2	R4	R5	R12	J1	J2	J3	J6	R27	Constancy (n=13)	Domin range		
Vegetation height low cm	3	3	2	5	2	2	2	4	1	0.5	2	5					
Vegetation height high cm	25	25	25	30	30	20	50	40	40	25	45	35					
Bare ground %	0	2	0	0	3	0	15	0	0	<1	<1	0	0				
Standing water %	0	0	0	0	0	0	0	0	0	0	0	0	0				
Litter %	0	0	0	0	0	0	0	0	0	0	0	0	0				
NVC	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d				
<i>Jacobaea vulgaris</i>	3	3	2	2	1	2	2	1	3	3	1	1	3	V	1-3		
<i>Holcus lanatus</i>	6	2	1	4	5	1		5	6	5	7	4	9	V	1-9		
<i>Festuca rubra</i>	5	5	4	7	8	5	5	7	5	5	5	5		V	4-8		
<i>Lotus corniculatus</i>	7	8	5	4	6	7	4	7	8	4	5	5		V	4-8		
<i>Plantago coronopus</i>	2	3	7	4	2	7	7		1	7	4	4		V	1-7		
<i>Potentilla reptans</i>				2	5	5	6	3	7		4		5	IV	2-7		
<i>Plantago lanceolata</i>	1			3	4	4	3	5	2		5	3		IV	2-5		
<i>Cerastium fontanum</i>	3			3	1	2	4	2				2	3	IV	1-4		
<i>Centaurium erythraea</i>			1	3	2	3			1	2	2			III	1-3		
<i>Achillea millefolium</i>				3		1		2	2		4		3	III	1-4		
<i>Medicago lupulina</i>					3	2	2		2		3	2		III	2-3		
<i>Glechoma hederacea</i>				3	3	2		2	1		2			III	1-3		
<i>Rubus fruticosus sp.</i>	1	1		1		1		2	2	1				III	1-2		
<i>Prunella vulgaris</i>				4	4	2			2		1			II	1-4		
<i>Geranium molle</i>				1		1			1	1	1			II	1		
<i>Bellis perennis</i>					5	3	3				3			II	3-5		
<i>Trifolium repens</i>	5			1				4	5		2			II	1-5		
<i>Polytrichum juniperinum</i>		4		4					2	2				II	2-4		
<i>Sedum acre</i>		3	3						2			3		II	2-3		
<i>Anagallis arvensis</i>					1	3			1			1		II	1-3		
<i>Rumex acetosella</i>	1			3					3	5				II	3-5		
<i>Aira praecox</i>				1			5			5				II	1-5		
<i>Cladonia sp.</i>	4	4	2	3										II	2-4		

Quadrat number	R17	R18	R26	R1	R2	R4	R5	R12	J1	J2	J3	J6	R27	Constancy (n=13)	Domin range		
Vegetation height low cm	3	3	2	5	2	2	2	4	1	0.5	2	5					
Vegetation height high cm	25	25	25	30	30	20	50	40	40	25	45	35					
Bare ground %	0	2	0	0	3	0	15	0	0	<1	<1	0	0				
Standing water %	0	0	0	0	0	0	0	0	0	0	0	0	0				
Litter %	0	0	0	0	0	0	0	0	0	0	0	0	0				
NVC	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d				
<i>Eurhynchium striatum</i>						3			2			4		II	2-4		
<i>Sagina procumbens</i>				3					1	4				II	1-4		
<i>Catapodium rigidum</i>						3	3				1			II	1-3		
<i>Fragaria vesca</i>				1					3	1				II	1-3		
<i>Trifolium dubium</i>				2					1	1				II	1-2		
<i>Cirsium vulgare</i>					1				1				1	II	1		
<i>Leontodon hispidus</i>	3	3										1		II	1-3		
<i>Agrostis capillaris</i>		5										5		I	5		
<i>Agrostis stolonifera</i>						4	5							I	4-5		
<i>Leontodon autumnalis</i>				2	5									I	2-5		
<i>Aira caryophyllea</i>		3	3											I	3		
<i>Cerastium semidecandrum</i>									3	2				I	2-3		
<i>Pseudoscleropodium purum</i>				3					1					I	1-3		
<i>Geranium dissectum</i>				1							1			I	1		
<i>Veronica arvensis</i>				1		1								I	1		
<i>Acrocarpus moss</i>			7											I	7		
<i>Hypnum cupressiforme</i>										7				I	7		
<i>Urtica dioica</i>													5	I	5		
<i>Pilosella officinarum</i>					4									I	4		
<i>Potentilla anserina</i>													3	I	3		
<i>Trifolium campestre</i>											3			I	3		
<i>Galium verum</i>						2								I	2		
<i>Silene latifolia</i>													2	I	2		
<i>Cirsium arvense</i>								1						I	1		



Quadrat number	R17	R18	R26	R1	R2	R4	R5	R12	J1	J2	J3	J6	R27	Constancy (n=13)	Domin range		
Vegetation height low cm	3	3	2	5	2	2	2	4	1	0.5	2	5					
Vegetation height high cm	25	25	25	30	30	20	50	40	40	25	45	35					
Bare ground %	0	2	0	0	3	0	15	0	0	<1	<1	0	0				
Standing water %	0	0	0	0	0	0	0	0	0	0	0	0	0				
Litter %	0	0	0	0	0	0	0	0	0	0	0	0	0				
NVC	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d	SD8d				
<i>Crepis capillaris</i>												1			1		
<i>Filago vulgaris</i>									1						1		
<i>Hypochaeris radicata</i>					1										1		
<i>Linum catharticum</i>					1										1		
<i>Poa annua</i>												1			1		
<i>Reseda lutea</i>													1		1		
<i>Veronica chamaedrys</i>								1							1		
<i>Vicia sativa</i>									1						1		



### 5.3.2 SD19 *Phleum arenarium* - *Arenaria serpyllifolia* dune annual community

Data SD19 (n=17): AS1, AS2, AS3, AS4, AS5, R19, R20, R21, R22, R23, R24, R25, R9, R10, R11, J4, J5.

**Photograph 3: SD19 Typical appearance on site:**



This community forms on sandy substrates where there has been previous disturbance. Buck's-horn plantain *Plantago coronopus* is a major cover component. The transition from SD8d to this community is usually quite sharp and seems entirely dependent on turf disturbance. The open conditions and amounts of bare ground are favourable habitats for some invertebrate species, and also for the rare plant species smooth catsear *Hypochaeris glabra* and bird's-foot clover *Trifolium ornithopodioides*. As this community occupies the former compound area for the Dudgeon Offshore Wind Farm landfall (constructed in 2015), and the site of a former waterworks<sup>9</sup>, it is assumed that this is the natural vegetation community which would re-form after disturbance episodes at this site.

The UKHab category into which this community falls is s3a. The community is in the list of NVC communities included in the Coastal Sand Dunes Priority Habitat<sup>10</sup>.

<sup>9</sup> Google Earth image, 1999

<sup>10</sup> NVC | JNCC - Adviser to Government on Nature Conservation

**Table 5: SD19 Constancy Table**

Quadrat	AS1	AS2	AS3	AS4	AS5	R19	R20	R21	R22	R23	R24	R25	R9	R10	R11	J4	J5	Const. (n= 17)	Domin range
Height	3	3-20	3-20	3-20	3	2-10	2-15	3-25	3-30	3-25	3-15	2-25	3-30	2-20	1-10	0-20	0-15		
Bare ground %	4	4	5	4	5	5	0	5	10	30	2	0	0	10	0	10	20-30		
Standing water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
<i>Plantago coronopus</i>	5	5	3	5	7	7	6	5	5	5	5	5	8	7	7	8	4	V	3-8
<i>Sedum acre</i>	2	3	4	2	3	3	4	4	5	5	7	7	5		5	4	1	V	1-7
<i>Cerastium semidecandrum</i>	3	1	2	3	2	5	5	4	1	2	6	5		1				IV	1-6
<i>Catapodium rigidum</i>	2	4	2	3	1	1	3	2			2		3		3	3	3	IV	1-4
<i>Acrocarpus moss</i>	7	5	5	5	4	5	5	3	3	3	3	2						IV	2-7
<i>Agrostis capillaris</i>		3	2	2			5	5	7	7	5	5			5	3	4	IV	2-7
<i>Holcus lanatus</i>	2	4	3	1		2	2	1	1	2		5	5	2				IV	1-5
<i>Jacobaea vulgaris</i>	1	3	2	3				1	2			1	2	3		1	1	IV	1-3
<i>Festuca rubra</i>						7	7	7	5	5	3	7	7			3	2	III	2-7
<i>Anagallis arvensis</i>							1	1	1	2	2		3		3	1	1	III	1-3
<i>Cladonia sp.</i>			1			3	7	7	3	2	4	7						III	1-7
<i>Aira caryophyllea</i>	1	3		4							2	3				2	3	III	1-4
<i>Vulpia bromoides</i>		2	3			2					2	3		3	3			III	2-3
<i>Cerastium fontanum</i>							2				2	4	2			2	2	II	2-4
<i>Arenaria serpyllifolia</i>						3	2	3	2	2	3							II	2-3
<i>Conyza sp.</i>						1	1	1	1		1	1						II	1
<i>Sonchus asper</i>						1	1	1	1							1	1	II	1
<i>Plantago lanceolata</i>	1								5	2			2			1		II	1-5
<i>Erodium cicutarium</i>						3	3	4		1	4							II	1-4
<i>Geranium molle</i>			1				3					1	3			1		II	1-3
<i>Leontodon hispidus</i>				1	1								2			3	2	II	1-3
<i>Filago vulgaris</i>			1	2			2	3										II	1-3
<i>Trifolium ornithopodioides</i>														7	7		5	I	5-7
<i>Agrostis stolonifera</i>											3		3		7			I	3-7
<i>Potentilla reptans</i>													3	5			2	I	2-5

Quadrat	AS1	AS2	AS3	AS4	AS5	R19	R20	R21	R22	R23	R24	R25	R9	R10	R11	J4	J5	Const. (n= 17)	Domin range
Height	3	3-20	3-20	3-20	3	2-10	2-15	3-25	3-30	3-25	3-15	2-25	3-30	2-20	1-10	0-20	0-15		
Bare ground %	4	4	5	4	5	5	0	5	10	30	2	0	0	10	0	10	20-30		
Standing water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
<i>Cirsium arvense</i>		2	3	2															2-3
<i>Sagina apetala</i>			3	1	3														1-3
<i>Hypochaeris glabra</i>		1									1	1							1
<i>Urtica dioica</i>								1	1			1							1
<i>Medicago lupulina</i>													5			4			4-5
<i>Poa annua</i>													5				1		1-5
<i>Myosotis ramosissima</i>								3				2							2-3
<i>Sagina procumbens</i>															3		2		2-3
<i>Centaurium erythraea</i>			1					2											1-2
<i>Cirsium vulgare</i>													1	1					1
<i>Rubus fruticosus sp.</i>							1					1							1
<i>Equisetum arvense</i>													3						3
<i>Lotus corniculatus</i>	3																		3
<i>Malva sylvestris</i>									3										3
<i>Trifolium repens</i>																3			3
<i>Phleum bertolonii</i>													2						2
<i>Rumex obtusifolius</i>									2										2
<i>Aphanes arvensis</i>							1												1
<i>Lolium perenne</i>																	1		1
<i>Peltigera sp.</i>								1											1
<i>Tripleurospermum inodorum</i>				1															1
<i>Veronica arvensis</i>							1												1



## 5.4 Acid Grassland

### 5.4.1 U1d *Festuca ovina* - *Agrostis capillaris* - *Rumex acetosella* grassland, *Anthoxanthum odoratum* - *Lotus corniculatus* sub-community.

Data U1d: R14, R15, R16.

Photograph 4: U1d Typical appearance on site:



This community is found in a small rectangular area of previously disturbed dune on the eastern half of the NVC survey area and is located within the DCO boundary. The area appears bare on a 2017 aerial photograph of the site, so it is assumed vegetation has recolonised since then. The constant species suggest a close relationship with both SD8d and SD19, but the gravelly substrate may have favoured acid-tolerant species such as sheep's sorrel *Rumex acetosella* and *Cladonia* species to a greater extent. This community is in the list of communities which support Lowland Dry Acid Grassland Priority Habitat<sup>10</sup>. The equivalent UKHab habitat code is g1a6.

**Table 6: Constancy Table U1d**

Quadrat number	R15	R16	R14	Constancy (n=3)	Domin range
Vegetation height low cm	3	3	2		
Vegetation height high cm	20	20	15		
Bare ground %	0	0	5		
Standing water %	0	0	0		
Litter %	0	0	0		
NVC	U1d	U1d	U1d		
<i>Agrostis capillaris</i>	7	8	7	V	7-8
<i>Lotus corniculatus</i>	2	4	7	V	2-7
<i>Cladonia sp.</i>	7	1	4	V	1-7
<i>Rumex acetosella</i>	5	2	5	V	2-5
<i>Hypochaeris glabra</i>	3	3	2	V	2-3
<i>Sedum acre</i>	5	1		IV	1-5
<i>Filago vulgaris</i>	3		3	IV	3-3
<i>Plantago coronopus</i>	2	3		IV	2-3
<i>Aira caryophyllea</i>	3			II	3
<i>Aira praecox</i>	3			II	3
<i>Centaurium erythraea</i>		3		II	3
<i>Festuca rubra</i>			3	II	3
<i>Sagina procumbens</i>	3			II	3
<i>Anagallis arvensis</i>			2	II	2
<i>Arenaria serpyllifolia</i>			2	II	2
<i>Holcus lanatus</i>	2			II	2
<i>Jacobaea vulgaris</i>	2			II	2
<i>Peltigera sp.</i>	2			II	2
<i>Rubus fruticosus sp.</i>		2		II	2
<i>Trifolium repens</i>		2		II	2
<i>Cerastium fontanum</i>		1		II	1
<i>Cerastium semidecandrum</i>			1	II	1
<i>Leontodon hispidus</i>		1		II	1
<i>Rumex crispus</i>	1			II	1
<i>Vulpia bromoides</i>			1	II	1

## 5.5 Woodland and Scrub

### 5.5.1 W24 *Rubus fruticosus* - *Holcus lanatus* scrub

No quadrats.

Photograph 5: W24 Typical Appearance on site:



W24 is used here as shorthand for dense bramble scrub. Occasionally other shrub species were present within the bramble, such as hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* or elder *Sambucus nigra*. The bramble was mainly found in discrete thickets scattered through the dune grassland. It is not considered to be a Priority Habitat; however, it performs an important function on the site, providing cover for migrant and breeding birds, nectar and fruit, and habitats for reptiles and invertebrates.

## 5.6 Other communities

### W23 *Ulex europaeus* - *Rubus fruticosus* agg. scrub

This community occurs in small discrete areas where gorse is the dominant shrub species, although bramble is always present as a sub-dominant component.

### OV25 *Urtica dioica* - *Cirsium arvense* community

There is one stand of this community in the east of the site to the south of the dune grassland. There is some bramble *Rubus* agg. and hawthorn *Crataegus monogyna* scrub growing within the community, which is however largely dominated by stinging nettle

*Urtica dioica*. It largely lies to the south of the area occupied by the former waterworks<sup>10</sup>, and may have arisen due to nutrient enrichment from that site.

Swamp Communities: S4a *Phragmites australis* reedbed and S28a *Phalaris arundinacea* swamp

The two loci of reedbed on the survey site are next to the re-excavated pond towards the western end of the site, where there is also a stand of reed canary grass *Phalaris arundinacea* (see **Figure 2**), and in the far eastern part of the site where a more extensive area of reedbed shows a minor encroachment inside the DCO boundary. S4 is listed as a Priority Habitat.



## 6. CONCLUSIONS

### 6.1 NVC Communities

The site holds S41 Priority Habitats that are important in a regional context, together with two species of elevated conservation status. The most important communities in this respect are:

- SD8d *Festuca rubra* - *Galium verum* fixed dune grassland, *Bellis perennis* - *Ranunculus acris* sub-community;
- SD19 *Phleum arenarium* - *Arenaria serpyllifolia* dune annual community;
- U1d *Festuca ovina* - *Agrostis capillaris* - *Rumex acetosella* grassland, *Anthoxanthum odoratum* - *Lotus corniculatus* sub-community; and,
- S4 reedbed.

The stand of U1d acid grassland is not within the DCO boundary and will not be affected.

Dune habitats in the UK are often over-stabilised<sup>11</sup>, with the loss of mobile dune habitats in favour of fixed dune habitats which are often lacking in niches such as bare ground which are important for invertebrates and other dune species. At this site, the ongoing actions of military vehicles and the disturbance created by the previous 2015 compound have given rise to the dune annual community on parts of the site, which has unintentionally helped create more bare ground niches for invertebrates and habitats for pioneer plant species.

The areas of each NVC community within the parts of the DCO boundary which were NVC surveyed are given in Table 7 as follows:

**Table 7: Areas of each NVC community within Surveyed Parts of the DCO boundary**

Totals	
NVC Code	Area (ha)
SD19 Dune annual community	1.3673
SD8d Fixed dune community	0.2788
OV25 Nettle and scrub	0.2436
MG1a Mesotrophic grassland	0.1451
W22-24 scrub	0.1325
S4 reedbed	0.0137

The temporary disturbance to the SD19 community will almost certainly result in the production of further bare sandy ground in this area, and in the minor amounts of other habitats. There are clearly short-term negative impacts arising from this, but the on-

<sup>11</sup> Jones, L.1, Rooney, P.2, Rhymes. J.2 and Dynamic Dunescapes partners (2021). The Sand Dune Managers Handbook. Version 1, June 2021. Produced for the Dynamic Dunescapes (DuneLIFE) project: LIFE17 NAT/UK/000570; HG-16-0864361

site evidence (from the previous 2015 works and current survey results) is that both the vegetation and linked invertebrate communities may see a medium-term benefit and renewal, provided the balance on site with the continued presence of both fixed dune and disturbed areas is maintained. See the invertebrate survey appendix<sup>12</sup> for details of suggested mitigation where the DCO boundary affects loci of rare species.

Clearly the impacts will need to be taken into account in any Biodiversity Net Gain calculation. The landowner has put forward some enhancement proposals across the site which may help to offset any further negative impacts if tied in with the project.

## 6.2 Species

Species of elevated conservation status found within the parts of the DCO boundary which were NVC surveyed were as follows:

- Smooth catsear *Hypochaeris glabra*
- Common cudweed *Filago vulgaris*

Additionally, bird's-foot clover *Trifolium ornithopodioides* occurs on the site. This species is not on the rare or scarce list for Norfolk, but is only known from 15 tetrads in the county and should therefore be considered scarce at a sub-county level.

Both smooth catsear *H. glabra* and common cudweed *F. vulgaris* are not scarce in a county context, and no particular mitigation is proposed for these species. *H. glabra* in particular is common within the SD19 dune annual community and is likely to recolonise and spread within recently disturbed areas which the works might result in. *T. ornithopodioides* also has its population within a frequently tracked-over part of the SD19 community, so will also be unlikely to require specific mitigation.

One non-native invasive species was found on the site:

- Pirri-pirri bur *Acaena novae-zelandiae*

Populations of this species will be eliminated from the site prior to the start of works to inhibit and prevent its spread.

---

<sup>12</sup> [Ref for invertebrate survey appendix]

Figure 2: NVC Communities and Quadrat Locations (west half of site)

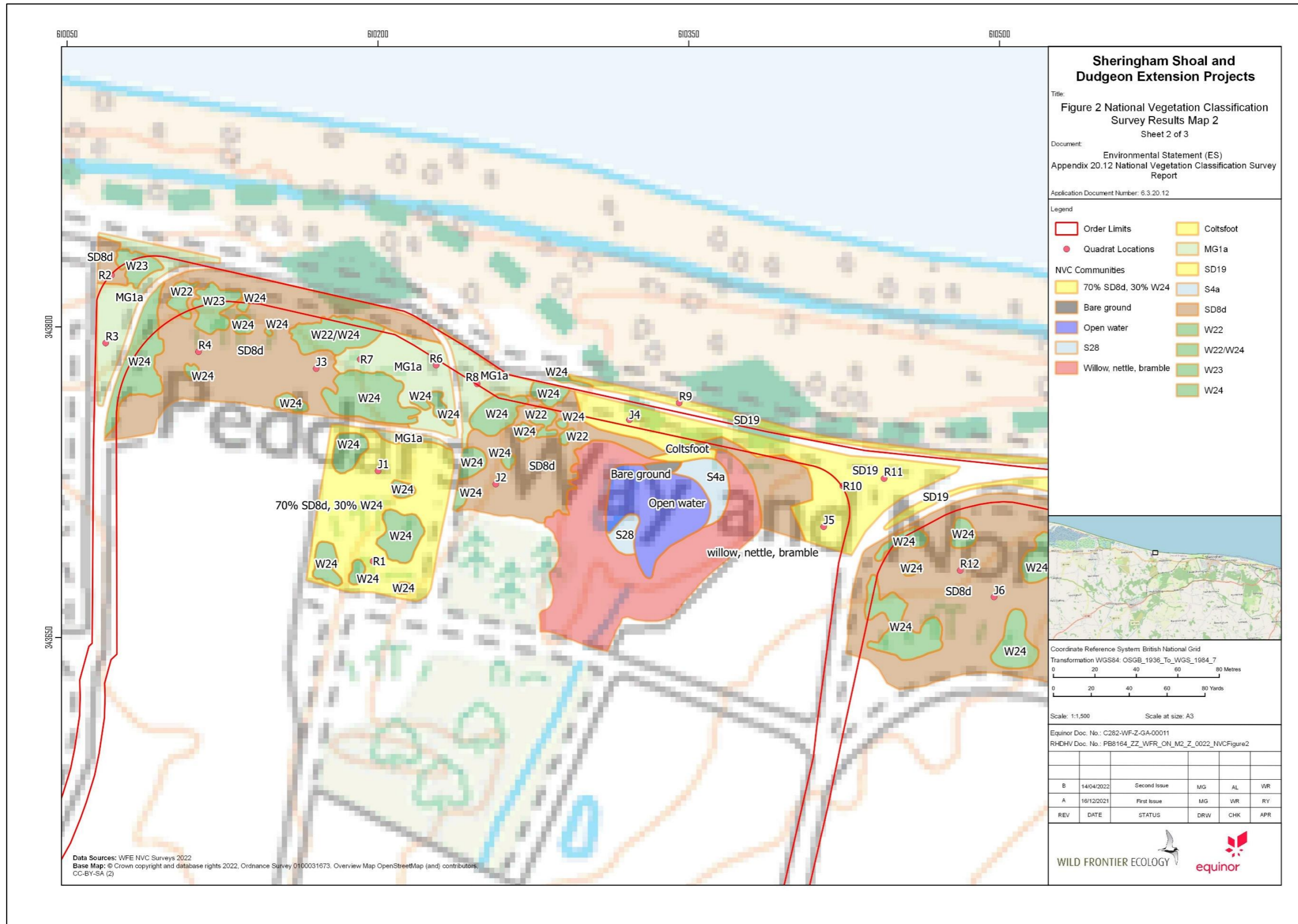


Figure 3. NVC Communities and Quadrat Locations (east half of site)

