**PROVISION OF INFORMATION FOR STAGE 1 SCREENING**

**AND**

# NATURA IMPACT STATEMENT

**TO INFORM STAGE 2 APPROPRIATE ASSESSMENT**

**FOR THE**

**PROPOSED WEXFORD TO CURRACLOE GREENWAY**

**PREPARED FOR**

**WEXFORD COUNTY COUNCIL**

| **Project Reference:** | | **160073** | | | |
|---|---|---|---|---|---|
| **Rev.** | **Status** | **Author** | **Reviewed By** | **Approved By** | **Issue Date** |
| D01 | Draft | MMW | PS | PS | 13/2/2018 |
| D02 | Final | MMW | PS | PS | 23/2/2018 |

Scott Cawley, College House, Rock Road, Blackrock, Co. Dublin, Ireland

Tel+353(1)676-9815 Fax +353(1) 676-9816

**TABLE OF CONTENTS**



**LIST OF TABLES**



**LIST OF FIGURES**

# 1 INTRODUCTION

This report contains information required for the competent authority (in this instance An Bord Pleanála) to undertake both Stage 1 Screening for Appropriate Assessment and Stage 2 Appropriate Assessment (AA) in respect of the proposed Wexford to Curracloe Greenway. It was prepared by Scott Cawley Ltd. on behalf of the applicant.

The report provides information and appraises the potential for the Wexford to Curracloe Greenway (hereafter referred to as 'proposed greenway'), to have significant effects, either individually or in combination with other plans or projects, on Natura 2000 sites (hereafter 'European sites'[1]) and furthermore assesses whether the proposed development would adversely affect the integrity of any European site. The information in this report forms part of, and should be read in conjunction with, the documentation accompanying the application for permission for the proposed development.

Article 6(3) of *Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora* (as amended) (hereafter 'the Habitats Directive') requires that, any plan or project not directly connected with or necessary to the management of a European site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to AA of its implications for the site in view of the site's conservation objectives.

For the purposes of the application for the proposed greenway, the requirements of Article 6(3) have been transposed into Irish law by Part XAB of the Planning and Development Act 2000, as inserted.

This document comprises information to enable An Bord Pleanála to perform both Stage 1 screening for Appropriate Assessment and Stage 2 full Appropriate Assessment if required.

The information in relation to the Stage 1 Screening Stage is presented in Section 4 of this document. Whereas, information to enable the Board to perform its statutory function to conduct a full Appropriate Assessment, if required, is presented in Sections 5, 6 and 7.

## 1.1 Overview

Wexford County Council have developed the Wexford to Curracloe Greenway in line with County policy promoting greenway in the form of a combined walking and cycling trail. Several route options were explored, which are described in Preliminary Design Report Book No. 2 of this application, before reaching the final preferred design. The 10.7km proposed route will begin at Ferrybank car park, it will travel northeast along the coast, before continuing inland around two private residential properties. The route will join Ardcavan Lane west of the Wildfowl Reserve Visitors Centre, continue past the Centre and along the sea protection wall skirting the north slobland until it meets the Raven Wood. The final section of the route will use the existing trail with the Raven Wood leading users to Culleton's Gap car park where the route will terminate.

Two *c.* 6km looped routes have also been incorporated into the design, one at the Raven using existing trails and a second at Ardcavan using a combination of the greenway from Ferrybank car park to Ardcavan Lane, Ardcavan Lane to R741 Regional Road and returning to Ferrybank car park.

Wexford County Council have designed the route with the knowledge that the route passes through European conservation designations that are highly sensitive ecological areas. The design of the

[1] Natura 2000 sites are defined under the Habitats Directive (Article 3) as a European ecological network of special areas of conservation composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats. In Ireland these sites are designed as *European sites* – as defined under the Planning and Development Act s and/or Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs).

greenway has considered ecologically sensitive areas along the route and has taken a preventative approach accommodating safeguarding measures wherever possible.

The Wexford Slobs is an area of reclaimed land within the River Slaney Estuary. The low agricultural land provides a feeding ground for nationally- and internally-important numbers of wintering waterbirds and supports in excess of 20,000 waterbirds, with a peak count over 5 winters 1996/97-2000/01 reaching 49,030 birds (NPWS, 2014). In addition to waterbirds, the site is important to winter roosting hen harrier which have occurred within the site in nationally important numbers. Hen harrier are a scare raptor in Ireland and their population is under increasing threat from several man-made influences including habitat loss, fragmentation and disturbance.

Of particular note is the role the Wexford Slobs plays in the lifecycle of some 30% of the global Greenland white-fronted goose (*Anser albifrons flavirostris*) population (NPWS, 2011a). Greenland white-fronted geese have an extremely restricted geographical distribution, breeding in western Greenland and wintering at sites in Ireland and the UK. Their confined geographical range limits their plasticity to environmental change and increases their vulnerability to population extinctions at a local level, which has been evident at wintering bog sites in the west of Ireland since the 1950s (Norris and Wilson 1988). Given the ornithological importance of the Wexford Slobs alone and sensitivity of the Greenland white-fronted goose population to disturbance at their feeding grounds, it was imperative that the design of the Greenway ensured the ecological sensitivity of the Wexford Slobs remains intact.

From the outset of the design process, it was agreed that the mid-section of the route which skirts the north sloblands would be closed during winter proposed to avoid potential adverse effects of disturbance of the waterbirds by interaction with greenway users. The closed period of the mid-section will apply annually from dates 16th September to 14th April which will cover the period that wintering waterbirds and Greenland white-fronted geese are present at the sloblands. The two looped routes will be open all year round and will provide an alternative walking and cycling trail during the closed period.

## 2 METHODOLOGY

### 2.1 Authors' Qualifications & Expertise

This report has been prepared by Ms. Maeve Maher-McWilliams, Ms. Kate-Marie O'Connor and Mr. Paul Scott. Ms Maher-McWilliams also carried out the breeding bird surveys and winter hen harrier surveys, and Kate-Marie O'Connor undertook the habitat surveys. All are fully qualified ecological consultants.

Ms Maher-McWilliams holds an honours degree in Biological Sciences from Queens University Belfast and attained a distinction in her Masters in Evolutionary and Behavioural Ecology from University of Exeter. She is an Associate member of CIEEM. She has worked in ecological consultancy for over five years and has worked on a range of large to small scale projects across Ireland and the UK. Maeve's primary technical specialism is ornithology, however her skills extend to protected mammal and habitat surveys. Her involvement extends from inception to post planning compliance, survey completion, project and survey management, carrying out of Ecological Impact Assessment, and authoring of EIA Chapters and Appropriate Assessment. She regularly undertakes surveys and prepares AA and EcIA reports.

Kate-Marie O'Connor holds an honours degree in Natural Sciences from Trinity College Dublin, specialising in Botany, and obtained a distinction in her Masters in Environmental Modelling, Monitoring and Reconstruction from the University of Manchester. Her experience as an ecological consultant has focused on the preparation of ecological assessments, most frequently for EIA and AA, with all the key elements of those processes including planning for an undertaking ecological baseline surveys, desktop studies, analysis and presentation of data and results, undertaking assessment of impacts and identifying appropriate mitigation measures. She has worked on a range of public and private sector schemes in the UK and Ireland. Ms. O'Connor has a specialist interest in botany but is also competent in a range of fauna surveys (e.g. mammals including bats and newts). She regularly

prepares information for Appropriate Assessment reports. Ms. O'Connor was responsible for the compilation of the data for the Report and coordinated and carried out much of the fieldwork which contributed to this assessment.

Paul Scott is Director with Scott Cawley Ltd. He holds a first-class honours degree in Environmental Biology from the University of Liverpool and a Masters in Pollution and Environmental Control at the University of Manchester. He is a Chartered Ecologist and Environmentalist and a full Member of the Chartered Institute of Ecology and Environmental Management. He is an experienced environmental scientist, specialising in impact assessment and ecology. He has experience in a wide variety of environmental assessment and management projects and has acted as a member of environmental assessment Expert Panels. Mr Scott has prepared guidance on Strategic Environmental Assessment, Appropriate Assessment and Environmental Impact Assessment to UK and Irish central government and local authorities. He has prepared ecological guidance notes designed for planners and developers on behalf of the four Dublin local authorities. He has been involved in many Appropriate Assessments of complex projects and land-use plans including the Cherrywood SDZ, Meath and Clare County Development Plans, East Meath Local Area Plan and variations to the Meath, Navan, Kells, Galway, Dublin, Ennis and Kildare Development Plans. He developed a review package for Appropriate Assessment as part of the EPA STRIVE funded project Integrated Biodiversity Impact Assessment. He lectures on EIA and Appropriate Assessment practice at University College Dublin, Trinity College Dublin and NUI Galway. Mr Scott was responsible for overall review and verification of this report and provided additional text where required.

### 2.2 Guidance

This report has been prepared having regard to the following guidance documents where relevant:

- *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.* (Department of Environment, Heritage and Local Government, 2010 revision);
- *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.* Circular NPW 1/10 & PSSP 2/10;
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission Environment Directorate-General, 2001); hereafter referred to as the EC Article 6 Guidance Document. The guidance within this document provides a non-mandatory methodology for carrying out assessments required under Article 6(3) and (4) of the Habitats Directive;
- *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (EC Environment Directorate-General, 2000 updated draft April 2015); hereafter referred to as MN2000; and

The information comprised in this report will assist the competent authority to conduct both the required Stage 1 Screening and Stage 2 Appropriate Assessments in respect of the proposed greenway. Baseline data collection included a desk study, three breeding bird visits conducted on the 9th and 30th May, 20th June 2017, six winter hen harrier visits conducted on 15th November 2017, 26th and 29th January, 14th and 15th February 2018, and three habitat surveys on the 11th and 12th July and 15th November 2017. Information relied upon included the following information sources, which included maps, ecological and water quality data:

- Ordnance Survey of Ireland mapping and aerial photography available from www.osi.ie;
- Online data available on European sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie;
- Information on land-use zoning from the online mapping of the Department of the Environment, Community and Local Government http://www.myplan.ie/en/index.html;

- Information on water quality in the area available from www.epa.ie;
- Information on the South Eastern River Basin District from http://sw.cfram.com/;
- Information on soils, geology and hydrogeology in the area available from www.gsi.ie;
- Information on environmental conditions of the site and environs from http://gis.epa.ie/Envision;
- Information on the location, nature and design of the proposed greenway supplied by the Wexford County Council design team;
- Information on the status of EU protected habitats in Ireland (National Parks & Wildlife Service, 2013a & 2013b); and,
- Information on the conservation status of birds in Ireland (Colhoun & Cummins, 2014).

The following planning and policy documents were relevant to the subject lands, in particular regarding the assessment of other plans and projects with potential for cumulative effects:

- National Biodiversity Action Plan 2017-2021;
- Wexford Town & Environs Development Plan 2009-2015 (extended to 2019);
- Wexford County Development Plan 2013-2019; and
- South Eastern River Basin District, River Basin Management Plan 2009-2015.

### 2.3 Stage 1 Screening Methodology

The above referenced AA guidance documents set out a staged process for carrying out the assessment required under the Habitats Directive, the first stage of which is referred to as screening. This screening stage identifies the likely significant impacts on a European site, if any, which would arise from a proposed development either alone or in combination with other plans and projects.

The possibility of there being a significant effect on a European site will generate the need for a Stage 2 AA to be carried out by the competent authority for the purposes of Article 6(3). In this instance, the competent authority is An Bord Pleanála. A screening for appropriate assessment of an application for consent for proposed development must be carried out by the competent authority to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on any European site. A Stage 2 Appropriate Assessment is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site. The first (Screening) stage for appropriate assessment operates merely to determine whether a (Stage 2) Appropriate Assessment must be undertaken on the implications of the plan or project for the conservation objectives of relevant European sites.

Screening for AA involves the following:

- Determining whether a project or plan is directly connected with or necessary to the conservation management of any European sites;
- Describing the details of the project/plan proposals and other plans or projects that may cumulatively affect any European sites;
- Describing the characteristics of relevant European sites; and
- Appraising likely significant effects of the proposed project on relevant European sites.

Section 4 of this report provides a summary of the information gathered for the AA screening and Sections 5, 6 and 7 of this report take forward the assessment into full AA.

## 2.4 Stage 2 AA Methodology

For Stage 2 AA, the potential for a proposed development, individually or in combination with other plans or projects, to adversely affect the integrity of European sites must be examined with respect to the specific conservation objectives of the relevant European sites. This Stage 2 AA also requires consideration of the specific mitigation measures that will be implemented to ensure an absence of adverse effects on the integrity of European sites. Stage 2 AA must provide a clear conclusion regarding the absence (considering the implementation of mitigation measures) of adverse effects on the integrity of European sites. In order to grant permission, the competent authority must conclude, having conducted the Stage 2 AA that the proposed development will not have an adverse effect on the integrity of any identified European sites.

For the avoidance of doubt, and as demonstrated by the conclusions of this report, it is not necessary in the case of this proposed development to progress to further stages of the assessment process *i.e.* the developer does not seek to rely upon the provisions of Article 6(4) of the Habitats Directive.

## 2.5 Consultation

Consultation with NPWS was carried out on 11th January 2017 to discuss the proposed greenway route. Issues raised included the route's ecological risk in terms of European sites and the importance of the Wexford Slobs and the Raven for wintering waterfowl, with emphasis on the internationally-important population of Greenland white-fronted geese. Wexford County Council also carried out consultation separately with Birdwatch Ireland's Reserves Manager, Dave Suddaby, on 22nd January 2018.

A request was made to NPWS to gather information on counts and usage of Greenland white-fronted geese within the individual north slobland fields.

All the issues raised by the consultees have been addressed as fully as possible in this documentation and references made to the consultations where appropriate.

## 2.6 Field Surveys

### *2.6.1 Habitat Surveys*

The proposed greenway and its immediate environs were surveyed on the 11th July, 12th July and 15th November 2017. Weather conditions varied from wet, blustery and overcast on 11th July of surveying to dry, calm and bright on 12th July and then dry overcast conditions on 15th November 2017. All habitats were classified using the Guide to Habitats in Ireland (Fossitt, 2000), recording dominant species, indicator species and/or species of conservation interest; with the Fossitt category codes given in parentheses and botanical nomenclature following the *Checklist of the Flora of Britain & Ireland* (Botanical Society of Britain and Ireland, 2007). Full survey details are provided in Appendix A of this report.

### *2.6.2 Breeding Bird Surveys*

Three breeding bird surveys were undertaken by Maeve Maher-McWilliams within the survey area on 9th May, 30th May and 20th June 2017 between 06:00 and 12:00. Breeding bird surveys followed an adapted methodology of Breeding Bird Survey (BBS) as described in Gilbert *et. al* (1998). A transect route was selected through the subject lands. The transect differed from the standard breeding bird survey in that its length was dictated by the area of the subject lands and the route was designed to cover all habitat types to give an accurate representation of the survey area. The transect route was walked at a slow and steady pace and birds within the surveyor's field of vision and hearing were recorded. Additionally, nesting activity such as carrying nesting material, food, and displaying activity was noted where observed. Full survey details are provided in Appendix B of this report.

### *2.6.3 Winter Hen Harrier Surveys*

Hen harrier roost surveys were carried out during winter months to identify the roost site location(s) in relation to the proposed greenway route and the flight paths of birds in and out of the area to fully assess the impact of the proposed greenway on this species. Six surveys were carried out: four at dusk and two at dawn on 15th November 2017, 26th and 29th January, 14th and 15th February 2018. Dusk surveys were carried out following methodology described in Gilbert *et al.* (1998) and commenced up to 2 hours prior to sunset and continued for 30 minutes after sunset. Dawn surveys commenced at first light up to 45 minutes before sunrise and continued for up to 2 hours after sunrise. Three different vantage point (VP) locations were used and were chosen to provide best visual coverage of the roost area and sufficient surrounding area to capture flightpaths of bird entering or leaving the roost site. VP locations were a sufficient distance from the roost site to avoid disturbance to birds. Due to the protected and sensitive nature of this species, full survey details are provided in the Confidential Appendix of this report.

# 3 OVERVIEW OF PROPOSED DEVELOPMENT AND ITS RECEIVING ENVIRONMENT

## 3.1 Description of Proposed Greenway

The Greenway commences at a trailhead in the carpark at Ferrybank Bridge where the route proceeds north following the coast line passing the reedbeds at Burgess then diverting in-land and crossing Orchard Lane. The trail continues back to the coast and connects at a new carpark at Ardcavan Lane at ch:2+500. Trail users at this point have an option of following the Ferrybank Loop Trail inland west or proceed east along the access road to the Wildfowl Reserve Visitor Centre, ch:3+700. The route follows the sea wall east past the reserve and sloblands to the Raven Wood, ch:7+130. Then the route turns north on to an existing 3.5km long trail through the Raven Wood where it terminates at an existing carpark at Culleton's Gap, Curracloe, ch:10+700.

The Ferrybank Looped Trail heads north out along the R741 Regional Road from Wexford to Ardcavan Business Park where it heads through the business park, then follows field boundaries before connecting with Ardcavan Lane. It follows the road east to the coast where it links with the greenway route at a new carpark at the end of Ardcavan Lane.

The entirety of the greenway route from Ferrybank to Culleton's Gap car park will be open annually for 5 months from 15th April to 15th September.

An annual closed period will be implemented for the mid-section of the route alone from the Wildfowl Reserve Visitors Centre ch:3+700 to the Raven Wood ch:6+830 to protect the wintering waterfowl and Greenland white-fronted geese that use the north sloblands in nationally and international important numbers during the winter months.

However, the two looped routes will be open all-year and provide alternative routes for users during the winter months.

## 3.2 Description of Receiving Environment

### *3.2.1 Surface Water*

The proposed greenway is located within the Slaney and Wexford Harbour catchment. The greenway will cross several watercourses and drainage ditches along the 10.7km route. In the western section of the route up to where it crosses Ardcavan Lane, surface waters will drain into the existing or proposed constructed drainage network ultimately discharging to transitional waters of the Lower Slaney Estuary. In the eastern section from Ardcavan Lane to Culleton's Gap car park, surface waters will drain into the existing slobland drainage network, when at a particular level water will be pumped into the Wexford Harbour close to the Wildfowl Reserve Visitor Centre.

According to EPA online Envision Maps the water quality of the Lower Slaney Estuary is classified as *'at risk of not achieving good status',* Wexford Harbour is classified as *'possibly at risk of not achieving good status'*, and the Southwestern Irish Sea is classified as *'strongly expected to achieve good status'*. Accordingly, the WFD status from 2010-2015 for the Lower Slaney Estuary is classified as *'poor',* Wexford Harbour is classified as *'moderate'*, and the Southwestern Irish Sea is classified as *'good'*. The groundwater body along the proposed route named as *'Castlebridge South'* is described as the *'productive fissured bedrock'* and is classified as '*not at risk*' and is *'expected to achieve good status'*.

### *3.2.2 Designated Sites*

The proposed greenway passes through and is within close proximity to several European sites. Sections of the route lie within the following European sites:

- Slaney River Valley Special Area of Conservation;
- Wexford Harbour and Slobs Special Protection Area;
- The Raven Special Protection Area; and

- Raven Point Nature Reserve Special Area of Conservation.

These European sites and others within 15km of the proposed route are discussed in Table 3 and 4.

The following species for which European sites listed in Table 3 are designated are known to occur within 2km of the proposed site[2].

- Red-throated Diver (*Gavia stellata*)
- Cormorant (*Phalacrocorax carbo*)
- Common Scoter (*Melanitta nigra*)
- Grey Plover (*Pluvialis squatarola*)
- Golden Plover (*Pluvialis apricaria*)
- Greenland White-fronted Goose (*Anser albifrons flavirostris*)
- Little Grebe (*Tachybaptus ruficollis*)
- Great Crested Grebe (*Podiceps cristatus*)
- Bewick's Swan (*Cygnus columbianus bewickii*)
- Whooper Swan (*Cygnus cygnus*)
- Light-bellied Brent Goose (*Branta bernicla hrota*)
- Shelduck (*Tadorna tadorna*)
- Goldeneye (*Bucephala clangula*)
- Hen Harrier (*Circus cyaneus*)
- Oystercatcher (*Haematopus ostralegus*)
- Lapwing (*Vanellus vanellus*)
- Knot (*Calidris canutus*)
- Dunlin (*Calidris alpina*)
- Black-tailed Godwit (*Limosa limosa*)
- Bar-tailed Godwit (*Limosa lapponica*)
- Curlew (*Numenius arquata*)
- Redshank (*Tringa totanus*)
- Black-headed Gull (*Chroicocephalus ridibundus*)
- Lesser Black-backed Gull (*Larus fuscus*)
- Little Tern (*Sterna albifrons*)
- Gadwall (*Anas strepera*)
- Sandwich Tern (*Sterna sandvicensis*)
- Common Tern (*Sterna hirundo*)
- Arctic Tern (*Sterna paradisaea*)

[2] According to National Biodiversity Data Centre (NBDC) Mapviewer: http://maps.biodiversityireland.ie/#/Map (Accessed 17/07/2017). A proportion of the bird data is sourced from Bird Atlas 2007-2011 and is generally at a resolution of >1km². Sources of records included: Bird Atlas 2007 – 2011; and, Birds of Ireland.

### *3.2.3 Habitats*

24 main habitat types (codes follow Fossitt, 2000) were recorded within the habitat survey area and are fully described in Appendix A of this report. An overview of habitats recorded along the route is described below.

Habitats identified along and/or in close proximity to the proposed trail route from Ferrybank (at *c.* ch:0+00) to south of Orchard Lane (at *c.* ch:1+500) consisted of:

- Areas of hardstanding (*i.e.* the habitat type buildings and artificial surfaces), which included the R741, the entrance of the Ferrybank Caravan and Camping Park and a small section of the Orchard Lane;
- Small patches of amenity grassland located at a small park, east off the R741, and at the Ferrybank Caravan and Camping Park;
- An improved grassland field, located at Burgess;
- Fields located north of Ferrybank Caravan and Camping Park dominated by a mosaic of dry meadows and grassy verges and scrub;
- An arable crop field planted with barley and bordered by a hedgerow and treeline, located directly south of Orchard Lane. This field also contained a small patch of wet grassland along its eastern boundary;
- A narrow strip of broadleaved woodland located at the boundary between two fields, north of the Ferrybank Caravan and Camping Park;
- A large area dominated by the habitat type reed and large sedge swamp, located at Burgess, which was in parts very wet and contained numerous wide drainage ditches;
- A narrow strip of shingle and gravel banks, located west of an area of shingle and gravel shores at Burgess, which grades into a mosaic of this habitat type and dry calcareous and neutral grassland. As grass species dominate, this habitat then grades into dry calcareous and neutral grassland, which in turn grades into a mosaic with the habitat type of reed and large sedge swamp as common reed encroaches from the west;
- Scattered patches of scrub located at various field boundaries and within the large area of common reeds at Burgess, directly east of the area of species-poor upper salt marsh dominated by sea club-rush *Bolboschoenus maritimus*;
- A narrow strip of sedimentary sea cliff, greater than 3m in height, located west of the improved grassland field; and,
- The Crosstown tidal river, which flows into the Lower Slaney Estuary at the shore.

Habitats identified along and/or in close proximity to the proposed trail route from north of Orchard Lane to south-west of the Wexford Wildfowl Reserve buildings consisted of:

- Areas of hardstanding (*i.e.* the habitat type buildings and artificial surfaces), which included Orchard Lane and Ardcavan Lane;
- A very small patch of recolonising bare ground located south of existing buildings on Ardcavan Lane;
- Small patches of amenity grassland located within two private gardens (*i.e.* managed lawns) located north of Orchard Lane;
- An improved grassland field, located west of Ardcavan Lane;
- Arable crop fields planted with barley, located north of Orchard Lane;
- Narrow strips of mixed broadleaved woodland, roadside verges of dry meadows and grassy verges and patches of scrub, located north of Ardcavan Lane;
- Hedgerows and a treeline located along field boundaries and along Ardcavan Lane, some of which had associated drainage ditches;

- Narrow strips of large sedge and reed swamp located north of Ardcavan Lane in association with brackish, slow-flowing to stagnant drainage ditches; and,
- The White Gap River, which flows under the Ardcavan Lane into the Lower Slaney Estuary.

Habitats identified along and/or in close proximity to the proposed trail route from south-east of the Wexford Wildfowl Reserve buildings to the Raven Wood Reserve consisted of:

- A small, narrow strip of recolonising bare ground located along existing path;
- Two very small patches of spoil and bare ground along the existing path;
- Stone walls and other stonework, which consisted of an existing stone wall and another stonewall structure adjacent to the existing path;
- A number of improved agricultural fields located north of the existing path;
- Dry meadows and grassy verges habitat type along the northern and southern banks of the existing path and along the path itself;
- A mosaic of dry calcareous and neutral grassland and dry meadows and grassy verges habitat types located along the existing path;
- A mosaic of dry meadows and grassy verges and wet grassland habitat types located in close proximity to drainage ditches located along the existing path;
- A mosaic of wet grassland upper salt marsh habitat types, which contained very few species typical of salt marsh habitat and those that were present in very small patches. This mosaic graded into upper salt marsh as species typical of this habitat type became more dominant;
- Two patches of upper salt marsh habitat located adjacent to brackish drainage ditches;
- Patches of scrub located along the northern and southern banks of the existing path;
- A small patch of wet willow-ash woodland in the eastern section in association with a drainage ditch; and,
- Sea walls, piers and jetties habitat type, located south of the existing path.

Upper salt marsh (CM2) habitat type corresponds to the Annex I habitats Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] and Mediterranean salt meadows (*Juncetalia maritimi*) [1410], both of which are Qualifying Interest of the Slaney River Valley SAC, while the former is a Qualifying Interest of the Raven Point Nature Reserve SAC.

Annex 1 Atlantic salt meadow habitat was recorded within the survey area, but only at Burgess lands within Slaney River Valley SAC. At this location, the habitat type was dominated by saltmarsh rush *Juncus gerardii* and sharp rush *Juncus acutus* and grass species red fescue *Festuca rubra* and creeping bent *Agrostis stolonifera*. Other grass species present included common saltmarsh-grass *Puccinellia maritima* and to a lesser abundance common cord-grass *Spartina anglica* and lyme-grass *Leymus arenarius*. Broadleaved species present included glasswort *Salicornia sp.*, sea aster *Aster tripolium* and sea arrowgrass *Triglochin maritimum*. Occasionally-occurring species included sea plantain *Plantago maritima* and lax-flowered sea-lavender *Limonium humile*. The area of salt marsh located within the SAC was particularly species-poor, dominated primarily by sea club-rush *Bolboschoenus maritimus*. It also contained rush species at lower abundances, red fescue, creeping bent and common reed *Phragmites australis*, which was encroaching from the adjacent large reed and sedge swamps habitat (see Plate 1 below).

**Plate 1:** Area of species-poor upper salt marsh (CM2) which corresponds to Annex I habitats Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] and Mediterranean salt meadows (*Juncetalia maritimi*) [1410] located within the Slaney River Valley SAC and surrounded by common reed and sedge swamps habitat type, dominated by common reed.

It was not possible to distinguish if this area of upper salt march (CM2) corresponds more to Annex 1 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] or Mediterranean salt meadows (*Juncetalia maritimi*) [1410]. Nevertheless, it has been regarded as an Annex 1 habitat for which is a Qualifying Interest of the Slaney River Valley SAC, for the purposes of the screening stage.

### *3.2.4 Fauna*

#### *3.2.4.1 Breeding Birds*

Breeding bird surveys carried out during the 2017 breeding season confirmed 26 species breeding within the survey area. The survey area for breeding bird surveys included a 50m buffer of trail route provided by WCC at the time of surveys, see Appendix B Figures 1a-1d.

A total of 50 species were recorded during 2017 breeding bird surveys within the survey area. 26 species were confirmed as breeding within the survey area and an additional 24 species were recorded present, but were not confirmed breeding within the survey area, although a number are considered or known to breed within the wider area. Of the confirmed breeders, 8 are birds of conservation concern, 1 red-listed species and 7 amber-listed species. Of the additional species recorded, 16 are birds of conservation concern, 3 red-listed species and 13 amber-listed species. See Appendix B for full details of results.

The majority of breeding birds were located in the western section of the survey area, where habitats including scrub, hedgerows and treelines are more frequently recorded. The eastern section of the survey area is dominated by improved agricultural grassland. Non-breeding birds recorded included birds in transit over the survey area, birds roosting, loafing or foraging along the shoreline.

Little tern are the only SCI species designated in the Wexford Harbour and Slobs SPA and The Raven SPA for its breeding population with up to 30 pairs being recorded (NPWS, 2011a). The breeding bird surveys recorded little tern foraging close to the shoreline along sections of the survey area but no nesting sites were recorded during surveys. Little tern are known to breed on sandbars in Wexford Harbour. In previous years the nearest breeding colony was located on a sandbar *c.* 1.3km off the Raven Point at the nearest location.

#### *3.2.4.2 Roosting Hen Harrier*

Due to the sensitive nature of the hen harrier roost site and the history of persecution of this species, the results from these surveys is treated as confidential information and has been presented in a Confidential Appendix which will be circulated to relevant statutory bodies including NPWS. The precise location of the roost site has been withheld from this main report.

11 observations of hen harrier were made during the surveys. 10 of the recordings were of individual female hen harrier in flight. 3 of the 10 flights recorded crossed the proposed greenway route, with one of these flights crossing the route on two occasions. The majority of flights were low to the ground *c.* 1-2m as birds were entering or exiting the roost area. Birds in transit generally flew higher to fly over treelines in the surrounding landscape. It is possible that all recordings relate to one female hen harrier that is currently using the roost site.

Activities that may cause disturbance to hen harrier included the presence of dog walkers, hunting activity, and children playing. Cars moving up and down Orchard lane were not considered to be a disturbance event but were noted. Overall activity in the vicinity of the roost site was determined to be low and infrequent.

#### *3.2.4.3 Greenland White-fronted Geese*

Data held by the NPWS includes geese counts per field recorded monthly within the north sloblands for the previous 4 winter periods (2013/14, 2014/15, 2015/16 and 2016/17).

Peak counts of geese recorded during each winter period within a) fields adjacent to the route; and b) within fields *c.* 1km from the proposed greenway route, are discussed below. The location of numbered fields is shown in Figure 1.

Within the area of the mid-section of the greenway, field nos. 56, 114 and 112 contained peak counts of geese across the four winter periods. They also held equally high numbers of birds outside years that peak counts were recorded. These three fields are located immediately east of the Wildfowl Reserve Visitor Centre and adjoin each other. Other fields adjacent to the route that consistently held high numbers (>100) of birds across the four winter periods included field nos. 13, 52, 53 and 55. These fields adjoin field no. 56 and continue east towards the Raven. Similarly field nos. 99, 101 and 102 had peak counts in at least one year of >100 geese. These three fields are west of the Wildfowl Reserve Visitor Centre, adjoin the Slob Channel and are adjacent to the existing Ardcavan Lane which is currently used to access the visitor centre and will form part of the greenway route. Geese were not recorded in five fields (nos. 12, 97, 117, 118 and 119) adjacent to the route across the four winter seasons.

In relation to fields beyond those adjacent to the route but within *c.* 1km of the route, it is clear that peak counts are much higher with up to 2700 birds recorded in one field alone during one count (field no. 94, 2013/14 peak count). Peak counts in field numbers 63, 94, 104, 106 and 110 have, on one or more occasions, numbered 1000 and 2700 during the four winter periods detailed in Table 3. These fields are located within the western section of the north sloblands, largely concentrated around the Slobs Channel and the Wildfowl Reserve Visitor Centre with the exception of field no. 63 which is slightly further east. In addition, 21 fields beyond those adjacent to the route but within *c.* 1km of the route regularly supported numbers of geese in excess of 100. Geese were not recorded in five fields (nos. 88, 92, 95, 96 and 100) and 2 geese were recorded in field no. 88, across the four winter periods detailed in Table 3 below.

**Table 5: Peak counts of Greenland white-fronted geese in north slobland fields adjacent to and within 1km of the greenway route in winter periods 2013/14, 2014/15, 2015/16 and 2016/17.** Rows highlighted in dark grey represent fields with peak counts across one or more of the winter seasons listed below (also shown on Figure 1), and light grey represent field which on one or more occasions supported peak counts of =/>100 geese. Data contained in this table was provided by NPWS.

| | | Peak Counts | | | |
|---|---|---|---|---|---|
| Location | Field No. | 2013/14 | 2014/15 | 2015/16 | 2016/17 |
| Fields Adjacent to the Route | 11 | 0 | 60 | 0 | 0 |
| | 12 | 0 | 0 | 0 | 0 |
| | 13 | 34 | 74 | 420 | 126 |
| | 52 | 152 | 135 | 372 | 251 |
| | 53 | 210 | 90 | 372 | 330 |
| | 55 | 169 | 202 | 90 | 52 |
| | 56 | 479 | 244 | 196 | 69 |
| | 97 | 0 | 0 | 0 | 0 |
| | 98 | 0 | 47 | 0 | 2 |
| | 99 | 41 | 92 | 0 | 57 |
| | 101 | 0 | 101 | 10 | 0 |
| | 102 | 0 | 118 | 64 | 61 |
| | 112 | 421 | 254 | 56 | 2800 |
| | 114 | 362 | 781 | 567 | 530 |
| | 117 | 0 | 0 | 0 | 0 |
| | 118 | 0 | 0 | 0 | 0 |
| | 119 | 0 | 0 | 0 | 0 |
| Fields within 1km of the Route | 10 | 240 | 422 | 165 | 76 |
| | 14 | 258 | 155 | 101 | 0 |
| | 15 | 210 | 32 | 100 | 0 |
| | 16 | 174 | 130 | 250 | 0 |
| | 17 | 30 | 46 | 500 | 0 |
| | 18 | 50 | 210 | 142 | 0 |
| | 49 | 103 | 142 | 200 | 151 |
| | 50 | 296 | 166 | 587 | 80 |
| | 51 | 252 | 52 | 282 | 114 |
| | 54 | 120 | 67 | 300 | 132 |
| | 57 | 102 | 182 | 132 | 107 |
| | 61 | 216 | 184 | 364 | 802 |
| | 62 | 31 | 62 | 17 | 62 |
| | 63 | 2500 | 700 | 1550 | 930 |
| | 64 | 101 | 135 | 214 | 458 |
| | 65 | 134 | 70 | 92 | 294 |
| | 66 | 107 | 102 | 272 | 72 |
| | 83 | 88 | 154 | 242 | 110 |
| | 87 | 2 | 0 | 0 | 0 |
| | 88 | 0 | 0 | 0 | 0 |
| | 90 | 44 | 80 | 0 | 132 |
| | 91 | 0 | 57 | 90 | 48 |
| | 92 | 0 | 0 | 0 | 0 |
| | 93 | 73 | 0 | 0 | 0 |
| | 94 | 2700 | 1000 | 42 | 0 |
| | 95 | 0 | 0 | 0 | 0 |
| | 96 | 0 | 0 | 0 | 0 |
| | 100 | 0 | 0 | 0 | 0 |
| | 103 | 242 | 195 | 54 | 37 |

| Location | Field No. | Peak Counts 2013/14 | 2014/15 | 2015/16 | 2016/17 |
|---|---|---|---|---|---|
| | 104 | 32 | 2000 | 46 | 113 |
| | 105 | 44 | 107 | 54 | 48 |
| | 106 | 235 | 221 | 1752 | 250 |
| | 110 | 2000 | 414 | 187 | 791 |
| | 115 | 88 | 154 | 110 | 176 |
| | 116 | 192 | 712 | 226 | 219 |

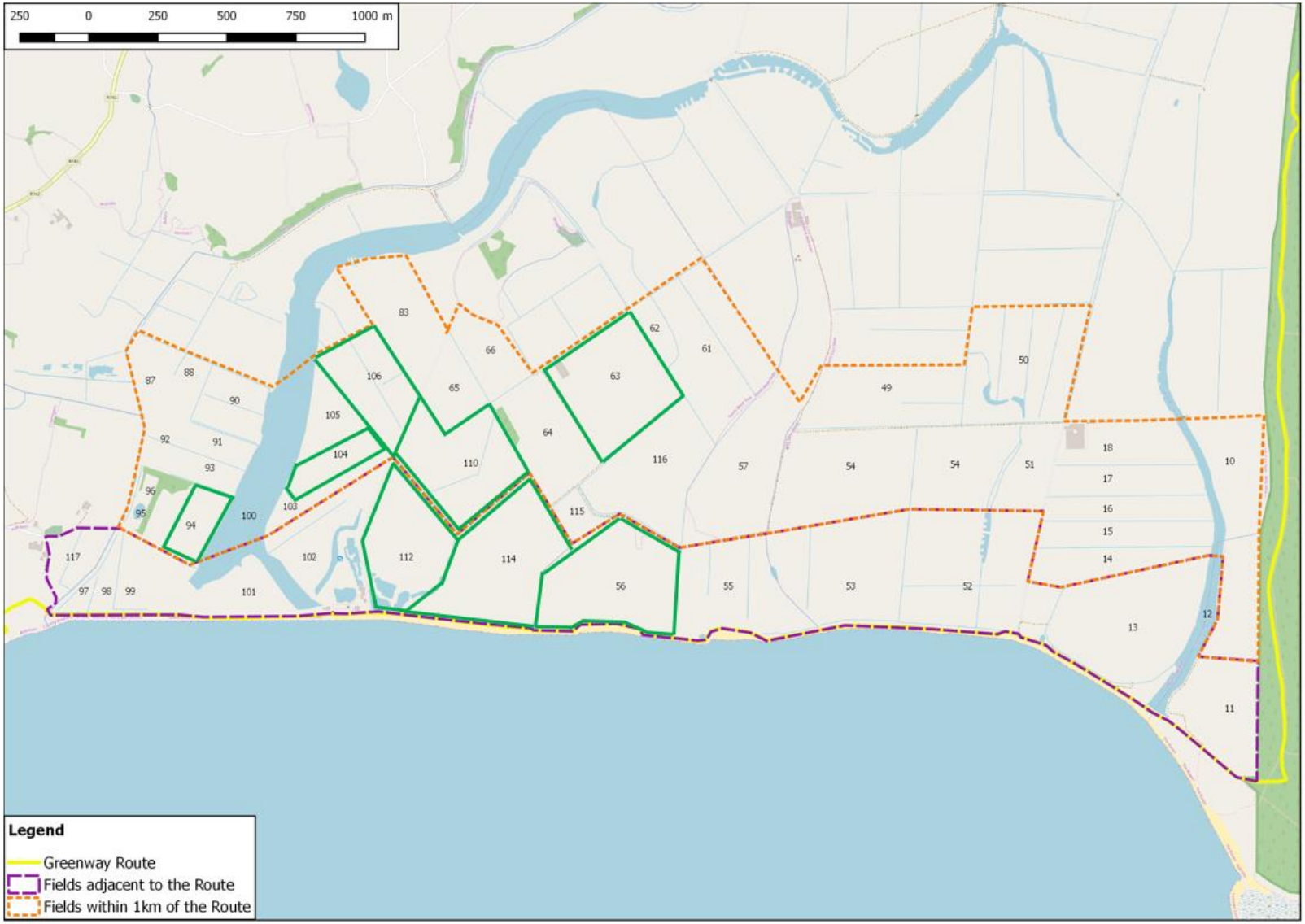
#### *3.2.4.4 Other Wintering Waterfowl*

Data held by the NPWS contained information on waterbird species within the north sloblands and included counts of mute swan, whooper swan, Bewick's swan, Barnacle goose, Canada goose, Brent goose, Wigeon and Pink-footed goose across three winter seasons 2014/15, 2015/16 and 2016/17. Peak counts in each year for each species are provided in Table 2 below, with differentiation between fields adjacent to the greenway route and fields beyond those adjacent to the route but within *c.* 1km of the route.

**Table 6: Peak counts of waterbird species in north slobland fields adjacent to and within 1km of the greenway route in winter periods 2013/14, 2014/15, 2015/16 and 2016/17.** Blank spaces below do not mean that birds were not recorded in those fields but rather than peak counts of birds were not recorded within that field no. Data contained in this table was provided by the NPWS.

| Location | Field No. | Mute swan | Whooper swan | Bewick's swan | Barnacle goose | Canada goose | Brent goose | Pink-footed goose | Wigeon |
|---|---|---|---|---|---|---|---|---|---|
| 2014/15 winter | | | | | | | | | |
| Adjacent | 12 | 2 | | | | | | | |
| | 98 | | | | | | | | 110 |
| | 114 | | | | 39 | 1 | | | |
| Within 1km | 93 | | | | | | 2000 | | |
| | 100 | 30 | | | | | | | 160 |
| | 104 | | 70 | 2 | | | | | |
| | 110 | | | | 33 | 1 | | | |
| 2015/16 winter | | | | | | | | | |
| Adjacent | 12 | 2 | | | | | | | |
| | 114 | | 2 | | 12 | | 1200 | | |
| Within 1km | 49 | 169 | | | | | | | |
| | 63 | | 208 | | | | | | |
| | 106 | | | 2 | | | | | |
| | 110 | | | | 13 | | | | |
| 2016/17 winter | | | | | | | | | |
| Adjacent | 53 | 4 | | | | | | | |
| | 101 | | | | | | 2450 | | |
| | 102 | | | | | | | | 400 |
| | 112 | | 495 | 4 | | 1 | | | |
| | 114 | | | | 27 | | | 2 | |
| Within 1km | 49 | | | | | | | 1 | |
| | 63 | | 302 | | | | | | |
| | 100 | 158 | | | | | | | 300 |
| | 105 | | | | | | | | 60 |
| | 106 | | | | | | 2000 | | |
| | 110 | | | | 22 | 1 | | | |

**Figure 5: Field numbers within the North Sloblands. Fields outlined in green held peak count numbers of Greenland white-fronted geese**



*3.2.4.5 Otter*

Evidence of otter were recorded during surveys along the proposed greenway route. During a breeding bird survey on 30th May 2017, an otter was observed exiting a watercourse that flows through reedbeds at Burgess onto the shoreline and entering the sea. A second observation was made during the habitat survey on 12th July 2017, where an otter was seen brief resting on the bank of a pond east of the Wildfowl Reserve Visitor Centre before dropping into the water. Otter are therefore assumed to use the surrounding terrestrial freshwater, intertidal and marine habitats widely.

### 3.3 Description of the Proposed Development

In brief, the provision of 10.7km greenway for use by cyclists and pedestrians will include;

- Construction of 5.3km of new trail with an overall width of 6m (3m wide hard surface, 1m wide grass verge on either side and an additional 1m for drainage grip or hedging where required);
- Upgrade of 5.4km of existing path or road (1.2km of existing public road, 1.1km of farm access paths and 3.5km of existing trail through the Raven Wood);
- 3 no. of box culverts using precast concrete at watercourse and drainage ditch crossings;
- 2 no. viewing platforms located along the trail, which will be raised off the ground and will provide some visual screening and shelter;
- 4 no. of at-grade road crossing and associated traffic calming measures;
- Provision of new drainage ditches adjacent to the newly constructed trail and retention of existing drainage along upgraded sections;
- Visual screening using 1.8m high solid fencing with landscaping will be erected in sections to protect privacy of local residents;
- Secure fencing using 1.8m high paladin mesh will be erected to prevent access beyond the route e.g. at Ferrybank caravan park;
- Secure gates and 2.4m high fencing will be in place along the trail at the Wildfowl Reserve Visitor Centre visitor center and at Raven Point to implement the closure of the mid-section of the trail between 16th September and 14th April;
- Construction of new car park at Ardcavan Lane for capacity of 25 spaces;
- All associated construction ancillary areas including site compounds, haul routes and passing bays; and
- The proposed greenway will also include all associated signage and site development and maintenance works during the lifetime of the greenway.

The mid-section of the route from the Wildfowl Reserve Visitor Centre ch:3+700 to the Raven Wood ch:6+830 will be open to the public from 15th April to 15th September inclusive, and will be closed between 16th September and 14th April inclusive to safeguard internationally important numbers of waterfowl that winter at the Wexford Slobs, with particular focus on Greenland white-fronted geese.

During the open season of the mid-section (15th April to 15th September), the trail will be closed at night from dusk until dawn but not later than 9pm during the summer season. Lockable gates at the Ferrybank caravan park and at proposed car park at Ardcavan Lane and a trail warden will enforce this closure.

A detailed maintenance plan for the proposed greenway will be developed and implemented in order to maintain the facility for public and tourist use, and will include measures such as;

- Erect marker post and finger posts;

- Erect information signs at trailheads and threshold signs at access points;
- Clear debris off trails and clear back under growth;
- Pick litter and remove waste where dumped;
- Cut low hanging branches with hand saw;
- Surface dress trails with dust/grit/granular material. This may include hauling in material with bobcat/dumper/quad, etc.;
- Lay shallow land drains across paths where ponding/soft areas occur;
- Place granular material to build up path to remove dips, soft areas or trip hazards;
- Install seating benches;
- Install trail counters on trees or posts; and
- Construct short sections of boardwalk over soft areas/flooding areas.

Some of these works will be carried out at a daily or *ad hoc* basis, however for more substantial works a schedule of works adhering to mitigation detailed within this report will be followed.

**Surface Water**

The existing drainage ditches located along the route and particularly through the sloblands will be retained. A proposed cross-fall gradient will be 2% across the proposed surface and direct runoff towards the existing drainage ditch adjacent to the proposed trail route. The pavement will always slope to one side and the lower grass verge will tilt away at 5% or greater, refer to TCD/100/01 in the standard details Book No. 4.

It is not proposed to route any of the existing drainage ditches along the proposed trail route within piped culverts. Where the proposed trail is to be placed over any existing ditch, a new ditch will be created adjacent the new trail. Drainage ditches adjoining the route will be cleared of any blockages/debris during the construction phase and maintained thereafter. Where excavation / clearing is required, silt fences or similar measures will be placed across the ditches downstream from the work to trap siltation runoff. Drainage ditches adjoining the SAC will be maintained in their present condition.

As the contribution of additional runoff from the new 3m wide trail surface would be insignificant in comparison to the existing drainage ditches prevalent along the route it is considered that the ditches are more than capable of providing sufficient drainage capacity to the greenway and therefore it nis regarded that additional attenuation is not required.

During the construction phase the following specific measures will be implemented to protect the receiving hydrological environment from contaminated surface waters;

i All material including oils, solvents and paints will be stored within temporary bunded areas or dedicated bunded containers;

ii Where possible refuelling will take place in a designated bunded area away from surface water gullies, drains and water bodies, in the event of refuelling outside of this area fuel will be transported in a mobile double skinned tank;

iii All machinery and plant used will be regularly maintained and serviced to ensure that leakage of diesel, oil and lubricants is minimised;

iv The excavation and handling of inert material will be carefully managed in such a way as to prevent any potential negative impact on the receiving water environment;

v Where possible the excavated spoil will not be stored beyond the working day, however in the event that this is not practical, appropriate precautions in relation to the material will be taken. These precautions will include appropriate storage and covering;

vi Full method statements will be provided by the contractor and approved prior to the commencement of construction;

vii A pre-construction survey of the route will be required within the optimal survey period (e.g. May, June) to identify if any invasive species are present along the route;

viii Where any invasive species is identified on site during construction the National Roads Authority's (NRA) Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (2010) and in particular the measures listed in the UK Environmental Agency's Managing Japanese knotweed on development sites.

# 4 PROVISION OF INFORMATION FOR AA SCREENING

## 4.1 Relevant European Sites

### *4.1.1 Zone of Influence of the Proposed Development*

There is no set recommended distance from a proposed development for which European sites are considered as being relevant for AA. Available guidance (NPWS, 2010) recommends that '*the distance should be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects*'. As a general rule of thumb, it is often considered appropriate to examine all European sites within 15km as a starting point. However, it should be noted that this distance is not always appropriate, *e.g.* in some instances where there are hydrological connections a whole river catchment or a groundwater aquifer may need to be included. Similarly, where bird flight paths are involved the impact may be on an SPA more than 15 km away.

As a starting point a search was carried out for all European sites within 15km of the proposed development. This distance was considered to be sufficient for the purposes of AA screening in this case as any European sites outside of the 15km distance either do not have any hydrological or any other pathways to the proposed greenway (mainly either because they are sited upstream and inland of the proposed development or are located in separate water catchments). As such, the potential zone of influence of the proposed works is anticipated to be less than 15km and any likelihood of significant effects in relation to European sites beyond 15km can be ruled out.

For significant effects to arise, there must be a potential impact enabled by having a '*source*' (*e.g.* construction works at a proposed development site), a '*receptor*' (*e.g.* a European site or its qualifying interests), and a pathway between the source and the receptor (*e.g.* a watercourse connecting a proposed development site to a European site). The identification of a pathway does not automatically mean that significant effects will arise, however, the absence of a pathway means that a significant effect is not possible. The likelihood for significant effects will depend upon the characteristics of the source (*e.g.* nature of construction works), the characteristics of the pathway (*e.g.* nature of the watercourse receiving run-off from construction) and the characteristics of the receptor (*e.g.* the sensitivities of the European site and its Qualifying Interests).

## 4.2 Relevant European Sites

European sites within 1km, 5km and 15km of the proposed greenway route are listed in Table 3 below along with their qualifying interests and any relevant source-pathway-receptor links between the proposed greenway and European sites that could result in significant effects on these European sites. An overview of European sites within 1km, 5km and 15km of the proposed greenway route are shown in Figure 2, and those within 1km are shown in more detail in Figures 3 and 4.

**Table 7: Analysis of European sites within 15km of the Proposed Greenway (information downloaded from www.npws.ie)**

| Site name & code | Reasons for designation[3] (*= Priority Habitat) | Relevant source-pathway-receptor links between proposed development and European site? |
|---|---|---|
| **Special Areas of Conservation (SACs)** | | |
| Raven Point Nature Reserve cSAC [000710]<br><br>Proposed greenway is within the European site | **Conservation Objectives Version 1.0 (02/12/11)**<br>**Annex I Habitats:**<br>• Mudflats and sandflats not covered by seawater at low tide [1140]<br>• Annual vegetation of drift lines [1210]<br>• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]<br>• Embryonic shifting dunes [2110]<br>• Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]<br>• Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]<br>• Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170]<br>• Humid dune slacks [2190] | Yes, there is linkage between the proposed development and the European site. The greenway will use the existing trail within the Raven Wood and European site. Approximately 3.5km of existing 3m wide gravel track will be upgraded to 3m wide macadam surfaced trail.<br><br>Although the trail is within the European site there will be no direct habitat loss of QI habitats listed for this designation. There is however linkage between the trail and the QI habitats including mudflats and sandflats not covered by seawater at low tide [1140], annual vegetation of drift lines [1210] and Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], via surface water run-off and through interactions between greenway users and associated activities. Such interactions with greenway users and QI habitats may include and have the potential to cause habitat erosion and degradation through trampling, dog fouling and litter.<br><br><u>Surface Water Run-off</u><br>Surface water run-off from the greenway section within the Raven Wood will discharge to the north slobland drainage system where water is pumped into Wexford Harbour west of the Wildfowl Reserve Visitor Centre when the water table reaches a particular height. Surface waters generated during construction and maintenance of the greenway could carry silt, oils, or other chemicals into the local surface water drainage network which ultimately discharges to Wexford Harbour. It is considered that surface water discharges will not result in significant effects on the reasons for designation of the European site in view of the relevant conservation objectives for the following reasons:<br>• Direction of surface-water flow away from the European site to the existing |

[3] "Qualifying Interests" for SACs and "Special Conservation Interests" for SPAs based on relevant Statutory Instruments for each SPA, and NPWS Conservation Objectives for SACs downloaded from www.npws.ie in September 2016.

| Site name & code | Reasons for designation[3] (*= Priority Habitat) | Relevant source-pathway-receptor links between proposed development and European site? |
|---|---|---|
| | | slobland drainage system;<br>• Distance between the proposed route and outfall of the slobland drainage system to Wexford Harbour and potential for dilution in the drainage network;<br>• The construction works of the entire route will be short in duration (spanning a period of *c.* 5 months);<br>• Programme of the construction works will be limited to summer months where rainfall and surface water-run is expected to be lower;<br>• Any pollution event is likely to be short in duration (i.e. confined to storm events);<br>• A number of qualifying interest habitats within the European site by nature have existing heavy silt loading;<br>• Any maintenance works are expected to be localised, minor works and will be timed to occur outside winter months, i.e. the greenway's closed period;<br>• The scale of works and the distance between the subject lands and the European site means that it is very unlikely that sediments or pollutants from the proposed development are likely to result in any discernible effects on QI habitat hydrologically linked to the proposed greenway; and<br>• See Section 3.3 Description of Development for measures that will be used to protect the receiving hydrological environment from contaminated surface water run-off.<br><br>Likely significant effects on the European site resulting from potential impacts such as erosion and degradation to QI dune habitats associated with the proposed development cannot be ruled out in view of the relevant conservation objectives, and are therefore discussed later in this NIS. |
| Slaney River Valley cSAC [000781]<br><br>Proposed greenway is within the European site | **Conservation Objectives Version 1.0 (21/10/11)**<br>**Annex I Habitats:**<br>• Estuaries [1130]<br>• Mudflats and sandflats not covered by seawater at low tide [1140] | Yes, there is linkage between the proposed development and the European site. A section of the proposed greenway traverses the European site and where the trail is not within the European site there is linkage via hydrological features.<br>A section of Atlantic salt meadow [1330] and Mediterranean salt meadow [1410] does occur within close proximity, *c.* 10m, to the route and may be impacted on during the |

| Site name & code | Reasons for designation[3] (*= Priority Habitat) | Relevant source-pathway-receptor links between proposed development and European site? |
|---|---|---|
| | • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]<br>• Mediterranean salt meadows (*Juncetalia maritimi*) [1410]<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]<br>• Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]<br>• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]<br>**Annex II Species:**<br>• *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]<br>• *Petromyzon marinus* (Sea Lamprey) [1095]<br>• *Lampetra planeri* (Brook Lamprey) [1096]<br>• *Lampetra fluviatilis* (River Lamprey) [1099]<br>• *Alosa fallax fallax* (Twaite Shad) [1103]<br>• *Salmo salar* (Salmon) [1106]<br>• *Lutra lutra* (Otter) [1355]<br>• *Phoca vitulina* (Harbour Seal) [1365] | proposed construction works (see Appendix A for full habitat survey results), and therefore is addressed later in this NIS.<br>Other potential impacts may include disturbance and potential displacement of QI species and a barrier effect to QI species movement e.g. movement of otter from inland watercourses to intertidal and marine habitats.<br>Potential impacts on QI species that occur within the River Slaney e.g. freshwater pearl mussel and lamprey species, can be ruled out as they do not occur within the zone of influence of the proposed greenway. Additionally, the main harbour seal haul-out, moult and breeding sites are located on sandbars in Wexford Harbour *c.* 1.8km from the nearest point of the proposed greenway where it meets the Raven Wood (NPWS, 2011b). It is considered that disturbance to seal populations is not a concern given the distance of the nearest main site.<br>There is additional linkage between the trail and the QI habitats, including estuaries [1130] and mudflats and sandflats not covered by seawater at low tide [1140], via construction-related surface water run-off discussed below.<br><u>Surface Water Run-off</u><br>Surface water run-off along the route of the proposed greenway will ultimately discharge to Wexford Harbour. Surface waters in the east of the route will discharge to existing slobland drainage before being pumped to Wexford Harbour west of the Wildfowl Reserve Visitor Centre. Surface water run-off along the route west of Ardcavan Lane will be directed to either existing drainage or newly constructed open drainage ditches which will be adjacent to the route. Both existing and newly-constructed drainage will ultimately outflow into Wexford Harbour. Surface waters generated during construction and maintenance of the greenway could carry silt, oils, or other chemicals into the local surface water drainage network which ultimately discharges to Wexford Harbour. It is considered that surface water discharges will not result in significant effects on the reasons for designation of the European site in view of the relevant conservation objectives for the following reasons:<br>• Distance between the proposed route and outfall of existing and newly-constructed drainage system to Wexford Harbour and potential for dilution in the drainage network; |

| Site name & code | Reasons for designation[3] (*= Priority Habitat) | Relevant source-pathway-receptor links between proposed development and European site? |
|---|---|---|
| | | • The construction works of the entire route will be short in duration (spanning a period of *c.* 5 months);<br>• Programme of the construction works will be limited to summer months where rainfall and surface water-run is expected to be lower;<br>• Any pollution event is likely to be short in duration (i.e. confined to storm events);<br>• A number of qualifying interest habitats within the European site by nature have existing heavy silt loading;<br>• Any maintenance works are expected to be localised, minor works and will be timed to occur outside winter months, i.e. the greenway's closed period; and<br>• The scale of works and the distance between the subject lands and the European site means that it is very unlikely that sediments or pollutants from the proposed development are likely to result in any discernible effects on QI habitat hydrologically linked to the proposed greenway.<br><br>Unlike for surface water run-off, significant effects on the European site resulting from potential impacts such as construction-related degradation to nearby salt meadow habitat, disturbance and displacement of QI species (otter), and barrier effect to QI species (otter) associated with the proposed development cannot be ruled out. |
| Screen Hills cSAC [000708]<br><br>Located *c.*4.5km northwest | **Conservation Objectives Version 5.0 (15/08/16)**<br>**Annex I Habitats:**<br>• Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]<br>• European dry heaths [4030] | No impact pathway connects the proposed development to the European site and the subject lands do not provide any stepping stone or supporting function to the European site and its qualifying interests. |
| Long Bank cSAC [002161]<br><br>Located *c.*5.5km east | **Conservation Objectives Version 1.0 (16/04/13)**<br>**Annex I Habitats:**<br>• Sandbanks which are slightly covered by sea water all the time [1110] | No, whilst the subject lands are connected to the European site by the surface water network which discharge to either Wexford Harbour or Wexford Bay, there is a significant open marine water buffer between the drainage outfalls and the European site over which any potential pollutants/inputs would become diluted. |
| Blackwater Bank cSAC | **Conservation Objectives Version 1.0 (16/04/13)** | No, whilst the subject lands are connected to the European site by the surface water |

| Site name & code | Reasons for designation[3] (*= Priority Habitat) | Relevant source-pathway-receptor links between proposed development and European site? |
|---|---|---|
| [002953]<br>Located *c.*7.5km east | **Annex I Habitats:**<br>• Sandbanks which are slightly covered by sea water all the time [1110] | network which discharge to either Wexford Harbour or Wexford Bay, there is a significant open marine water buffer between the drainage outfalls and the European site over which any potential pollutants/inputs would become diluted. |
| Carnsore Point cSAC [002269]<br>Located *c.* 10.2km southeast | **Conservation Objectives Version 1.0 (21/10/11)**<br>**Annex I Habitats:**<br>• Mudflats and sandflats not covered by seawater at low tide [1140]<br>• Reefs [1170] | No, whilst the subject lands are connected to the European site by the surface water network which discharge to either Wexford Harbour or Wexford Bay, there is a significant open marine water buffer between the drainage outfalls and the European site over which any potential pollutants/inputs would become diluted. |
| Kilmuckridge-Tinnaberna Sandhills cSAC [001741]<br>Located *c.* 11.9km northeast | **Conservation Objectives Version 1.0 (18/07/14)**<br>**Annex I Habitats:**<br>• Embryonic shifting dunes [2110]<br>• Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]<br>• Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] | No, whilst the subject lands are connected to the European site by the surface water network which discharge to either Wexford Harbour or Wexford Bay, there is a significant open marine water buffer between the drainage outfalls and the European site over which any potential pollutants/inputs would become diluted. |
| Tacumshin Lake cSAC [000709]<br>Located *c.* 14.5km southwest | **Conservation Objectives Version 5.0 (15/08/16)**<br>**Annex I Habitats:**<br>• Coastal lagoons [1150]<br>• Annual vegetation of drift lines [1210]<br>• Perennial vegetation of stony banks [1220]<br>• Embryonic shifting dunes [2110]<br>• Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] | No impact pathway connects the proposed development to the European site and the subject lands do not provide any stepping stone or supporting function to the European site and its qualifying interests. |
| **Special Protection Areas (SPAs)** | | |

| Site name & code | Reasons for designation[3] (*= Priority Habitat) | Relevant source-pathway-receptor links between proposed development and European site? |
|---|---|---|
| Wexford Harbour and Slobs SPA [004076]<br><br>Proposed greenway is within the European site | **Conservation Objectives Version 1.0 (21/03/12)**<br>• Little Grebe (*Tachybaptus ruficollis*) [A004]<br>• Great Crested Grebe (*Podiceps cristatus*) [A005]<br>• Cormorant (*Phalacrocorax carbo*) [A017]<br>• Grey Heron (*Ardea cinerea*) [A028]<br>• Bewick's Swan (*Cygnus columbianus bewickii*) [A037]<br>• Whooper Swan (*Cygnus cygnus*) [A038]<br>• Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]<br>• Shelduck (*Tadorna tadorna*) [A048]<br>• Wigeon (*Anas penelope*) [A050]<br>• Teal (*Anas crecca*) [A052]<br>• Mallard (*Anas platyrhynchos*) [A053]<br>• Pintail (*Anas acuta*) [A054]<br>• Scaup (*Aythya marila*) [A062]<br>• Goldeneye (*Bucephala clangula*) [A067]<br>• Red-breasted Merganser (*Mergus serrator*) [A069]<br>• Hen Harrier (*Circus cyaneus*) [A082]<br>• Coot (*Fulica atra*) [A125]<br>• Oystercatcher (*Haematopus ostralegus*) [A130]<br>• Golden Plover (*Pluvialis apricaria*) [A140]<br>• Grey Plover (*Pluvialis squatarola*) [A141]<br>• Lapwing (*Vanellus vanellus*) [A142]<br>• Knot (*Calidris canutus*) [A143]<br>• Sanderling (*Calidris alba*) [A144] | Yes, there is linkage between the proposed development and the European site, 4km of the proposed greenway is located within the European site and includes newly constructed trail and existing road and farm access tracks.<br><br>Nationally- and internationally-important numbers of SCI waterbirds winter within the designated site with high concentrations of waterbirds using the north slobland as foraging and roosting grounds, particularly Greenland white-fronted goose where up to 30% of the global population winter. Hen harrier are also known to the use the north slobland in winter and roost west of the slobland area within the European site. Breeding little tern, an SCI species, are known to use exposed sandbars in Wexford Harbour, *c.* 1.3km off the Raven Point and *c.* 1.8km from the proposed greenway at its nearest point.<br><br>Due to the flat topography of the slobland and proposed greenway route there is little visual screening between the proposed location of the greenway and surrounding habitats. The mid-section of the greenway (i.e. from the Wildfowl Reserve Visitor Centre to the Raven Wood) will be closed during the winter months to protect wintering waterfowl from potential disturbance caused by users of the greenway.<br><br>The eastern section of the route within Raven Wood will remain open during the winter period, however this existing pathway is visually screened from the sloblands by mature woodland and edge vegetation. The western section of the route will be open from Ferrybank to the Wildfowl Reserve Visitor Centre. The western section of the route although not adjacent to habitats used by wintering waterfowl it is within close proximity to the winter hen harrier roost, and therefore greenway users and associated activities have potential to cause disturbance and displacement to winter roosting hen harrier.<br><br>It is not expected that the proposed route will have any impact on the little tern breeding colony as they nest on sandbars in Wexford Harbour, often alternating sites between years. The nearest known nesting location in previous years is located *c.* 1.8km from the nearest point of the route and *c.* 1.3km from the Raven Point. Disturbance over this distance is not expected to have any impact on the little tern breeding colony. There is no pedestrian access to the sandbars within Wexford Harbour.<br><br>Given the above information, significant effects on the European site cannot be ruled |

| Site name & code | Reasons for designation[3] (*= Priority Habitat) | Relevant source-pathway-receptor links between proposed development and European site? |
|---|---|---|
| | • Dunlin (*Calidris alpina*) [A149]<br>• Black-tailed Godwit (*Limosa limosa*) [A156]<br>• Bar-tailed Godwit (*Limosa lapponica*) [A157]<br>• Curlew (*Numenius arquata*) [A160]<br>• Redshank (*Tringa totanus*) [A162]<br>• Black-headed Gull (*Chroicocephalus ridibundus*) [A179]<br>• Lesser Black-backed Gull (*Larus fuscus*) [A183]<br>• Little Tern (*Sterna albifrons*) [A195]<br>• Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]<br>• Wetland and Waterbirds [A999] | out. |
| The Raven SPA [004019]<br><br>Proposed greenway is within the European site | **Conservation Objectives Version 1.0 (21/03/12)**<br>• Red-throated Diver (*Gavia stellata*) [A001]<br>• Cormorant (*Phalacrocorax carbo*) [A017]<br>• Common Scoter (*Melanitta nigra*) [A065]<br>• Grey Plover (*Pluvialis squatarola*) [A141]<br>• Sanderling (*Calidris alba*) [A144]<br>• Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]<br>• Wetland and Waterbirds [A999] | Yes, there is linkage between the proposed development and the European site, *c.* 0.9km of the proposed greenway is located within the European site. The Raven SPA is part of the Wexford Harbour and Slobs SPA complex, and therefore should be considered together.<br><br>The proposed greenway route is not directly within the European site, although a section of the route is adjacent to The Raven SPA. Users of the greenway within Raven Wood will be visually screened to birds using the surrounding area, however the provision of the greenway is expected to increase visitor numbers to the general area which may stray off the marked route and as such increase human presence at Raven Point and on Culleton's Gap Beach.<br><br>Potential increased human presence at the Raven Point and on Culleton's Gap Beach may cause disturbance to SCI birds using intertidal habitats or shallow waters close to the shoreline if mitigation measures are not implemented<br><br>Significant effects on the European site can therefore not be ruled out. |

| Site name & code | Reasons for designation[3] (*= Priority Habitat) | Relevant source-pathway-receptor links between proposed development and European site? |
|---|---|---|
| Tacumshin Lake SPA [004092]<br><br>Located *c.* 14.5km southwest | **Conservation Objectives Version 5.0 (15/08/16)**<br>• Little Grebe (*Tachybaptus ruficollis*) [A004]<br>• Bewick's Swan (*Cygnus columbianus bewickii*) [A037]<br>• Whooper Swan (*Cygnus cygnus*) [A038]<br>• Wigeon (*Anas penelope*) [A050]<br>• Gadwall (*Anas strepera*) [A051]<br>• Teal (*Anas crecca*) [A052]<br>• Pintail (*Anas acuta*) [A054]<br>• Shoveler (*Anas clypeata*) [A056]<br>• Tufted Duck (*Aythya fuligula*) [A061]<br>• Coot (*Fulica atra*) [A125]<br>• Golden Plover (*Pluvialis apricaria*) [A140]<br>• Grey Plover (*Pluvialis squatarola*) [A141]<br>• Lapwing (*Vanellus vanellus*) [A142]<br>• Black-tailed Godwit (*Limosa limosa*) [A156]<br>• Wetland and Waterbirds [A999] | No impact pathway connects the proposed development to the European site has been identified. Furthermore, there is no risk of linkage between the subject lands and SCI bird species given the distance from the European site and absence of suitable *ex situ* habitat for SCI species at the proposed development site. |
| Lady's Island Lake SPA [004009]<br><br>Located *c.* 14km south | **Conservation Objectives Version 5.0 (15/08/16)**<br>• Gadwall (*Anas strepera*) [A051]<br>• Black-headed Gull (*Chroicocephalus ridibundus*) [A179]<br>• Sandwich Tern (*Sterna sandvicensis*) [A191]<br>• Roseate Tern (*Sterna dougallii*) [A192]<br>• Common Tern (*Sterna hirundo*) [A193]<br>• Arctic Tern (*Sterna paradisaea*) [A194]<br>• Wetland and Waterbirds [A999] | No impact pathway connects the proposed development to the European site has been identified. Furthermore there is no risk of linkage between the subject lands and SCI bird species given the distance from the European site and absence of suitable *ex situ* habitat for SCI species at the proposed development site. |

**Figure 6: Overview of European sites located within 15km of Proposed Greenway**

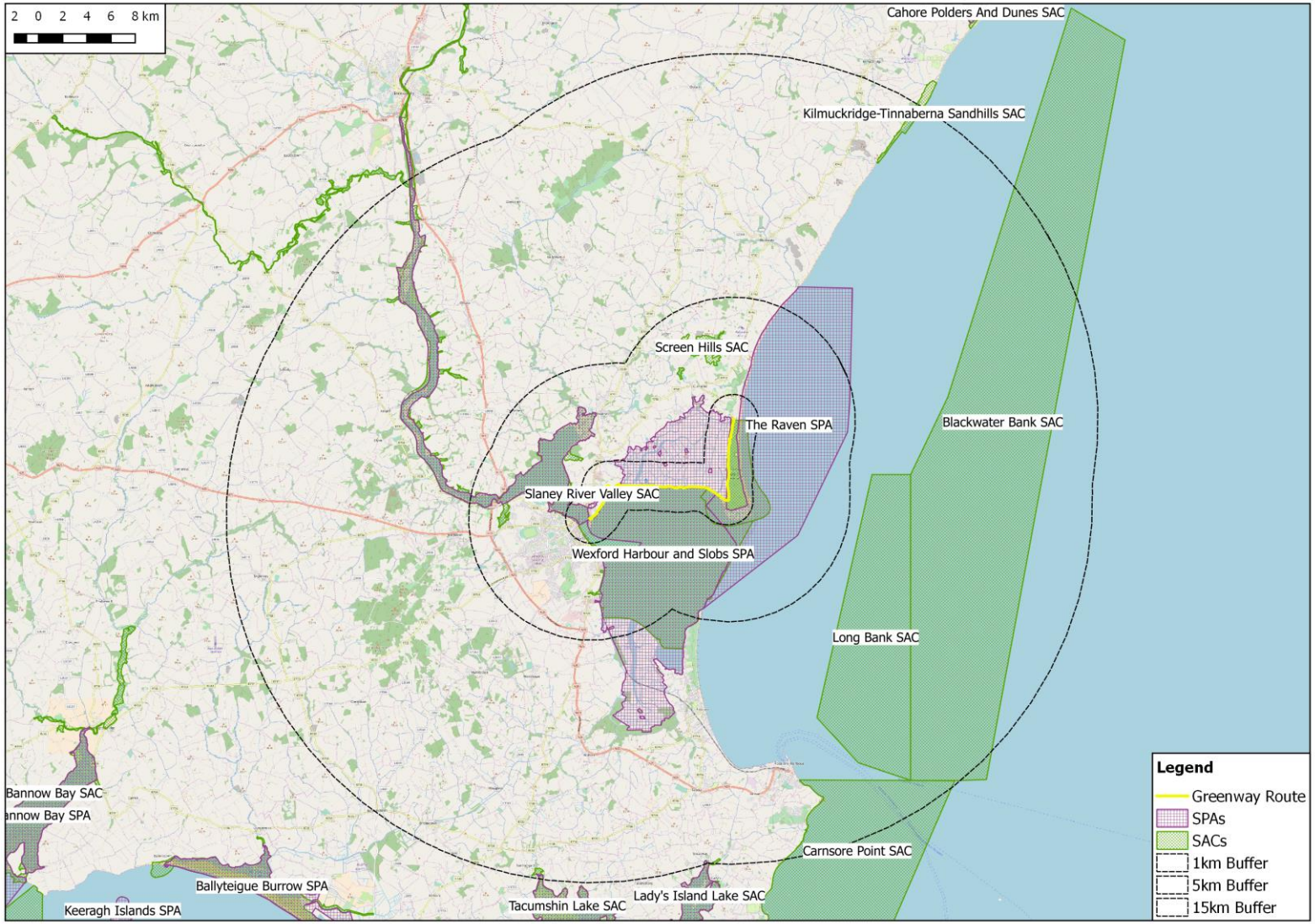


**Figure 7: European sites located within 1km of Proposed Greenway (western section)**

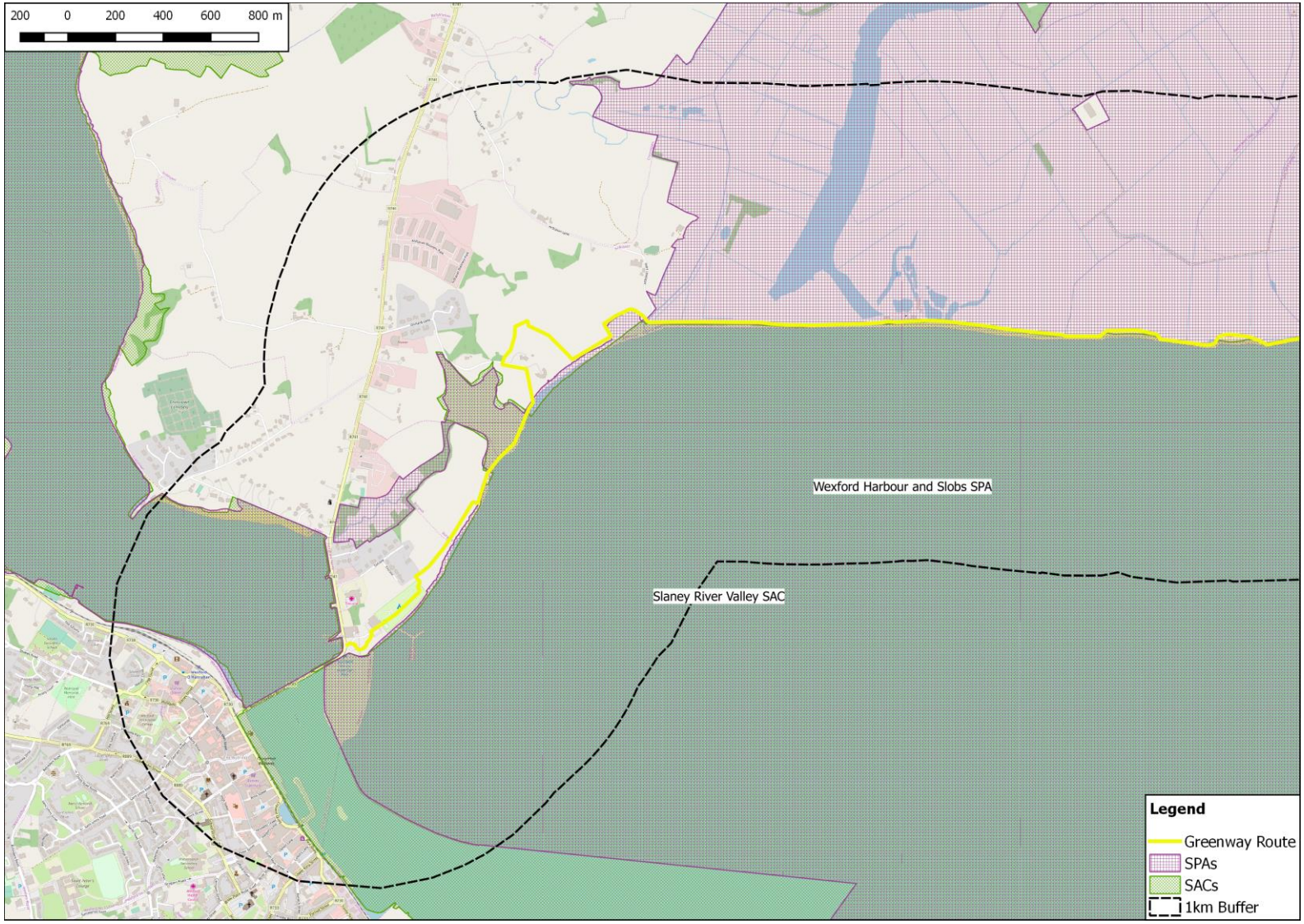
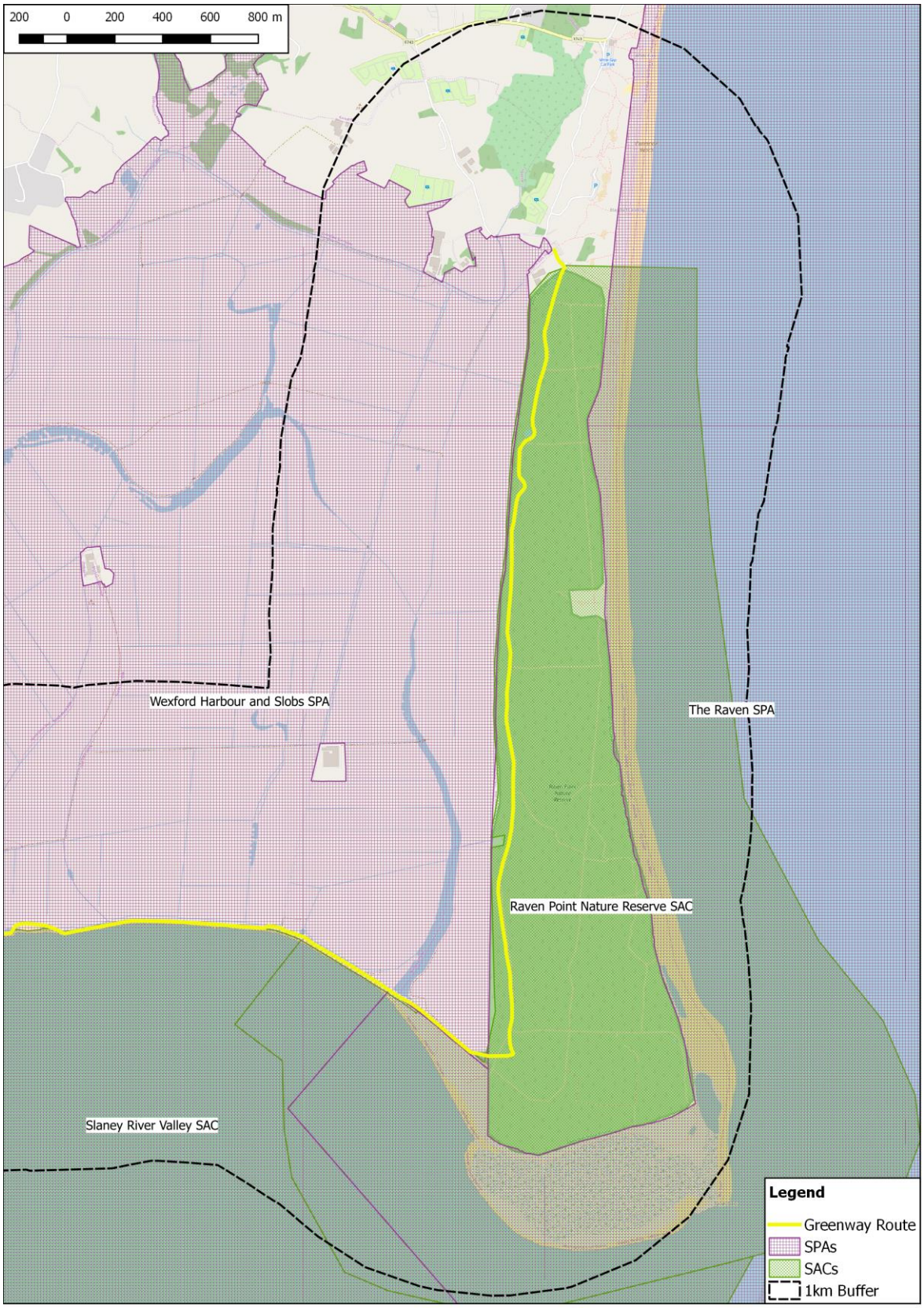


**Figure 8: European sites located within 1km of Proposed Greenway (eastern section)**



### 4.3 Conclusions on Information Provided for Screening Assessment

Information to enable the competent authority to perform its statutory function to carry out a screening for AA has been presented within this section of the report.

Following an examination, analysis and evaluation of the relevant information including, in particular, the nature of the proposed development and the likelihood of significant effects on any European site, and applying the precautionary principle, it is the professional opinion of the authors that it is not possible to exclude, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a likely significant effect on the following four European sites:

- Raven Point Nature Reserve cSAC;
- Slaney River Valley cSAC;
- Wexford Harbour and Slobs SPA; and
- The Raven SPA.

In this case the distance of 15km exceeds the potential zone of influence of the proposed works and any likelihood of significant effects in relation to European sites beyond 15km can be ruled out.

In the case of the four European sites listed above for which the possibility of significant impacts cannot be excluded, the likely significant effects to those European sites (in the absence of mitigation) arises from:

- risk of habitat erosion and degradation, for which the European sites are designated, resulting from recreational users, littering and dog fouling and unauthorised camping;
- disturbance to Special Conservation Interest (SCI) and Qualifying Interest (QI) species during construction and upgrade of the greenway;
- disturbance to SCI and/or QI species caused by recreational users, the presence of dogs and increased numbers of pedestrians in the presence in the general area;
- short or long-term displacement of SCI and/or QI species resulting from disturbance caused by greenway users; and
- potential barrier to movement of SCI and QI species created by the provision of the greenway route.

It was concluded, therefore, that likely significant effects on these four European sites may require mitigation.

The authors of this report acknowledge it is for the competent authority to carry out a screening for appropriate assessment and to reach one of the following determinations:

(a) Stage 2 AA of the proposed development is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site; and

(b) Stage 2 AA of the proposed development is not required if it can be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.

# 5 PROVISION OF INFORMATION FOR STAGE 2 APPROPRIATE ASSESSMENT

The potential for the proposed development to have an adverse effect on the integrity of the Raven Point Nature Reserve cSAC, Slaney River Valley cSAC, Wexford Harbour and Slobs SPA or The Raven SPA, in light of their conservation objectives, is examined in this section.

## 5.1 Summary of European Sites Relevant to the Stage 2 Appropriate Assessment

### *5.1.1 Raven Point Nature Reserve cSAC*

***Condition of site and management***

The Natura 2000 Standard Data Form (NPWS, 2015a) details the cSAC's ecological importance as an important example of an extremely dynamic coastal sand system. It contains one of the few afforested sand dune systems in Ireland though the commercial plantings have compromised the structure of the natural dune vegetation. Outside of the planted areas are good examples of a range of sand dune types, Atlantic salt meadow and sandy intertidal flats. The site provides principal roost site for the Wexford Harbour and Slobs SPA's international important population of wintering Greenland white-front geese. Threats to the site include changes in agricultural use and abandonment of pastoral systems, forestry management, invasive non-native species, and erosion from recreational activities such as walking, horseriding, camping and use of motorised and non-motorised vehicles. The site is not currently under any management plan (NPWS, 2015a).

### *5.1.2 Slaney River Valley cSAC*

***Condition of site and management***

The Natura 2000 Standard Data Form (NPWS, 2015b) lists the SAC representing estuaries and intertidal sand and mud flats particularly well with salinity ranging from full freshwater to full seawater. The Slaney River and its tributaries display good examples of floating river vegetation. The site includes an important area of alluvial forest and old oak woodlands. The site is of high importance for the conservation of fish species, salmon, river lamprey, brook lamprey and sea lamprey, and twaite shad. Otter are distributed along the River Slaney and freshwater pearl mussel also occur within the site. Harbour seal occupy the site which represents regionally significant breeding and moulting sites for the species. The designation is also important for wintering waterfowl and more recently the site supports a nesting colony of little egret. Threats to the site include agricultural practices such as fertilisation, removal of hedgerows and scrub, forestry management, invasive non-native species, pollution to surface waters from agriculture and forestry activities, household sewage and wastewater treatment works, and surface water abstractions. The site is not currently under any management plan (NPWS, 2015b).

### *5.1.3 Wexford Harbour and Slobs SPA*

***Condition of site and management***

The Natura 2000 Standard Data Form (NPWS, 2015c) states that the SPA is one of the top three sites in the country for numbers and diversity of wintering birds and of particular importance it is one of the two most important sites in the world for Greenland white-fronted geese. The site also supports internationally important populations of Brent geese, Bewick swans and bar-tailed godwit, nationally important numbers of breeding Little tern and wintering Hen harrier As mentioned above for Slaney River Valley cSAC, a nesting colony of little egret has become established within the site. Threats to the site include forestry management and practices, disturbance from nautical sports and recreational activities including walking, horseriding and non-motorised vehicles. The site is currently under a Farm Management Plan agreed between NPWS and the Slob commission.

### *5.1.4 The Raven SPA*

***Condition of site and management***

The Natura 2000 Standard Data Form (NPWS, 2015d) states that the site has important bird interests, being part of the Wexford Slobs and Harbour complex. Of critical significance is that it forms the principal night roost for the internationally important Wexford Harbour population of Greenland white-fronted geese. The shallow waters provide optimum conditions for divers, grebes and seaduck, nationally important populations of common scoter, red-throated diver (one of the top sites in the country), great northern diver, red-breasted merganser and cormorant. Threats to the site include agricultural practices such as cultivation, grazing and fertilisation, forestry management and practices, encroachment of urbanisation and roads, and aquaculture activities.

### *5.1.5 Qualifying Interests potentially exposed to risk*

#### *5.1.5.1 Raven Point Nature Reserve cSAC*

Threats to the qualifying interests for which the Raven Point Nature Reserve cSAC has been designated include walking, horseriding and non-motorised vehicles, camping and caravans, and invasive non-native species (NPWS, 2013b). Qualifying interests include:

- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170]
- Humid dune slacks [2190]

Distribution of these habitats within the designation are provided in the Conservation Objective Supporting Document - coastal habitats (NPWS, 2011c) for the European site. Only habitats that are at risk to trampling or degradation from greenway users and activities associated with the proposed development are listed above.

#### *5.1.5.2 Slaney River Valley cSAC*

Threats to the qualifying interests for which the Slaney River Valley cSAC has been designated include bait digging and collection, paths and cycling tracks, and invasive non-native species (NPWS, 2013b). Qualifying interests include:

- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- *Lutra lutra* (Otter) [1355]

With regards to all other qualifying interests of the European site there is not considered to be any possibility for significant effects arising from the proposed development. QI habitats not listed above are not hydrologically or otherwise linked to the proposed development or are considered to be outside the zone influence of the proposed development. Similarly, other species listed as QIs of the European site are not considered to occur within the zone of the influence of the proposed development, e.g. freshwater pearl mussel *Margaritifera margaritifera*, or specific fish species.

#### *5.1.5.3 Wexford Harbour and Slobs SPA*

Threats to the qualifying interests for which the Wexford Harbour and Slobs SPA has been designated includes roads, walking, horseriding and non-motorised vehicles, and human habitat (NPWS, 2013b). Qualifying interests include:

- Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]
- Hen Harrier (*Circus cyaneus*) [A082]
- Little Grebe (*Tachybaptus ruficollis*) [A004]

- Great Crested Grebe (*Podiceps cristatus*) [A005]
- Cormorant (*Phalacrocorax carbo*) [A017]
- Grey Heron (*Ardea cinerea*) [A028]
- Bewick's Swan (*Cygnus columbianus bewickii*) [A037]
- Whooper Swan (*Cygnus cygnus*) [A038]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Shelduck (*Tadorna tadorna*) [A048]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Mallard (*Anas platyrhynchos*) [A053]
- Pintail (*Anas acuta*) [A054]
- Scaup (*Aythya marila*) [A062]
- Goldeneye (*Bucephala clangula*) [A067]
- Red-breasted Merganser (*Mergus serrator*) [A069]
- Coot (*Fulica atra*) [A125]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Lapwing (*Vanellus vanellus*) [A142]
- Knot (*Calidris canutus*) [A143]
- Sanderling (*Calidris alba*) [A144]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Lesser Black-backed Gull (*Larus fuscus*) [A183]

Although all SCI species of the European site have been listed above, there are particular species which are at greater risk to potential impacts from the proposed greenway due to their usage of the site in relation to the location of the greenway, sensitive nature of their behaviour or importance of their population, notably wintering Greenland white-fronted geese and wintering Hen harrier.

#### *5.1.5.4 The Raven SPA*

Threats to the qualifying interests for which The Raven SPA has been designated includes walking, horseriding and non-motorised vehicles as a threat or pressure of medium importance (NPWS, 2013b), and therefore potentially exposed to risk from the proposed development:

- Red-throated Diver (*Gavia stellata*) [A001]
- Cormorant (*Phalacrocorax carbo*) [A017]
- Common Scoter (*Melanitta nigra*) [A065]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Sanderling (*Calidris alba*) [A144]
- Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]

- Wetland and Waterbirds [A999]

### 5.2 Conservation Objectives

The Habitats Directive and Part XAB of the Planning and Development Act 2000 requires the focus of the AA at this second stage to be on the integrity of European sites *"in light of their conservation objectives."* Site specific conservation objectives (SSCOs) for the Qualifying Interests (QIs) of Raven Point Nature Reserve cSAC and Slaney River Valley cSAC, and the Special Conservation Interests (SCIs) of Wexford Harbour and Slobs SPA and The Raven SPA are provided in Table 3 below.

**Table 8: Detailed Conservation Objectives for relevant European sites (information taken from Conservation Objective documents from www.npws.ie)** (Rows highlighted in Amber below have been identified as attributes that could potentially be impacted on by the proposed greenway, see Section 6)

| Attribute | Measure | Target |
|---|---|---|
| **Raven Point Nature Reserve SAC** | | |
| Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] **(Maintain the favourable conservation condition)** | | |
| Habitat area | Hectares | Area increasing, subject to natural processes, including erosion and succession |
| Habitat distribution | Occurrence | No decline, subject to natural processes |
| Physical structure: functionality and sediment supply | Presence/ absence of physical barriers | Maintain the natural circulation of sediment and organic matter, without any physical obstructions |
| Vegetation structure: zonation | Occurrence | Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession |
| Vegetation composition: plant health of dune grasses | % cover | 95% of marram grass (*Ammophila arenaria*) and/or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present) |
| Vegetation composition: typical species and sub-communities | % cover at a representative number of monitoring stops | Maintain the presence of species poor communities dominated by marram grass (*Ammophila arenaria*) and/or lyme-grass (*Leymus arenarius*) |
| Vegetation composition: negative indicator species | % cover | Negative indicator species (including non-natives) to represent less than 5% cover |
| Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] **(Maintain the favourable conservation condition)** | | |
| Habitat area | Hectares | Area stable or increasing, subject to natural processes, including erosion and succession |
| Habitat distribution | Occurrence | No decline, subject to natural processes |
| Physical structure: functionality and sediment supply | Presence/ absence of physical barriers | Maintain the natural circulation of sediment and organic matter, without any physical obstructions |
| Vegetation structure: zonation | Occurrence | Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession |
| Vegetation structure: bare ground | % cover | Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes |
| Vegetation structure: vegetation | Centimetres | Maintain structural variation within sward |

| Attribute | Measure | Target |
|---|---|---|
| height | | |
| Vegetation composition: typical species and sub-communities | % cover at a representative sample of monitoring stops | Maintain range of sub-communities with typical species listed in Ryle *et al.* (2009) |
| Vegetation composition: negative indicator species | % cover | Negative indicator species (including non-natives) to represent less than 5% cover |
| Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170] **(Maintain the favourable conservation condition)** | | |
| Habitat area | Hectares | Area stable or increasing, subject to natural processes, including erosion and succession |
| Habitat distribution | Occurrence | No decline, subject to natural processes |
| Physical structure: functionality and sediment supply | Presence/ absence of physical barriers | Maintain the natural circulation of sediment and organic matter, without any physical obstructions |
| Vegetation structure: zonation | Occurrence | Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession |
| Vegetation structure: bare ground | % cover | Bare ground should not exceed 10% cover, subject to natural processes |
| Vegetation structure: vegetation height | Centimetres | Maintain structural variation within sward |
| Vegetation composition: typical species and sub-communities | % cover at a representative sample of monitoring stops | Maintain range of sub-communities with typical species listed in Ryle *et al.* (2009) |
| Vegetation composition: cover and height of *S. repens* | % cover; centimetres | Maintain >10% cover of creeping willow (*Salix repens*); vegetation height should be in the average range of 5-20cm |
| Vegetation composition: negative indicator species | % cover at a representative sample of monitoring stops | Negative indicator species (including non-natives) to represent less than 5% cover |
| Vegetation composition: scrub/trees | % cover | For trees and scrub other than creeping willow (*Salix repens*), there should be no more than 5% cover or their presence should be under control |
| Humid dune slacks [2190] **(Maintain the favourable conservation condition)** | | |
| Habitat area | Hectares | Area stable or increasing, subject to natural processes, including erosion and succession |

| Attribute | Measure | Target |
|---|---|---|
| Habitat distribution | Occurrence | No decline or change in habitat distribution, subject to natural processes |
| Physical structure: functionality and sediment supply | Presence/ absence of physical barriers | Maintain the natural circulation of sediment and organic matter, without any physical obstructions |
| Physical structure: hydrological and flooding regime | Water table levels; groundwater fluctuations (metres) | Maintain natural hydrological regime |
| Vegetation structure: zonation | Occurrence | Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession |
| Vegetation structure: bare ground | % cover | Bare ground should not exceed 5% of dune slack habitat, with the exception of the pioneer slacks, which can have up to 20% bare ground |
| Vegetation structure: vegetation height | Centimetres | Maintain structural variation within sward |
| Vegetation composition: typical species and sub-communities | % cover at a representative sample of monitoring stops | Maintain range of sub-communities with typical species listed in Ryle *et al.* (2009) |
| Vegetation composition: cover of *Salix repens* | % cover; centimetres | Maintain <40% cover of creeping willow (*Salix repens*) |
| Vegetation composition: negative indicator species | % cover | Negative indicator species (including non-natives) to represent less than 5% cover |
| Vegetation composition: scrub/trees | % cover | No more than 5% cover or under control |
| **Slaney River Valley SAC** | | |
| Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] **(Maintain the favourable conservation condition)** | | |
| Habitat area | Hectares | Area stable or increasing, subject to natural processes, including erosion and succession |
| Habitat distribution | Occurrence | No decline, subject to natural processes |
| Physical structure: sediment supply | Presence/ absence of physical barriers | Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions |
| Physical structure: creeks and pans | Occurrence | Allow creek and pan structure to develop, subject to natural processes, including erosion and |

| Attribute | Measure | Target |
|---|---|---|
| | | succession |
| Physical structure: flooding regime | Hectares flooded; frequency | Maintain natural tidal regime |
| Vegetation structure: zonation | Occurrence | Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession |
| Vegetation structure: vegetation height | Centimetres | Maintain structural variation within sward |
| Vegetation structure: vegetation cover | % cover at a representative sample of monitoring stops | Maintain >90% saltmarsh area vegetated |
| Vegetation composition: typical species and sub-communities | % cover at a representative number of monitoring stops | Maintain range of sub-communities with typical species listed in Saltmarsh Monitoring Project |
| Vegetation structure: negative indicator species *Spartina anglica* | Hectares | No significant expansion of common cordgrass (*Spartina anglica)*, with an annual spread of less than 1% |
| *Lutra lutra* (Otter) [1355] **(Maintain the favourable conservation condition)** | | |
| Distribution | % positive survey sites | No significant decline |
| Extent of terrestrial habitat | Hectares | No significant decline. Area mapped and calculated as 64.7ha above high water mark (HWM); 453.4ha along river banks/around ponds |
| Extent of marine habitat | Hectares | No significant decline. Area mapped and calculated as 534.7ha |
| Extent of freshwater (river) habitat | Kilometres | No significant decline. Length mapped and calculated as 264.1km |
| Extent of freshwater (lake/lagoon) habitat | Hectares | No significant decline. Area mapped and calculated as 0.4ha |
| Couching sites and holts | Number | No significant decline |
| Fish biomass available | Kilograms | No significant decline |
| Barriers to connectivity | Number | No significant increase |
| **The Raven SPA** | | |
| Red-throated Diver (*Gavia stellata*) [A001], Cormorant (*Phalacrocorax carbo*) [A017], Common Scoter (*Melanitta nigra*) [A065], Grey Plover (*Pluvialis squatarola*) [A141], | | |

| Attribute | Measure | Target |
|---|---|---|
| Sanderling (*Calidris alba*) [A144], Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] **(Maintain the favourable conservation condition)** | | |
| Population trend | % change | Long term population trend stable or increasing |
| Distribution | Number and range of areas used by waterbirds | There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation |
| Wetlands [A999] **(Maintain the favourable conservation condition)** | | |
| Wetland habitat area | Hectares | The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 4,207ha, other than that due to natural patterns of variation |
| **Wexford Harbour and Slobs SPA** | | |
| Little Grebe (*Tachybaptus ruficollis*) [A004], Great Crested Grebe (*Podiceps cristatus*) [A005], Cormorant (*Phalacrocorax carbo*) [A017], Grey Heron (*Ardea cinerea*) [A028], Bewick's Swan (*Cygnus columbianus bewickii*) [A037], Whooper Swan (*Cygnus cygnus*) [A038], Light-bellied Brent Goose (*Branta bernicla hrota*) [A046], Shelduck (*Tadorna tadorna*) [A048], Wigeon (*Anas penelope*) [A050], Teal (*Anas crecca*) [A052], Mallard (*Anas platyrhynchos*) [A053], Pintail (*Anas acuta*) [A054], Scaup (*Aythya marila*) [A062], Goldeneye (*Bucephala clangula*) [A067], Red-breasted Merganser (*Mergus serrator*) [A069], Coot (*Fulica atra*) [A125], Oystercatcher (*Haematopus ostralegus*) [A130], Golden Plover (*Pluvialis apricaria*) [A140], Grey Plover (*Pluvialis squatarola*) [A141], Lapwing (*Vanellus vanellus*) [A142], Knot (*Calidris canutus*) [A143], Sanderling (*Calidris alba*) [A144], Dunlin (*Calidris alpina*) [A149], Black-tailed Godwit (*Limosa limosa*) [A156], Bar-tailed Godwit (*Limosa lapponica*) [A157], Curlew (*Numenius arquata*) [A160], Redshank (*Tringa totanus*) [A162], Black-headed Gull (*Chroicocephalus ridibundus*) [A179], Lesser Black-backed Gull (*Larus fuscus*) [A183], Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] **(Maintain the favourable conservation condition)** | | |
| Population trend | % change | Long term population trend stable or increasing |
| Distribution | Number and range of areas used by waterbirds | There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation |
| Hen Harrier (*Circus cyaneus*) [A082] **(Maintain the favourable conservation condition)** | | |
| Roost attendance: individual hen harriers | Number | No significant decline |
| Suitable foraging habitat | Hectares | No significant decline |
| Roost site: condition | Area (hectares); structure | The roost site should be maintained in a suitable condition |
| Disturbance at the roost site | Level of impact | Human activities should occur at levels that do not adversely affect the Hen Harrier winter roost population |

| Attribute | Measure | Target |
|---|---|---|
| Wetlands [A999] **(Maintain the favourable conservation condition)** | | |
| Wetland habitat area | Hectares | The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 4,207ha, other than that due to natural patterns of variation |

# 6 Analysis of Potential Impacts and Proposed Mitigation Measures

## 6.1 Potential Impacts on European sites

There is potential for impacts on the four relevant European sites (in the absence of mitigation) within the zone of influence of the proposed greenway arising from the following:

1. construction-related surface water discharges;
2. construction-related disturbance to Qualifying Interest (QI) and Special Conservation Interest (SCI) habitats and species;
3. risk of QI habitat erosion and degradation, for which the European sites are designated, resulting from activities associated with greenway users, littering, dog fouling and unauthorised camping;
4. disturbance to SCI and QI species during construction and upgrade of the greenway;
5. disturbance to SCI and/or QI species caused by recreational users, the presence of dogs and increased numbers of pedestrians in the presence in the general area;
6. short or long-term displacement of SCI and/or QI species resulting from disturbance caused by greenway users; and
7. potential barrier to movement of SCI and QI species created by the provision of the greenway route.

In view of the relevant conservation objectives for each QI and SCI of the four relevant European sites, Table 4 identifies (highlighted amber rows) those that may be affected by potential impacts listed above.

As outlined in Section 4 of this report all other potential impacts on the four relevant European sites may be excluded.

### *6.1.1 Raven Point Nature Reserve SAC*

#### *6.1.1.1 Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]*

As provided in dune habitat distribution mapping of the European site, Shifting dunes [2120] along the shoreline with *Ammophila arenaria* (white dunes) [2120] has been recorded along lengths of the eastern fringe of the dune habitat system where it meets Culleton's Gap Beach, and also at Raven Point where the dynamic nature of the terrestrial dune system is continuously being transformed by activity of the sea and wind (NPWS, 2011c).

The Annex 1 shifting dune habitat [2120] has not been assessed specifically for this European site in terms of EU conservation status assessment, however a national coastal monitoring programme (Ryle *et al.* 2009) has carried out this assessment. Shifting dunes [2120] within the Raven Point Nature Reserve SAC has been assessed as 'unfavourable-inadequate' in relation to extent, structure and functions, and future prospects due to erosion and recreational pressures. More recent surveys of shifting dune [2120] habitat within the European site by Delaney *et al.* 2013 recorded 5.4ha of the habitat type compared to 10.93ha recorded in previous surveys by Ryle *et al.* (2009), this change being largely due to natural processes. Delaney *et al.* (2013) reassessed the structure and function of the Annex 1 habitat as 'favourable', passing on all assessment criteria.

#### *6.1.1.2 Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]*

The sand dune distribution map of the fixed dune habitat [2130] within the European site has recorded this habitat in two main areas: in the north of the site east of Raven Wood and in the south of the site at Raven Point. Smaller isolated sections are also recorded along a stretch east of the Raven Wood

where there is a close association with shifting dune habitat [2120] which flanks the eastern periphery of these fixed dune [2130] pockets (NPWS, 2011c).

NPWS have noted that much of the east of the Raven where fixed dune habitat is absent is due to afforestation up to the beach line.

The conservation status assessment of Annex 1 sand dune habitat [2130] extent has been assessed as 'favourable', and structure and functions, and future prospects have been assessed as 'unfavourable-inadequate'. The overall EU conservation status assessment for the habitat within the European site was assigned 'unfavourable-inadequate' and the proposed Irish conservation status as 'unfavourable-unchanged'. Surveys carried out during sand dune monitoring (Delany *et al.* 2013) recorded an increase of fixed dune habitat [2130] at the site from 26.67ha (Ryle *et al.* 2009) to 31.78ha (which does not include forested areas). Delaney *et al.* (2013) reassessed the structure and function of the Annex 1 habitat as 'unfavourable-bad', failing on several criteria including target species, negative indicator species, encroachment from adjacent plantations, vegetation height and damage due to disturbance.

#### *6.1.1.3 Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170]*

The mapped area of dune with *salix* habitat [2170] is *circa* 0.1ha and is closely associated with dune slack [2190] and fixed dune [2120] habitat types. The dune habitat represents a very small proportion of the dune system.

The conservation status assessment of Annex 1 sand dune habitat [2170] extent, structure & functions have been assessed as 'favourable', and future prospects as 'unfavourable-inadequate'. The overall EU conservation status assessment for the habitat within the European site was assigned 'unfavourable-inadequate' and the proposed Irish conservation status as 'unfavourable-unchanged'. More recent surveys showed a minor increase in habitat area from 2.57ha to 2.77ha (Delaney *et al.* 2013), although results of structure and function reassessment concluded 'unfavourable-inadequate' status of the habitat type, failing on tree/scrub cover and height of *Salix repens*.

#### *6.1.1.4 Humid dune slacks [2190]*

Dune slack habitat [2190] within the European site is associated with artificial ponds created either as Natterjack toad (*Bufo calamita*) habitat or for forest fire reservoirs. Areas of this habitat are isolated from each other and where found outside forestry are associated with fixed dune [2130] or dunes with *salix* [2170].

The conservation status assessment of Annex 1 dune habitat [2190] extent, structure & functions have been assessed as 'favourable', and future prospects as 'unfavourable-inadequate'. The overall EU conservation status assessment for the habitat within the European site was assigned 'unfavourable-inadequate' and the proposed Irish conservation status as 'unfavourable-unchanged'. Following Delaney *et al.* (2013) surveys it was found that the habitat area of humid dune slacks [2190] had not changed from the previous Ryle *et al.* (2009) surveys, and that structure and function had been reassessed as 'favourable' status, passing on all criteria.

#### *6.1.1.5 Habitat Erosion and degradation*

There is potential for adverse effects arising from activities associated with users of the greenway to cause erosion and degradation to QI habitats adjacent to the proposed route which may affect their conservation status in relation to the Site Specific Conservation Objectives (SSCOs) including habitat area, habitat distribution and vegetation composition - plant health of dune grasses. Such activities may arise from users diverging from the marked route and walking through habitats either on informal paths or through undisturbed habitats, unauthorised camping, lighting fires, and/or littering and dog fouling. The route occurring within the Raven Wood will be open all year round. During the open season (15th April to 15th September inclusive) it will join the newly constructed greenway section west of Raven Point and during the closed season (16th September and 14th April inclusive) it will form a looped route and users will follow a marked path back towards Culleton's Gap car park.

Erosion of dune habitats at the Raven is an on-going pressure from factors such as weather and recreational activities. However, it has been noted that it is often difficult to distinguish between natural erosion and erosion caused by human intervention (NPWS 2011c). Delaney *et al.* (2013) included walking, horse-riding and non-motorised vehicles (e.g. bicycles) as a neutral impact affecting dune habitats occurring within this European site. Negative impacts were largely attributable to the management of the site including under-grazing, agricultural intensification, problematic native species and forestry management.

Due to the dynamic and often shifting nature of dune systems, it is possible that pressures from recreational users may affect the Annex 1 dune habitats at a local scale. However sea, wind and weather regimes are likely to remain the prevailing forces driving the changing behaviour of shifting dune habitat type [2120]. For fixed dune habitat [2130], dunes with *Salix* [2170] and humid slack dunes [2190] other pressures such as forestry management, scrub encroachment and problematic native species are considered to have a greater impact than erosion and degradation impacts from recreational users.

At present forestry management is ongoing at the site. Local NPWS staff monitor the site and actively patrol the area to maintain a public presence and control activates such as camping and fire lighting which could be detrimental to the dune habitat system.

#### *6.1.1.6 Proposed Mitigation*

The route occurring within the Raven Wood will be open all year round. During the open season (15th April to 15th September inclusive) it will join the newly constructed greenway section west of Raven Point and during the closed season (16th September and 14th April inclusive) it will form a looped route and users will follow a marked path back towards Culleton's Gap car park. It was deemed essential that several layers of mitigation combine to encompass the proposed mitigation strategy in order to protect the dune system from habitat erosion and degradation from greenway users.

Outlined below are mitigation measures proposed for implementation;

- The design of the greenway route itself has been contoured to lead greenway users away from sensitive dune habitats. Where the newly constructed path joins the existing Raven Wood path west of Raven Point landscaping including banking and native planting (advised by ecologist) will guide pedestrians away from sensitive habitats at Raven Point;
- Signage will be erected educating greenway users of the dynamic dune system and sensitive nature of this habitat, deterring them from walking through the habitat off the marked way. Signage prohibiting littering, dog fouling, camping and lighting fires will also be displayed along the route within the Raven Wood and at Culleton's Gap Car Park;
- Greenway wardens as part of their duties shall where they encounter users not respecting the trail, advise the individuals of the greenway rules, highlight signage messages and educate users about the sensitive site; and
- Greenway wardens will be authorised to enforce Trail Bye-laws along the greenway and its environs (see Book No. 8 for Wexford County Council Trail Bye-laws for Wexford Town to Curracloe Greenway 2018).

#### *6.1.1.7 Conclusion on adverse effects on the integrity of European Sites*

Considering the implementation of the above mitigation measures and the natural shifting and changing nature of dune systems, it is concluded that there will be no adverse effects on the QI dune habitats discussed above in view of the relevant SSCOs identified in Table 4 which are habitat area, habitat distribution and vegetation composition (plant health of dune grasses), or on the integrity of the European site as a result of the proposed greenway.

### *6.1.2 River Slaney Valley SAC*

#### *6.1.2.1 Atlantic salt meadows [1330] and Mediterranean salt meadows [1410]*

The main Atlantic and Mediterranean salt meadow habitat types within the River Slaney Valley SAC are located at Castlebridge, Ferrycarrig and Rosslare. At the Castlebridge site, saltmarsh monitoring carried out in 2007-2008 (McCorry and Ryle 2009) recorded *c.* 2.9ha of Atlantic salt meadow [1330] and *c.* 23.4ha of Mediterranean salt meadow [1410]. Monitoring assessed Atlantic salt meadow [1330] extent, structure and functions, and future prospects as 'favourable' status and overall EU conservation status of the Annex 1 habitat at Castlebridge as 'favourable'. McCorry and Ryle (2009) assessed Mediterranean salt meadow [1410] extent as 'favourable', structure and functions, and future prospects as 'unfavourable-inadequate' and the overall EU conservation status assessment as 'unfavourable-inadequate'. At present there are no activities significantly negatively affecting Atlantic salt meadows [1330] and if continued low intensity grazing within Mediterranean salt meadow [1410] may have future negative impacts.

At Ferrycarrig, *c.* 0.026ha of Atlantic salt meadow [1330] and *c.* 0.06ha of Mediterranean salt meadow [1410] has been recorded (McCorry and Ryle 2009). Saltmarsh monitoring assessed Atlantic salt meadow [1330] extent as 'favourable' and structure and functions, and future prospects as 'unfavourable-bad' status and overall EU conservation status of the Annex 1 habitat at this location as 'unfavourable-bad'. McCorry and Ryle (2009) assessed Mediterranean salt meadow [1410] extent, structure and functions, and future prospects as 'favourable' and the overall EU conservation status assessment as 'favourable'. Current activities at this site, such as the presence of boats and associated activities, if continued will negatively impact Atlantic salt meadow [1330]. At present there are no activities significantly negatively affecting Mediterranean salt meadows [1410].

At Rosslare, *c.* 7.5ha of Atlantic salt meadow [1330] and *c.* 0.45ha of Mediterranean salt meadow [1410] has been recorded (McCorry and Ryle 2009). Saltmarsh monitoring assessed Atlantic salt meadow [1330] extent as 'unfavourable-inadequate' and structure and functions, and future prospects as 'unfavourable-bad' status and overall EU conservation status of the Annex 1 habitat at this location as 'unfavourable-bad'. McCorry and Ryle (2009) assessed Mediterranean salt meadow [1410] extent, structure and functions, and future prospects as 'favourable' and the overall EU conservation status assessment as 'favourable'. The main threat negatively impacting Atlantic salt meadow [1330] at this site is presence and continued spread of Common Cordgrass. At present there are no activities significantly negatively affecting Mediterranean salt meadows [1410].

#### *6.1.2.2 Habitat Damage and Degradation*

There will be no direct habitat loss of QI habitats Atlantic salt meadow [1330] and Mediterranean salt meadow [1410] from the greenway route, however in the absence of mitigation there is potential for adverse effects arising from the proposed construction works which may cause accidental damage and degradation of the QI habitats Atlantic salt meadow [1330] and Mediterranean salt meadow [1410] identified adjacent to the route and in light of the SSCOs. Relevant SSCOs that may be affected are habitat area, habitat distribution, and physical structure - that may affect natural tidal regime. Accidental damage could occur from construction workers not being aware of the location of the sensitive habitat, use of construction machinery within the habitat and/or storage of materials/machinery/hydro-carbons within the habitat. Degradation of the habitat could occur from the encroachment of non-native invasive species or native problematic species associated with proposed works, and/or a change in the surrounding hydrology in the area e.g. from drainage associated with the greenway.

The area of Atlantic salt meadow [1330] and Mediterranean salt meadow [1410] identified adjacent to the route covers an area of *c.* 0.12ha and was not included in saltmarsh monitoring and habitat assessments at Castlebridge, Ferrybank or Rosslare detailed in the European site's supporting documents (McCorry and Ryle 2009). The area of Annex 1 salt meadow habitat recorded is surrounded

by reed and large sedge swamp and ground conditions are very wet. It is considered that this area is surface-water fed by drainage ditches flowing in from the north-northwest. There is tidal influence in the watercourse flowing through the reedbed and swamp habitat onto the shoreline towards Wexford Harbour, however the reedbed and swamp habitat does not appear to have a tidal influence although under easterly or southerly storm conditions it is likely that saline concentrations may fluctuate.

From the centreline of the proposed route the nearest point of the Annex 1 habitat is *c.* 10.8m away, without mitigation it is likely that this area may be encroached upon by construction works. Works in this area will contrast to the majority of the route in that the greenway takes on a boardwalk style over the reedbed and scrub habitat at Burgess. It is proposed that the boardwalk will be raised by 0.5m using posts and therefore will not cause a barrier to hydrological movements and will negate the need for adjacent drainage ditches along this section of the route. Surface water from the slatted boardwalk will run-off into the surrounding habitat. The avoidance of drainage in the area of the Annex 1 habitat ensures the local hydrology will not be altered. Shading impacts on the Annex 1 habitat from the raised boardwalk will not occur due to the low height of the boardwalk and distance of the salt meadow habitat from the route.

Although not listed as a SSCO of Annex 1 salt meadow habitat with Slaney River Valley SAC, it is possible that construction traffic moving along the route could spread non-native invasive species identified during habitat surveys. It is possible that the spread of such species could negatively impact the salt meadow habitat if mitigation measures and correct management is not applied.

#### *6.1.2.3 Proposed Mitigation*

During the construction phase the following measures will be implemented;

- Atlantic salt meadow [1330] and Mediterranean salt meadow [1410] habitat plus a minimum of a 7m buffer will be demarcated by a suitably qualified ECoW prior to the commencement of construction work mobilisation;
- There will be no storage of materials/machinery/hydro-carbons within the demarcated area;
- An Ecological Clerk of Works (ECoW) will be present during the proposed construction works and will monitor the works to ensure the protection of the salt meadow habitat;
- Implementation of a Invasive Species Management Plan, if required, along the route with particular attention in the vicinity of identified salt meadow habitat;
- Access to the working area near the salt meadow habitat will be from the shore side rather than reedbed and swamp side; and
- The following measures to minimise surface water run-off contaminants will be implemented;
    - All material including oils, solvents and paints will be stored within temporary bunded areas or dedicated bunded containers;
    - Where possible refuelling will take place in a designated bunded area away from surface water gullies, drains and water bodies, in the event of refuelling outside of this area fuel will be transported in a mobile double skinned tank;
    - All machinery and plant used will be regularly maintained and serviced to ensure that leakage of diesel, oil and lubricants is minimised;
    - The excavation and handling of inert material will be carefully managed in such a way as to prevent any potential negative impact on the receiving water environment;
    - Where possible the excavated spoil will not be stored beyond the working day, however in the event that this is not practical, appropriate precautions in relation to the material will be taken. These precautions will include appropriate storage and covering; and

- Full method statements will be provided by the contractor and approved prior to the commencement of construction.

#### *6.1.2.4 Conclusion on adverse effects on the integrity of European Sites*

Considering the implementation of the above mitigation measures, presence of ECoW during the proposed works, the boardwalk style route over the reedbed and swamp habitat, and implementation of Invasive Species Management Plan, it is concluded that there will be no adverse effects on the integrity of the European site discussed above in view of the relevant SSCOs which are habitat area, habitat distribution, and physical structure - that may affect natural tidal regime, as a result of the proposed greenway.

#### *6.1.2.5 Otter (Lutra lutra) [1355]*

#### *6.1.2.6 Disturbance and Displacement*

In the absence of mitigation through design or otherwise, there is an increased risk of disturbance to QI species of the European site occurring within lands adjacent to the proposed greenway route. The presence of recreational greenway users, including walkers, dog-walkers, runners and cyclists, in previously lightly traversed areas has the potential to impact otter in light of the relevant SSCOs distribution, extent of terrestrial habitats above high water mark and along rivers banks/around ponds, and barriers to connectivity.

Disturbance may be all year round at Ardcavan and the Raven looped routes, or restricted to the open period (15th April to 15th September) along the mid-section of the route from the Wildfowl Reserve Visitor Centre to the Raven Wood. If otter experience regular repeated disturbance it may result in temporary long-term displacement (i.e. during the open period) or permanent long-term displacement (i.e. along the looped routes that are open all year round). Aforementioned disturbance relates to post-construction/operational stage of the route, additional disturbance during the construction phase is likely to be temporary and short-term in nature with construction works estimated to continue for 5months. Construction phase disturbance may relate to noise and visual disturbance from the works, presence of humans, or lighting at works area. Construction lighting operated at night and associated with the proposed works has the potential to disturb commuting and foraging otter and alter their behaviour in highly lit areas.

Otter are known to tolerate human disturbance, under certain circumstances (Bailey and Rochford 2006) and can occur in areas that often have high levels of disturbance, e.g. in towns, ports, harbours and close to busy bridges (Sleeman and Moore 2005), although they are less tolerant to disturbance at active holt sites (Liles, 2003). No active holt sites were recorded during baseline surveys, however pre-construction surveys will be carried out prior to works in the event that new holts have been established close to the route.

Otters in the locality of the greenway are expected to be exposed to disturbance from users along the greenway during the open periods. The greenway will be fenced with a combination of dog-proof fencing or security fencing (also dog-proof) on both sides of the route from Ferrybank to the Raven Wood, therefore greenway users or their dogs should not have access to lands outside the marked route. Nevertheless, visual and audio disturbance in adjacent habitats suitable for otter is likely to occur. It is possible but less likely for otter to occur near the Raven looped route considering the habitats within the Raven Wood and dune system to the east, and more likely that they will continue to use drainage channels within the sloblands west of the Raven Wood which is screened by mature forestry from the Raven looped route.

Otters can be active any time of the day however they are described as being crepuscular, with activity peaking at dusk and dawn.[4] It is anticipated that peak activity times of greenway users will be during the hours of daylight and therefore will largely avoid a conflict with peak otter activity. However, in such instances where otter encounter greenway users, temporary disturbance is likely and may force otter further inland along watercourses and drainage ditches until such disturbance has passed.

The two areas where otter were recorded, at Burgess lands and man-made ponds east of the Wildfowl Reserve Visitor Centre, are considered to be important habitats for otter. At these locations panelled screening will be provided to protect otter against visual disturbance from greenway users and their dogs. Viewing panes will be available to users along the screened areas, however it is not expected that there is a risk of disturbance from the clear panes. As discussed in later sections, the screening is two-fold and has the function in protecting wintering and/or breeding birds from disturbance.

#### *6.1.2.7 Barrier to Movement*

In the absence of mitigation through design or otherwise, there is a risk of the proposed greenway to create a barrier to species movement, for example between terrestrial and marine habitats given the coastal location of the pathway. Although this barrier could be a result of frequent disturbance (discussed above) this section relates to the physical barrier the route could create.

The proposed greenway route is located along a strip of land that follows the coastline from Ferrybank to the Raven Wood before continuing north within Raven Wood to Culleton's Gap Beach car park. The proposed greenway covers a total width of 6m including fencing, drainage, the pathway and associated planting or landscaping. Currently there is free movement for otter between inland habitats north of the greenway route and marine habitats south of the greenway route.

It is proposed that the greenway route will be fenced with a combination of dog-proof fencing and security fencing (also dog-proof) for the length of the route between Ferrybank and the Raven Wood. The fencing will protect mammals and wintering and breeding birds from disturbance from greenway users outside the marked way and loose dogs. However, without the provision of fauna passes strategically placed along the route, connectivity and movement of otters and mammals between habitats separated by the route would be severed.

At Burgess land, a raised boardwalk style path will be used to protect the hydrology of the wetland area and to allow unrestricted movement of otter between the wetland habitat and numerous drains and watercourses in this area, and the marine habitats of Wexford Harbour. On 30th May 2017, an otter was observed exiting a watercourse at Burgess lands onto the shoreline, before darting towards and entering the sea.

#### *6.1.2.8 Proposed Mitigation*

- Provision of otter ledges on culverts along the route;
- Provision of 6 no. of mammal passes along the route, between Ferrybank and where the route meets the Raven, which will pass under the pathway at key locations (see drawing no. ATR/101 Constraints Map);
- Raised boardwalk style pathway over wetlands at Burgess lands, allowing the free movement of otter between wetlands, watercourses and drainage ditches in this area to the marine habitats;
- Provision of dog-proof fencing along the length of the route from Ferrybank to Raven Wood, and along the looped Ardcavan route;

[4] http://www.mammals-in-ireland.ie/species/otter [last accessed 09/02/2018]

- Provision of landscaped screening along otter (and consequently bird) sensitive areas e.g. at Burgess lands, waterbodies west of Wildfowl Reserve Visitor Centre and at Curracloe Channel;
- Daily closure of the proposed trail from dusk until dawn but not later than 9pm in the summer season;
- Construction mitigation for otter includes;
    - Pre-commencement checks for otter holts along the proposed greenway route should be carried out to ensure that no new mammal resting sites have been created;
    - A suitably qualified ECoW will be present during the construction phase and will monitor otter activity;
    - Identify mammal passage routes along the working area which will be kept unimpeded as a result of construction;
    - Review of temporary construction lighting within the working area. All lighting will be directional and floodlighting over large areas will be avoided to minimise impact upon the foraging activity of the nocturnal and crepuscular mammals; and
- If the nature of maintenance works is within the zone of influence of watercourses or drainage ditches the above mitigation for construction works will apply.

#### *6.1.2.9 Conclusion on adverse effects on the integrity of European Sites*

Considering the potential impacts, temporary disturbance during construction and maintenance works, short-term disturbance post construction and during operational phase, large avoidance of peak otter activity and greenway activity times, panelled screening at important otter locations, provision of strategically located fauna passes and unrestricted otter movement at Burgess lands, and additional proposed mitigation, there is no adverse effect on otter in view of the relevant SSCOs relevant SSCOs that are distribution, extent of terrestrial habitats above high water mark and along rivers banks/around ponds, and barriers to connectivity outlined in Table 3, or on the integrity of the European site as a result of the proposed greenway.

### *6.1.3 Wexford Harbour and Slobs SPA and The Raven SPA Complex*

Wexford Harbour and Slobs SPA and the Raven SPA are located adjacent to each other. The Wexford Harbour and Slobs SPA comprises of *c.* 20km of the lower reaches of the River Slaney, River Slaney estuarine habitats, extensive sand and mudflats of Wexford Harbour and Wexford north and south sloblands. The sloblands are flat areas of agricultural land, mainly arable and pasture grassland, which were reclaimed in 19th century, are contained within sea-protection walls and are drained by an extensive network of channels. The entire Wexford Harbour and Slobs SPA designation covers *c.* 5,982ha of which 54% of this area is marine habitat.

The Raven SPA comprises mainly of marine habitats, 98% of *c.* 4,206ha, and extends from Rosslare Point southeast of Wexford town to Blackwater Harbour *c.* 14km northeast of Wexford town on the east coast, and includes extensive sand and mudflats, some sandflats entirely exposed at both high and low tides south of Raven Point.

These designations are considered together in this NIS as both sites support SCI species of the Wexford Harbour and Slobs SPA and the Raven SPA.

#### *6.1.3.1 Greenland White-fronted Geese*

The conservation objectives supporting document regard the status of the Greenland white-fronted geese population within the European sites as 'intermediate (unfavourable)', which is based on the long-term population trend for this species which over the 15-year period 1992/93-2007/08 has declined by 7% and represents an all-Ireland and international trend (NPWS, 2011a). International decline in the population has been attributed to factors including annual recruitment, increased

competition for nest sites, and perhaps climate change (NPWS, 2011a). Given the international importance of the Wexford Harbour and Slobs and the Raven SPA complex for Greenland white-fronted geese it was imperative that the protection of this site for wintering geese is central to the design of the proposed greenway.

As a result of the global decline of the species an international conservation action plan for Greenland white-fronted goose was developed by parties of the African-Eurasian Waterbird Agreement (AEWA). The long-term goal of the plan (by 2020) is to establish and then maintain the favourable conservation status of the international population of the geese throughout its global range (Stroud *et al.* 2012).

Greenland white-fronted geese migrate from breeding grounds in west Greenland towards Iceland where they stage on route to wintering sites in Ireland and the UK. Arrival dates recorded at Wexford sloblands between year 2011 and 2016 have ranged between 28th September and 9th October (data provided by NPWS), and departure dates between the same years have ranged between 19th March and 9th April (data provided by WCC).

The north sloblands are the single most important subsite for Greenland white-fronted geese. The area of reclaimed land, now agricultural land, provides winter foraging for the SPA population of geese. The sloblands are managed to provide the best feeding resource for the geese, with grass being favoured across the entire winter period, some preference for stubble fields as new shoots appear and beet is also planted to supplement feeding when grass and new shoots are limited. Monitoring by NPWS have suggested that geese favour fields in the mid- and northern parts of the north sloblands and are least attracted to fields in the southeast corner towards the Raven (NPWS, 2011a). See Section 3.2.4.3 of this report for peak counts of geese in individual fields adjacent to the route and within 1km of the route.

The primary roost site for Greenland white-fronted geese is located on tidal sandbanks south of the Raven Point within the Raven SPA. Small numbers of geese occasionally roost alongside major channels in the north slobland (principally during bad weather events). The intrinsic role of the north sloblands and roost site south of the Raven Point demonstrate the inseparable functions of the two European sites in supporting the population of Greenland white-fronted geese.

#### *6.1.3.2 Disturbance and Displacement*

In the absence of mitigation by design or otherwise, the occurrence of construction and maintenance works, presence of cyclists, walkers and dogs along the greenway route have the potential to cause disturbance and potentially either short-term or long-term displacement of Greenland white-fronted geese which may affect the conservation status of the species in relation to the relevant SSCO, distribution with regards to number and range of areas used by waterbirds. The SSCO specifically states that '*there should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation*'.

Waterbirds including geese can react to disturbance in many different ways, by increasing alertness and vigilance, by walking away or flying from the disturbance and continuing feeding a short distance away, or by flying away from disturbance and not returning to the site for a period of time. All reactions that deviate from undisturbed behaviour have knock-on effects on feeding time and efficiency, and energy expenditure (Platteeuw and Henkens 1997). If birds are repeatedly reacting to disturbance, over time body condition can decrease affecting mortality, emigration and reproductive success and can result in short- and/or long-term individual and population implications.

Greenland white-fronted geese are known to be a particularly "flighty". An experimental study carried out on human disturbance on moulting Greenland white-fronted geese found that one intruding person resulted in a more profound disturbance response than expected with displacement lasting up to 4.6 days before disturbed birds returned to the site (Glander and Walsh, 2006).

Norris and Wilson (1988) showed that disturbance (included farming, shooting, aircraft, and other) had been an important factor affecting rates of population change in Ireland, and flocks with a restricted

feeding range being more likely to suffer local population declines as a results of disturbance (Norris and Wilson, 1988).

Geese are recorded using the fields within the north sloblands immediately adjacent to the greenway route with a concentration of geese using fields closer to the Wildfowl Reserve Visitor Centre in numbers up to 781 and even 2800. An even larger accumulation of feeding birds, numbers regularly in the thousands and up to 2,700 birds, are frequently recorded in fields north of the visitor centre typically one, two or three fields back from the proposed greenway route. From data received from NPWS peak counts of Greenland white-fronted geese were not recorded in field nos. 97, 117 or 118 which are adjacent to the proposed Ardacavan car park and Ardcavan Lane which will be open all year round. Without mitigation, there is a high probability that the presence of the greenway would cause disturbance to feeding geese at a magnitude that would be significant at a population level.

NPWS staff at the Wildfowl Reserve Visitor Centre record *ad hoc* disturbance events within the north slobslands all year round. From data received 32 anecdotal disturbance events were recorded in over the 2012/13 winter period (23rd September to 6th April), 47 over the 2013/14 winter period (11th October to 13th April), 23 over the 2014/15 winter period (24th October to 4th April), 30 over the 2015/16 winter period (18th October to 4th April), and 61 over the 2016/17 winter period (25th September to 2nd April). As it currently stands there is no walking, cycling and/or horse-riding trail within north sloblands. However NPWS are regularly required to intervene to prevent disturbance of the geese from pedestrian-based impact sources.

Extensive mitigation measures and a contingency strategy are outlined in the below sections.

#### *6.1.3.3 Proposed Mitigation*

- Implementation of a closed period between 16th September and 14th April along the mid-section of the route which skirts the sloblands, from the Wildfowl Reserve Visitor Centre to Raven Wood. The closed period allows for an exclusion period when Greenland white-fronted geese are present and accounts for early arriving and late leaving birds. The closed period allows for a buffer period of one to two weeks on either side of geese arriving and departing for unusually early or late birds. Typically arrival dates recorded at Wexford sloblands between year 2011 and 2016 have ranged between 28th September and 9th October (data provided by NPWS), and departure dates between the same years have ranged between 19th March and 9th April (data provided by WCC).
- Although it is anticipated that the closed period will avoid conflict between greenway users and wintering geese, there is a low probability that members of the public will disregard the closed period, deterrent signage, security fencing and continue to access the mid-section or lands outside the gated greenway route. As such additional measures including a full-time greenway warden will man the route and enforcing the closed period along with educating greenway users on the importance of the site for Greenland white-fronted geese and the dangers at a population level of disturbance to this species. The greenway wardens will also have authority to enforce Wexford County Council Trail Bye-laws included in Book No. 8 of the application.
- 1.8m high secure fencing with lockable gates across the trail path and extending into adjacent habitat will close off the mid-section at either end (see drawing no. TCD/300/07 for fencing details and TCD/300/07 gate details. Dog-proof fencing will also be used and will extend far enough away from the locked gates so that loose dogs cannot access the sloblands;
- No construction works will occur within the Winter Construction Exclusion Zone (see Construction Methods Statement) during the closed period 16th September to 14th April inclusive;

- Greenland white-fronted geese will be monitored by a suitably qualified ECoW during construction works occurring outside the excluded mid-section during the closed period for any signs of disturbance relating the proposed works;
- If disturbance associated with the proposed works is detected (to be defined and agreed with the NPWS), the works will be stopped immediately and postponed until outside the closed period;
- Maintenance works within the excluded mid-section will not occur during the closed period;
- If maintenance is required to address damage which is causing an adverse effect on Greenland white-fronted geese, through consultation with NPWS, it may be agreed that minimal maintenance works to address the adverse effect could be carried out along the mid-section of the route during the closed period. This work will be carried out over a short period and potentially at such time when the geese are at the roosting site on exposed sandbars south of the Raven Point. In this way maintenance works along the route within the mid-section would be visually screened from the roosting site by the sea protection wall;
- Maintenance checks of the mid-section during the closed period must be carried out from a vehicle. Persons must not leave the vehicle within the mid-section during the closed period unless there is no risk of disturbance to feeding Greenland white-fronted geese;
- There will be the presence of greenway wardens who will patrol the area either end of the excluded mid-section. The role of the wardens will be to inform and educate greenway users of the sensitive nature of the sloblands and winter and its importance to the international Greenland white-fronted goose population;
- Greenway wardens as part of their duties shall where they encounter users not respecting the trail, advise the individuals of the greenway rules, highlight signage messages and educate users about the sensitive site (see Book No. 8 for Wexford County Council Bye-laws for Wexford Town to Curracloe Greenway 2018).
- Signage will be erected educating greenway users of the sensitive nature of the sloblands and winter and its importance to the international Greenland white-fronted goose population, and prohibiting access to the mid-section during the closed period. During the open period, signage will be erected on the approaches to the trail mid-section, advising users that they are now entering Wexford Wildfowl Reserve, which is a part of a European designated site and it is the winter home for the Greenland White-fronted Goose and the international importance of that population.

#### *6.1.3.4 Contingency Mitigation Strategy*

In the event that there is a failure in the proposed mitigation outlined above and greenway users cause disturbance to Greenland white-fronted geese, following discussion with NPWS and WCC, the mid-section of the greenway that skirts along the sloblands and links the Wildfowl Reserve Visitor Centre and the Raven Wood, will be removed entirely and remediation works will take place to reinstate habitats as nest possible to their original state. Following these works, occurring outside the closed period, ownership of the land within the mid-section will be taken back in charge by the NPWS.

#### *6.1.3.5 Conclusion on adverse effects on the integrity of European Sites*

Considering all of the above information, sensitivity of Greenland white-fronted geese and international importance of the Wexford Harbour and Slobs and Raven SPA complex, proposed mitigation and contingency strategy, it is concluded that there will be no adverse effect on Greenland white-fronted geese in view of the relevant SSCO that the proposed greenway will not affect the distribution in terms of number and range of areas used by the geese, or on the integrity of the European site complex as a result of the proposed greenway.

#### *6.1.3.6 Other Wintering Waterbirds*

#### *6.1.3.7 Disturbance and Displacement*

In the absence of mitigation by design or otherwise, the occurrence of construction and maintenance works, the presence of cyclists, walkers and dogs along the greenway route have the potential to cause disturbance and potentially either short-term or long-term displacement of winter waterbirds which may affect the conservation status of the species in relation to the relevant SSCO, distribution with regards to number and range of areas used by waterbirds.

As noted above, waterbirds can react to disturbance in many different ways, by increasing alertness and vigilance, by walking away or flying from the disturbance and continuing feeding a short distance away, or by flying away from disturbance and not returning to the site for a period of time. All reactions that deviate from undisturbed behaviour have knock-on effects on feeding time and efficiency, and energy expenditure (Platteeuw and Henkens 1997). If birds are repeatedly reacting to disturbance, over time body condition can decrease affecting mortality, emigration and reproductive success and can result in short- and/or long-term individual and population implications.

Data received from NPWS have recorded important numbers of whooper swan (70-495 individuals), mute swan (30-169 individuals), Barnacle goose (12-39 individuals), Brent goose (1200-2450 individuals) and wigeon (110-400 individuals) in fields adjacent to or within 1km of the proposed greenway route. As previously noted there is a background level of disturbance during winter months, however without applied mitigation there is potential for disturbance to wintering waterfowl.

#### *6.1.3.8 Proposed Mitigation*

Section 6.1.3.3 describes the proposed mitigation for QI wintering waterbirds of Wexford Harbour and Slobs SPA and Section 6.1.1.6 for mitigation which aim to keep greenway users on the marked route and deter them from deviating off to enter dune or habitats at Raven Point where wintering waterbirds are known to roost and congregate at times during the winter period.

#### *6.1.3.9 Conclusion on adverse effects on the integrity of European Sites*

Considering the above information and proposed mitigation, it is concluded that is no adverse effect on wintering waterbirds in view of the relevant SSCO that the proposed greenway will not affect the distribution in terms of number and range of areas used by waterbirds, or on the integrity of the European site complex as a result of the proposed greenway.

#### *6.1.3.10 Wintering Hen Harrier*

Wintering hen harrier are regular winter visitors to the north sloblands and the Wexford Harbour and Slobs SPA regularly supports a population of nationally-important numbers of winter roosting hen harrier with a peak count of 8 individuals recorded at the roost site (NPWS, 2011a). From communications with local residents during surveys the numbers of roosting hen harrier using this site have declined significantly and site surveys carried out confirmed a single female hen harrier using the roost site at the time of surveys over the 2017/18 winter season (full survey results contained in Confidential Appendix).

The 2015 National Survey of Breeding Hen Harrier in Ireland (Ruddock *et al.* 2016) estimated 108-157 breeding pairs of hen harrier were recorded. This estimation represents a decline compared to numbers recorded in the previous 2010 and 2005 national surveys which estimated 128-172 and 132-153 breeding pairs respectively. Therefore the national population (confirmed and possible pairs) has declined by 8.7% since 2010.

Hen harriers select roost sites with suitable cover, low ambient levels of disturbance and within range of suitable foraging areas and are often found located in reedbeds, upland heather, rank grassland, fen, bracken gorse and saltmarsh, and a small number of known roosts are found in forested habitat

(O'Donoghue, 2010 as cited in NPWS, 2015). In 2014, approximately 96 winter roosts were confirmed in Ireland and supported between 219-313 individuals (NPWS, 2015).

#### *6.1.3.11 Disturbance and Displacement*

In the absence of mitigation by design or otherwise, the presence of cyclists, walkers and dogs along the greenway route have the potential to cause disturbance and potentially either short-term or long-term displacement of winter roosting hen harrier which may affect the conservation status of the species in relation to the relevant SSCO. Relevant SSCOs that may be affected include numbers of individuals attending the roost and disturbance at the roost site. The section of greenway route closest to the roost site will be open all year round as it forms part of the Ardcavan looped route, however as birds will not be present at the roost location during the summer months disturbance impacts will affect winter roosting birds only.

A review of hen harrier disturbance at nest sites suggests that disturbance can occur up to 500m from a nest site (Ruddock *et al.* 2007). Although no such distances have been suggested for disturbance at roost sites, it is known that human activities can cause abandonment of hen harrier roost sites (Clarke and Watson 1990). Main threats and pressures identified to hen harrier at winter roost sites and relevant to the north sloblands include habitat loss through agricultural reclamation, timing of cultivation practices, and human disturbance (NPWS, 2015).

Construction and use of the proposed greenway and its users has the potential to cause disturbance to roosting hen harrier as the site is located *c.* 200m from the route at its nearest point. Disturbance is a risk at the roost site itself but also along the flight corridors used by hen harrier entering and exiting the roost site. During baseline surveys in 2017/18, three of the ten hen harrier flight lines recorded cross the route at least once and in some instances crossed the route at low flight heights. Disturbance along flight corridors may alter hen harrier behaviour which may have secondary effects such as consequential energetic costs and, roost and foraging habitat fragmentation.

Disturbance resulting from the greenway may cause short-term displacement of roosting hen harrier for example during times of high activity along the route. This displacement may be temporary and short-term where birds continue to use the roost site after the disturbance event. If birds are repeatedly exposed to disturbance events from greenway users, it may result in long-term displacement of hen harrier from the roost site.

Dog-proof fencing along the route and along the Ardcavan looped route will prevent loose dogs from causing disturbance to roosting birds. However does not eliminate visual and audio disturbance.

There is some natural visual screening along the section of route closest to the roost site provided by vegetation and hedgerows, however the provision of additional landscaped screening comprising of an earth bank and hedging is proposed to ensure visual disturbance from greenway users is minimised. In the interim until hedging is suitably established to provide adequate screening a brushwood-type fencing will supplement the landscaped screening. Screening will be used along the route on the approach to the roost site and for up to 800m north of the roost site. Female hen harrier were recorded approaching and exiting the roost area over agricultural fields to the north of the roost site. If hen harrier flight lines are altered to avoid the route altogether it is possible that birds may use a flight corridor leaving the roost site in a northwesterly direction rather than northeasterly as recorded during baseline surveys.

It is anticipated that lower numbers of users will utilise the greenway route during the winter months due to weather and restricted hours of daylight. Additionally, there will be no provision of lighting along the route to guide walkers during night-time hours or to cause unnecessary disturbance to roosting hen harrier. Disturbance levels and general activity in the area was noted during baseline surveys and was deemed to be low and infrequent even with the presence of occupied residential properties nearby. Long-term monitoring of the roost site may indeed increase awareness and protection of the hen harrier from such pressures such as persecution which are unrelated to the proposed greenway route but are evident in the local area.

*6.1.3.12 Proposed Mitigation*

- Implementation of a closed period between 16th September and 14th April along the Winter Construction Exclusion Zone during construction works;
- Provision of landscaped screening (bird and otter sensitive area);
- Daily closure of the proposed trail from dusk until dawn but not later than 9pm in the winter season;
- Winter roosting hen harrier will be monitored by suitably qualified ECoW during construction works occurring outside the excluded sections for any signs of disturbance relating the proposed works;
- If disturbance associated with the proposed works is detected, the works will be stopped immediately and postponed until outside the closed period;
- Maintenance works within the excluded section will not occur during the closed period;
- If maintenance works are required to address damage which is causing an adverse effect on roosting hen harrier, through consultation with NPWS, it may be agreed that minimal maintenance works to remove the adverse effect could be carried out along the section of the route during the closed period. This work will be carried out over a short period and potentially at such time, e.g. during foraging in daylight hours, when the hen harrier are not at the roost site. In this way maintenance works along the route within the Burgess-section would not impact roosting birds;
- Post-construction long-term monitoring of roosting hen harrier will be continued during the operational phase of the greenway to monitor disturbance of hen harrier and their response to the greenway;
- Greenway wardens will also educate pedestrians of hen harrier ecology and raise awareness of pressures such as persecution that currently threaten the population; and
- If disturbance is detected during monitoring additional mitigation will be discussed with NPWS and potential long-term closure of the section of the route will be applied.

*6.1.3.13 Conclusion on adverse effects on the integrity of European Sites*

Considering all of the above information, sensitivity of roosting hen harrier, provision of landscaped visual screening, closed period for construction and maintenance works proposed mitigation and on-going monitoring, it is concluded that is no adverse effect on hen harrier in view of the relevant SSCOs, numbers of individuals attending the roost and disturbance at the roost site, or on the integrity of the European site complex as a result of the proposed greenway.

# 7 POTENTIAL EFFECTS OF THE PROPOSED DEVELOPMENT IN-COMBINATION WITH OTHER POTENTIAL SOURCES

**Existing and Cumulative Pressures on Disturbance to SCI species within European Sites**

Threats to the qualifying interests for which the Wexford Harbour and Slobs SPA has been designated includes roads, walking, horseriding and non-motorised vehicles, and human habitat (NPWS, 2013b). As it currently stands there is no walking, cycling and/or horse-riding trails within the north sloblands, however NPWS are regularly required to intervene walkers/cyclists/horse-riders and others from continuing their route within the sloblands in an attempt to minimise disturbance from to SCI species.

The local gun club schedules 12 shoot days annually between the period 15th September and 1st January (shoot season). These shoots do not target SCI species, however inevitably cause disturbance to SCI species particularly wintering waterbirds and Greenland white-fronted geese during these 12 days which are spread out over the shoot season. Although shooting activity is generally a distance from the hen harrier roost site, hen harrier are known to forage on the north sloblands and as such are subject to disturbance on these shoot days.

Farmers within the north slobland are currently under a Farm Management Plan agreed between NPWS and the Slob commission which has been produced to sustainably manage the land for Greenland white-fronted geese and other wintering waterfowl and geese species. As the land is manged for agriculture, although activity is limited within the winter months due to the management plan, outside this period agricultural practices including cattle grazing and arable tillage are on-going.

The Raven Point Nature Reserve is an existing recreational hotspot with existing trails for walkers, runners and cyclists, and has car park amenities which are shred with access to Culleton's Gap beach. The Raven is listed within the current Wexford County Development Plan 2013-2019 as a key tourist attraction and draws large numbers of visitors each year. At present waters adjacent to the Raven are known as for conditions suitable for watersports such as wind-surfing and kite-surfing. At present levels of intensity of the sport in the area not an issue, however may increasingly become a disturbance pressure as the sport grows in popularity.

As set out in the Wexford County Development Plan 2013-2019 Objective NH01 "*To conserve and protect the integrity of sites designated for their habitat/wildlife or geological/geomorphological importance and prohibit development which would damage or threaten the integrity of these sites, including SACs, cSACs, SPAs, NHAs, pNHAs, Nature Reserves, and Refuges for Fauna*", therefore future recreational proposals for the area should fully assess the impacts of any development on the integrity of European sites.

## 8 CONCLUSIONS ON THE STAGE 2 APPROPRIATE ASSESSMENT PROCESS

In order for AA to comply with the requirements of Article 6(3) the Habitats Directive and Part XAB of the Planning and Development Act 2000, a Stage 2 AA undertaken by the competent authority must include an examination, analysis, evaluation, findings, conclusions and a final determination. The information in this report will, along with all other submissions and observations received, enable An Bord Pleanála to perform its statutory function in this regard is presented within this NIS.

In the case of the relevant European sites, the only potentially significant risks to those European sites (in the absence of mitigation) arise from potential construction-related surface water discharges, construction-related disturbance to QI and SCI species, operational related degradation to QI habitats, operational-related disturbance and displacement to SCI and QI species and potential barrier to movement of SCI and QI species created by the proposed greenway route. However, with the full implementation of the mitigation measures outlined in this report these risks will be avoided. Consequently, there will be no risk of adverse effects on Qualifying Interest habitats or species, nor the attainment of specific conservation objectives, either alone or in-combination with other plans or projects, for the relevant European sites. As a result, the constitutive characteristics of the European sites concerned that are connected to the qualifying interests for which the sites have been designated will not be adversely affected.

There is no potential for any direct impacts to European sites to arise, from the proposed greenway either alone or in combination with other plans or projects.

Accordingly, in the professional opinion of the authors of this report, whilst it has been acknowledged that there is the potential in the absence of mitigation for the proposed development to have significant indirect or indirect impacts on European sites, with the implementation of the detailed mitigation measures identified in this NIS, the integrity of those European sites will not be adversely affected.

## 9 References

**Bailey, M. and Rochford J. (2006)** *Otter Survey of Ireland 2004/2005.* Irish Wildlife Manuals, No. 23 National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

**BirdLife International (2013).** IUCN Red List for birds. Downloaded from http://www.birdlife.org in November 2013.

**Colhoun K. & Cummins S. (2014)** *Birds of Conservation Concern in Ireland 2014–2019*. BirdWatch Ireland.

**Council of the European Communities (1992)** *Council Directive of 21 May 1992 on The Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC).* O. J. L 206/35, 22 July 1992.

**Delaney, A., Devaney, F.M, Martin, J.M. and Barron, S.J. (2013)** Monitoring survey of Annex I sand dune habitats in Ireland. Irish Wildlife Manuals, No. 75. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

**DoEHLG (2010)** *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (Department of Environment, Heritage and Local Government, Rev Feb 2010).

**DoEHLG (2011)** *Actions for Biodiversity* 2011 – 2016*, Ireland's National Biodiversity Plan*.

**Environmental Protection Agency (2002)** *Guidelines on the information to be contained in Environmental Impact Statement.* Environmental Protection Agency. Wexford.

**Environmental Protection Agency (2003)** *Advice Notes on Current Practice (in the preparation of Environmental Impact Statements).* Environmental Protection Agency. Wexford.

**Environmental Protection Agency (2015).** *Water Quality in Ireland. 2010-2012*. Available online at

**European Commission (EC) (2000).** *Communication from the Commission on the precautionary principle*

**European Commission (EC) (2001)**. *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission Environment Directorate-General,);

**European Commission (EC) (2007)**. *Guidance Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the Concepts of Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence.* Opinion of the European Commission.

**European Commission (EC) (**updated draft April 2015**)**. *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (EC Environment Directorate-General, updated draft April 2015); hereinafter referred to as "MN2000"

**European Parliament and European Council (2009).** *Directive 2009/147/EC of 30th November 2009 on the Conservation of Wild Birds (2009/147/EC).* O.J. L20/7, 26th January 2010

**Glander, C.M. and Walsh, A.J. (2006)** Experimental disturbance of moulting Greenland White-fronted Geese *Anser albifrons flavirostris*. *Waterbirds around the World*. Eds. G.C. Boere, C.A. Galbraith & D.A. Stroud. The Stationery Office, Edinburgh, UK. p640

http://www.epa.ie/pubs/reports/water/waterqua/waterqualityinireland2010-2012.html#.Va41GflViko

**Institute of Ecology and Environmental Management (2006)** *Guidelines for Ecological Impact Assessment. Institute of Ecology and Environmental Management.*

**Liles, G. (2003)** *Otter Breeding Sites. Conservation and Management.* Conserving Natura 2000 Rivers Conservation Techniques Series No. 5. English Nature, Peterborough.

**McCorry, M. and Ryle, T. (2009)** Saltmarsh Monitoring Project 2007-2008. Volume 5. A report for Research Branch, National Parks and Wildlife Service, Environment, Heritage and Local Government.

**Norris, D.W. and Wilson, H.J. (1988)** Disturbance and flock size changes in Greenland White-fronted Geese wintering in Ireland. *Wildfowl* **39:** 63-70

**NPWS (2010).** Circular NPW 1/10 & PSSP 2/10 *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.* (Department of Environment, Heritage and Local Government, March 2010).

**NPWS (2011a)** Wexford Harbour and Slobs SPA (site code: 4076) & The Raven SPA (site code: 4019) Conservation Objectives Supporting Document. Version 1, December 2011. National Parks and Wildlife Service.

**NPWS (2011b)** Slaney River Valley SAC (site code: 0781) Conservation objectives supporting document – marine habitats and species. Version 1, August 2011. National Parks and Wildlife Service.

**NPWS (2011c)** Raven Point Nature Reserve SAC (site code: 710) Conservation objectives supporting document – coastal habitats. Version 1, October 2011. National Parks and Wildlife Service.

**NPWS (2013a).** *The Status of EU Protected Habitats and Species in Ireland*. Species Assessments Volume 2, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

**NPWS (2013b).** *The Status of EU Protected Habitats and Species in Ireland*. Species Assessments Volume 3, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

**NPWS (2014).** *Conservation Objectives for Great Island Channel [001058]*. Generic Version 1.0. 6th June 2014. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

**NPWS (2014)** *Site Synopsis – Wexford Harbour and Slobs SPA (Site code: 004076).*

**NPWS (2015)** Hen Harrier Conservation and the Forestry Sector in Ireland. Version 3.2. 31/03/2015. National Parks and Wildlife Service, Department of the Arts, Heritage and the Gaeltacht, Ireland.

**NPWS (2015a).** *Natura 2000 – Standard Data Form Raven Point Nature Reserve SAC.*

**NPWS (2015b).** *Natura 2000 – Standard Data Form Slaney River SAC.*

**NPWS (2015c).** *Natura 2000 – Standard Data Form Wexford Hharbour and Slobs SPA.*

**NPWS (2015d)** *Natura 2000 – Standard Data Form The Raven SPA.*

**NPWS (2014)**. *Conservation objectives for Cork Harbour SPA [004030].* Generic Version 1.0. 16th December 2014. National Parks and Wildlife Service, Department of Arts, Heritage & the Gaeltacht, Dublin, Ireland.

**Platteeuw, M. and Henkens, R.J.H.G. (1997)** Possible Impacts of Disturbance to Waterbirds: individuals, carrying capacity and populations. *Wildfowl* **48:** 225-236

**R. Clarke and D. Watson (1990)** The Hen Harrier *Circus cyaneus* Winter Roost Survey in Britain and Ireland. *Bird Study* **37**:2, pg84-100

**Ruddock, M., Mee, A., Lusby, J., Nagle, A., O'Neill, S. and O'Toole, L. (2016)** The 2015 National Survey of Breeding Hen Harrier in Ireland. Irish Wildlife Manuals, No. 93. National Parks and Wildlife Service, Department of the Arts, Heritage and the Gaeltacht, Ireland.

**Ryle, T., Murray, A., Connolly, K. and Swann, M. (2009)** Coastal Monitoring Project 2004-2006; A report to the National Parks and Wildlife Service, Dublin, Ireland.

**Sleeman, D.P. and Moore, P. (2005)** *Otter Lutra lutra in Cork City.* Irish Naturalists Journal 28: 73-79.

**Stroud, D.A., Fox, A.D., Urquhart, C. and Francis, I.S. (2012)** International Single Species Action Plan for the Conservation of the Greenland White-fronted Goose (*Anser albifrons flavirostris*). *AEWA Technical Series* No. 45. Bonn, Germany.

**APPENDIX A**

# WEXFORD TO CURRACLOE GREENWAY

# HABITATS AND FLORA SURVEY REPORT 2017

**PREPARED FOR**

**WEXFORD COUNTY COUNCIL**

| **Project Reference:** | | **160073** | | | |
|---|---|---|---|---|---|
| **Rev.** | **Status** | **Author** | **Reviewed By** | **Approved By** | **Issue Date** |
| D01 | Draft | KMOC | PS | PS | 20/2/2018 |

Scott Cawley, College House, 71-73 Rock Road, Blackrock, Co. Dublin, A94 F9X9

Tel+353(1)676-9815 Fax +353(1) 676-9816

**TABLE OF CONTENTS**

# 1. INTRODUCTION

Scott Cawley were commissioned by Wexford County Council (WCC) to carry out habitat surveys along the proposed Wexford to Curracloe Greenway route.

The Greenway commences at a trailhead in the carpark at Ferrybank Bridge where the route proceeds north following the coast line passing the reedbeds at Burgess then diverting in-land and crossing Orchard Lane. The trail continues back to the coast and connects at a new carpark at Ardcavan Lane at ch:2+500. Trail users at this point have an option of following the Ferrybank Loop Trail inland west or proceeds east along the access road to the Wildfowl Reserve Visitor Centre, ch:3+700. The route follows the sea wall east past the reserve and sloblands to the Raven Wood, ch:7+130. Then the route turns north on to an existing 3.5km long trail through the Raven Wood where it terminates at an existing carpark at Culleton's Gap, Curracloe, ch:10+700.

The Ferrybank Looped Trail heads north out along the R741 Regional Road from Wexford to Ardcavan Business Park where it heads through the business park, then follows field boundaries before connecting with Ardcavan Lane. It follows the road east to the coast where it links with the greenway route at a new carpark at the end of Ardcavan Lane.

## 1.1 SURVEY AREA

The survey area was based around the greenway route provided by WCC at the time of surveys and covers the route and a 10m buffer on either side for the route. The route has gone through a number of alterations since the habitat surveys were conducted, however the survey area largely covered the final greenway route.

## 1.2 LIMITATIONS

The first visits were completed during the optimal time to conduct habitat surveys (*i.e.* July), while the last visit was completed outside this period in November. During this visit, it was possible to identify a number of plant species by their vegetative features alone. A precautionary approach has been applied to the results of this survey to account for this limitation.

At the time of surveys the final route was not fixed, therefore the survey area was based around a previous version of the route which varies slightly from the final route. The relatively small areas that were subsequently not surveyed were located in close proximity to habitats that where and, following a review of aerial photography, are considered likely to be of low ecological value (*e.g.* fields of improved and rough grassland with encroaching scrub located within the western section of the scheme). This limitation is therefore not considered to have impacted on the results of this assessment.

## 2. METHODOLOGY

### 2.1 HABITATS AND FLORA SURVEY

Habitats and flora surveys were undertaken on the 11th July 2017, 12th July 2017 and 15th November 2017. Weather conditions varied from wet, blustery and overcast on the first day of surveying to dry, calm and bright on the second day and then dry overcast conditions on the third day. All habitats were classified using the *Guide to Habitats in Ireland* (Fossitt, 2000), recording dominant species, indicator species and/or species of conservation interest; with the Fossitt category codes given in parentheses and botanical nomenclature following the *Checklist of the Flora of Britain & Ireland* (Botanical Society of Britain and Ireland, 2007).

## 3. FIELD SURVEY RESULTS

### 3.1 HABITAT AND FLORA SURVEY

The following 24 main habitat types (codes follow Fossitt, 2000) are present within the survey area (see Figures 1-7 for habitat maps):

- Drainage ditches (FW4)
- Reed and large sedge swamps (FS1)
- Improved agricultural grassland (GA1)
- Amenity grassland (improved) (GA2)
- Dry calcareous and neutral grassland (GS1)
- Dry meadows and grassy verges (GS2)
- Wet grassland (GS4)
- Wet willow-alder-ash woodland (WN6)
- (Mixed) broadleaved woodland (WD1)
- Broadleaved woodland (WD1)
- Scrub (WS1)
- Hedgerows (WL1)
- Treelines (WL2)
- Spoil and bare ground (ED2)
- Recolonising bare ground (ED3)
- Arable crops (BC1)
- Stone walls and other stonework (BL1)
- Buildings and artificial surfaces (BL3)
- Sedimentary sea cliffs (CS3)
- Tidal rivers (CW2)
- Upper salt marsh (CM2)
- Shingle and gravel banks (CB1)
- Sea walls, piers and jetties (CC1)
- Shingle and gravel shores (LS1)

*Drainage Ditches (FW4)*

This habitat type was identified: in close proximity to the existing path located within the Wexford Wildfowl Reserve and north of the Ardcavan Lane, in association with other habitat types (*i.e.* (mixed) broadleaved woodland, reed and large sedge swamps, wet grassland, treelines and stone walls and

other stonework); within a hedgerow located north of Orchard Lane; and, within the area of reed and large sedge swamps located within the Slaney River Valley SAC at Burgess (see **Plate 1a-b** below). The depth and width of these drainage ditches varied substantially. They generally contained brackish, slow-flowing or stagnant water and had very limited to no in-stream vegetation.

**Plate 1a** Drainage ditch located within the (mixed) broadleaved woodland, outside the survey area Photograph taken facing a north-easterly direction.

**Plate 1b** Drainage ditch located along the existing path within the Wexford Wildfowl Reserve. Photograph taken facing a westerly direction.

*Reed and Large Sedge Swamps (FS1)*

This habitat type was located: towards the western section of the proposed active trail near to the Crosstown River, which was part of a larger area dominated by common reed *Pragmites australis* located within the Slaney River Valley SAC; and, along the northern roadside verge of the Ardcavan Lane adjacent to drainage ditches. This habitat type was species-poor, dominated primarily by

common reed *Pragmites australis*. Rarer species present included Bindweed *Calystegia sepium* and brambles *Rubus fruticosus* agg. route (see **Plate 2a-c** below). Directly east of this section of habitat, there was a mosaic of reed and large sedge swamps and dry calcareous and neutral grassland habitat types, where common reed was encroaching into the narrow strip of grassland.

**Plate 2a** Reed and large sedge swamp (FS1) habitat type located in close proximity to the shoreline, south of the Crosstown River. Photograph taken facing a north-westerly direction.

**Plate 2b** Reed and large sedge swamps habitat type located north of the Ardcavan Lane adjacent to the habitat types drainage ditch and dry meadows and grassy verges. Photograph taken facing an easterly direction.

**Plate 2c** Reed and large sedge swamps habitat type located within the Slaney River Valley SAC at Burgess. Photograph taken facing an easterly direction.

*Improved Agricultural Grassland (GA1)*

This habitat type is located at various sections along the proposed active trail route and consists of improved grassland fields; some of which are grazed while others are uncut and as such slightly more species-rich. It is dominated by grass species typical of this habitat type, such as perennial rye-grass *Lolium perenne*, Yorkshire fog *Holcus lanatus*, cock's-foot *Dactylis glomerata*, crested dog's-tail *Cynosurus cristatus* and sweet vernal-grass *Anthoxanthum odoratum*. Abundant to frequently-occurring broadleaved herbs present include ribwort white clover *Trifolium repens*, ribwort plantain *Plantago lanceolata*, common ragwort, spear thistle *Cirsium vulgare* and hogweed *Heracleum sphondylium*, while rarer broadleaved herbs present include knapweed *Centaurea nigra* and carrot *Daucus carota* (see **Plate 3** below).

**Plate 3** Example of improved agricultural grassland habitat located in a field west of the Ardcavan lane, the field boundaries of which consisted of hedgerows. Photograph taken facing a westerly direction.

*Amenity Grassland (Improved) (GA2)*

This habitat type consisted of the following areas of managed lawns: a relatively small public park located east off the R741 adjacent to the Ferrybank Caravan and Camping Park; areas within the Ferrybank Caravan and Camping Park; and two private gardens located off the Orchard Lane. Dominant species present included those typical of this habitat type such as forb species daisy *Bellis perennis*, white clover *Trifolium repens* and creeping buttercup *Ranunculus repens* and grass species perennial rye-grass *Lolium perenne* and annual meadow-grass *Poa annua*. Frequent to occasionally-occurring species included yarrow *Achillea millefolium*, greater plantain *Plantago major* and dandelion *Taraxacum officinale* agg. (see **Plate 4** below).

**Plate 4** Amenity grassland (GA2) located either side of an existing walkway located in the western section of the proposed trail route. Photograph taken facing a north-westerly direction.

*Dry Calcareous and Neutral Grassland (GS1) / Dry meadows and grassy verges (GS2)*

This consisted of a mosaic of the two habitat types: dry calcareous and neutral grassland and Dry meadows and grassy verges. It was located in the eastern section of the proposed active trail route within the existing path in the Wexford Wildfowl Reserve (see **Plate 5** below). Dominant to abundant grass species present included Yorkshire fog, creeping bent *Agrostis stolonifera*, sweet vernal-grass, false oat-grass *Arrhenatherum elatius* and perennial rye-grass. Forb species typical of dry calcareous and neutral grassland present included lady's bedstraw *Galium verum*, selfheal *Prunella vulgaris*, common bird's-foot trefoil *Lotus corniculatus* and eyebright *Euphrasia sp.* Species typical of dry meadows and grassy verges present included meadow vetchling *Lathyrus pratensis,* red clover *Trifolium pratense*, bush vetch *Vicia sepium* and Agrimony *Agrimonia eupatoria*. Other forb species present included burnet rose *Rosa spinosissima*, fairy flax *Linum cathacticum*, wild thyme *Thymus polytrichus,* Stork's-bill *Erodium cicutarium* and red bartsia *Odontites vernus*.

**Plate 5** A mosaic of *dry calcareous and neutral grassland /* GS2 Dry meadows and grassy verges located in the eastern section of the proposed active trail route. Photograph taken facing a westerly direction.

*Dry Meadows and Grassy Verges (GS2)*

This habitat type was located along sections of the southern and northern roadside verges of the Ardcavan Lane and along some sections of the existing path within Wexford Wildfowl Reserve (see **Plate 6a-b** below). It was also identified within a mosaic with other habitat types, *i.e.* scrub, wet grassland and dry calcareous and neutral grassland. Dominant grass species present included those typical of this habitat type such as Yorkshire fog, sweet vernal-grass, creeping bent, cock's-foot *Dactylis glomerata* and red fescue *Festuca rubra*. Dominant and abundant forb species present included Common Bird's-foot-trefoil, tormentil *Potentilla erecta*, meadow buttercup *Ranunculus acris*, common knapweed *Centaurea nigra* and common vetch *Vicia sativa*, while abundant to frequently-occurring species included meadow vetchling, soft-rush *Juncus effusus*, rosebay willowherb *Chamerion angustifolium*, purple loosestrife *Lythrum salicaria* and Spear Thistle *Cirsium vulgare*. Rarer species included pyramidal orchid *Anacamptis pyramidalis*.

**Plate 6a** Dry meadows and grassy verges identified south of the Ardcavan Lane. Photograph taken facing an easterly direction.

**Plate 6b** Mosaic of dry meadows and grassy verges (GS2) and scrub identified in the western section of the proposed active trail route. Photograph taken facing a north-easterly direction.

*GS4 Wet Grassland*

This habitat type was identified: in a small patch of land located within a field of arable crops habitat type; in a small patch located within an improved agricultural grassland field north the existing path within the Wexford Wildfowl Reserve; and, directly adjacent to the existing path within the Wexford Wildfowl Reserve (see **Plate 7** below). It was also identified within a mosaic with other habitat types, *i.e.* dry calcareous and neutral grassland, dry meadows and grassy verges and upper salt marsh. Dominant and abundant grass species present included Yorkshire fog, creeping bent and sweet vernal-grass, while frequent to occasionally-occurring species present included false oat-grass and common couch. Abundant to frequently-occurring forb species included meadowsweet *Filipendula ulmaria*, marsh-bedstraw *Galium palustre*, sheep's sorrel *Rumex acetosella* and great willowherb *Epilobium hirsutum*, while occasionally-occurring species included Marsh Willowherb *Epilobium palustre*, marsh woundwort *Stachys palustris* and common fleabane *Pulicaria dysenterica*. Rush species were abundant and those present included soft-rush, sharp rush *Juncus acutus* and Jointed Rush *Juncus articulates*. Other plant species present included common reed, sea club-rush *Bolboschoenus maritimus*, wood horsetail *Equisetum sylvaticum* and field horsetail *E. arvense*.

**Plate 7** Example of wet grassland habitat type located along the existing path within the Wexford Wildfowl Reserve south of a drainage ditch. Photograph taken facing a westerly direction.

*Wet Willow –Alder-Ash Woodland (WN6)*

A relatively small patch of this habitat type was located within the survey area adjacent to the existing path in the far eastern section of the proposed trail route. This area was connected to the woodland located within the Raven Point Nature Reserve SAC. It was dominated by alder *Alnus glutinosa*, but also contains willow species *Salix spp*. in lesser abundances (see **Plate 8** below).

**Plate 8** A relatively small patch of wet willow-alder-ash woodland (WN6) (as seen in the background) located adjacent to wet grassland and dry meadows and grassy verges habitat types (as seen in the foreground). Photograph taken facing an easterly direction.

*(Mixed) Broadleaved woodland (WD1) and Broadleaved Woodland (WD1)*

A section of (mixed) broadleaved woodland was present north of Ardcavan Lane. A section of broadleaved woodland was present within the western section of the proposed active trail route along a field boundary. Woody tree species present included Lime *Tilia sp.*, holly *Ilex aquifolium*, birch *Betula sp.*, elm *Elmus sp.*, eared willow *Salix aurita* and goat willow *Salix cinerea*, while Leyland cypress *Cupressus x leylandii* was present in the (mixed) broadleaved woodland. The understorey was generally species poor, dominated by brambles, nettles, ivy *Hedera hibernica* and hogweed. Frequent to abundant species present included hairy-brome *Bromopsis ramosa* and fern species soft shield-fern *Polystichum setiferum* and hart's-tongue *Phyllitis scolopendrium*, while occasionally-occurring species included the non-native invasive species winter heliotrope *Petasites fragrans* (recorded in the section of woodland located within the southern section of the proposed active trail route), common reed *Pragmites australis* and sheep's sorrel (see **Plate 9a-b** below).

There were drainage ditches associated with the (mixed) broadleaved woodland located along Ardcavan Lane, which had both dry and wet in parts. The depth of the wet ditches varied. Some contained very shallow stagnant water and had limited to no in-stream vegetation. See the section drainage ditches above for more information on this habitat type.

**Plate 9a** Broadleaved woodland located within the southern section of the proposed trail route adjacent to a mosaic of scrub / dry meadows and grassy verges habitat types. Photograph taken facing a north-easterly direction.

**Plate 9b** (Mixed) broadleaved woodland located north of Ardcavan Lane. Photograph taken facing a westerly direction.

*Scrub (WS1)*

This habitat type consisted of dense patches of shrub vegetation dominated by brambles (see **Plate 10** below). Other frequently occurring plant species present include blackthorn *Prunus spinosa* and gorse *Ulex europaeus*. Rare species presented included broom *Cytisus scoparius*. It was present along banks of dry meadows and grassy verges adjacent to the existing path located directly north of the Slaney River Valley SAC and within the Raven Point Nature Reserve SAC and the Wexford Harbour and Slobs SPA. There were small patches of scrub located within the boundary of the Slaney River Valley SAC at Burgess, located over 10m from the existing proposed trail route. It was also located along the boundaries of four fields located in the western section of the proposed active trail route. Within these same four fields, it was found in a mosaic with the habitat type dry meadows and grassy verges.

**Plate 10** Patches of scrub dominated by brambles located along the existing path and banks of dry meadows and grassy verges, south-east of the Wexford Wildfowl Reserve buildings. Photograph taken facing a westerly direction.

*Hedgerows (WL1)*

This habitat type was located along field boundaries located within the western section of the proposed trail route and adjacent to the Ardcavan Lane (see **Plate X** above). Dominant woody species present include hawthorn *Crataegus monogyna*, blackthorn, brambles, ivy and willow *Salix spp*., while frequent to occasionally occurring species included gorse, elder *Sambucus nigra* and field maple *Acer campestre.* Rarer woody species present included holly and lime species *Tilia sp.* The associated hedgerow understorey generally consisted of species typical of this habitat type such as hogweed, nettles *Urtica dioica*, cleavers *Galium aparine*, hedge bindweed *Calystegia sepium* and hedge woundwort *Stachys sylvatica*. Other species recorded included false oat-grass, bracken *Pteridium aquilinum* and broad buckler-fern *Dryopteris dilatata*. The hedgerows varied in height and width, which were on average between *c.* 2-3m in height and *c.* 1.5-2m in width, and were generally densely vegetated.

*Treelines (WL2)*

This habitat type was located along a field boundary to the south Orchard Lane and at two small sections north of the Ardcavan Lane (see **Plate 11** below). Dominant to abundant woody species present included Leyland cypress, eared willow *Salix aurita*, Beech *Fagus sylvatica* and Sycamore *Acer pseudoplatanus*. Frequently occurring species included ash, hawthorn, holly and Ivy *Hedera hibernica*. The associated understorey was generally very sparsely vegetated and species poor and includes cleavers *Galium aparine*, hogweed, nettles and hedge bindweed *Calystegia sepium ssp. sepium*. The treelines varied in height (on average *c.* 20m in height) and some had associated drainage ditches, which are both dry and wet in parts. Some contained very shallow stagnant water and have limited in-stream vegetation.

**Plate 11** Example of treelines habitat type located along the Ardcavan Lane. Photograph taken facing a westerly direction.

*Spoil and Bare Ground (ED2)*

There were two relatively small patches of this habitat type on the existing path located east of the Ardcavan Lane, south-east of the Wexford Wildfowl Reserve buildings. There was limited plant species associated with this habitat type.

*Recolonising Bare Ground (ED3)*

There were two areas of this habitat type located along the existing path south-east of the Raven Point Nature Reserve SAC and a very small section north of the Ardcavan Lane by existing buildings (see **Plate 12** below). Species present include those typically found growing on disturbed and/or waste ground such as common mouse-ear *Cersastium fontanum*, cat's ear *Hyopchaeris radicata*, common ragwort *Senecio vulgaris*, scarlet pimpernel *Anagalis arvensis* and hop trefoil *Trifolium campestre*. Other such species present included great willowherb *Epilobium hirsutum*, rosebay willowherb *Chamerion angustifolium*, red fescue, spear thistle *Cirsium vulgare* and Hawkbit *Leontodon sp.*, while rarer species present included kidney vetch *Anthyllis vulneraria* and scentless mayweed *Tripleurospernum inodorum*.

**Plate 12** Example of recolonising bare ground habitat type located along the existing path within the Wexford Wildfowl Reserve, adjacent to dry meadows and grassy verges. Photograph taken facing an easterly direction.

*Arable Crops (BC1)*

This habitat type was present in four fields located in the centre of the proposed trail route, *i.e.* three north of Orchard Lane and one south of Orchard Lane (see **Plate 13** below). Both these fields were planted with barley *Hordeum vulgare*. Some species noted around the periphery of these fields included field pansy *Viola arvensis* and scarlet pimpernel *Anagallis arvensis*.

**Plate 13** Example of arable crops habitat type, planted with barley.

*Stone walls and other stonework (BL1)*

This habitat type consisted of an existing stone wall located adjacent to a drainage ditch and another stonewall structure, the function of which is unknown (see **Plate 14** below). These features were located within the survey area, adjacent a mosaic habitat of dry meadows and grassy verges and wet grassland. It had a very limited associated plant cover, with hop trefoil *Trifolium campestre* and red fescue growing on the walls.

**Plate 14** Example of stone walls and other stonework habitat type located within dry meadows and grassy verges habitat type. Photograph taken facing a southerly direction.

*Buildings and Artificial Surfaces (BL3)*

This habitat type consisted of the following areas of hardstanding (see **Plate 15** below): a small section of the R741 and the entrance to the Ferrybank Caravan and Camping Park located east off the R741;

a small section of Orchard Lane; a section of Ardcavan Lane located from the River White Gap bridge to the entrance of the Wexford Wildfowl Reserve. There was very limited to no plant cover associated with this habitat type.

**Plate 15** Example of the habitat type buildings and artificial surfaces located in the far western section of the proposed trail route. Photograph taken facing a north-westerly direction.

*Sedimentary Sea Cliffs (CS3)*

This habitat type was located partially within the survey area within the western section of the proposed trail route, on the shoreline located near to shingle and gravel banks habitat type. It was comprised of vertical cliffs that are greater than 3m in height and consisted of exposed sand and soil.

Exposed sand and soil.

*Tidal Rivers (CW2)*

This habitat type was comprised of the White Gap River, which flows under the existing Ardcavan Lane into the Lower Slaney Estuary (see **Plate 16a-b** below), and the Crosstown River, which also flows into the Lower Slaney Estuary at the shore (see **Plate 16c** below). Gorse and bramble scrub is located on the western and eastern banks of the White Gap River. It contained brackish water, which is slow flowing. It was *c.* 4m wide and contained little to no in-stream vegetation. The habitat reed and large sedge swamps and shingle and gravel shores were located adjacent to the Crosstown River, which contained brackish, slow flowing water which stops on the shore and had little to no in-stream vegetation. The non-native invasive plant species Japanese rose *Rosa rugosa* was noted growing in close proximity to this river.

**Plate 16a** White Gap River, which is comprised of the tidal rivers habitat type. Photograph taken facing a northerly direction.

**Plate 16b** White Gap River, which is comprised of the tidal rivers habitat type. Photograph taken facing a southerly direction.

**Plate 16c** Crosstown River, which is comprised of the tidal rivers habitat type, located adjacent to reed and large sedge swamps. Photograph taken facing a northerly direction.

*Upper Salt Marsh (CM2)*

There are three areas of this habitat type identified within the survey area, only one of which was located within the footprint of the proposed active trail route (see **Plate 17a** below). The first two were located outside of the Slaney River Valley SAC, while the third was located within the Slaney River Valley SAC, *c.* 10.8m north-west of the centre of the proposed trail route.

Overall, this habitat type was dominated by rushes, *i.e.* saltmarsh rush *Juncus gerardii* and sharp rush, and grass species, *i.e.* red fescue and creeping bent. Other grass species present included common saltmarsh-grass *Puccinellia maritima* and to a lesser abundance common cord-grass *Spartina anglica* and *Leymus arenarius* lyme-grass. Dominant to abundant broadleaved species present included glasswort *Salicornia sp.*, sea aster *Aster tripolium* and sea arrowgrass *Triglochin maritimum*. Occasionally-occurring species included sea plantain *Plantago maritima* and lax-flowered sea-lavender *Limonium humile*. The area in the eastern section of the proposed trail was associated with a mosaic of wet grassland and upper salt marsh, which contained very few species typical of salt marsh habitat and those that were present were in very small patches (see **Plate 17c** below). This mosaic habitat gradually graded into upper salt marsh habitat type and was located outside the Slaney River Valley SAC.

The area of salt marsh located within the SAC was particularly species-poor, dominated primarily by sea club-rush *Bolboschoenus maritimus*. It also contained rush species at lower abundances, red fescue, creeping bent and common reed *Phragmites australis*, which was encroaching from the adjacent large reed and sedge swamps habitat (see **Plate 17b** below). Ground conditions within this area were particularly very wet underfoot. It is considered likely that this area is surface-water fed by drainage ditches flowing in from the north-northwest. There is tidal influence in the watercourse flowing through the reedbed and swamp habitat onto the shoreline towards Wexford Harbour, however the reedbed and swamp habitat does not appear to have a tidal influence although under easterly or southerly storm conditions it is likely that salinity may fluctuate.

Upper salt marsh habitat type corresponds to the Annex I habitats Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] and Mediterranean salt meadows (Juncetalia maritimi) [1410], both

of which are Qualifying Interest of the Slaney River Valley SAC, while the former is a Qualifying Interest of the Raven Point Nature Reserve SAC.

**Plate 17a** Upper salt marsh habitat type located along the existing path within the Wexford Wildfowl Reserve. Photograph taken facing a westerly direction.

**Plate 17c** Area of species-poor upper salt marsh located within the Slaney River Valley SAC surrounded by common reed and sedge swamps habitat type, dominated by common reed. Photograph taken facing a westerly direction.

**Plate 17b** A mosaic of wet grassland and upper salt marsh habitat types located along the existing path within the Wexford Wildfowl Reserve. Photograph taken facing a westerly direction.

*Shingle and Gravel Banks (CB1)*

This habitat type was located above the strandline directly adjacent to the habitat types of shingle and gravel shores within the Slaney River Valley SAC (see **Plate 18a-b** below). It was comprised of large gravel and pebble stones, sand and associated plant species typical of this habitat type. Dominant to abundant plant species present included lyme-grass, *Elytrigia repens* common couch, and sea beet *Beta vulgaris subsp. maritima*, while frequently occurring species included Frosted orache *Atriplex lacinata* perennial sow-thistle *Sonchus arvensis*, sand couch *Elymus juncea* and Silverweed *Potentilla anserina*. Occasionally occurring and rare species present included false-oat grass *Arrhenatherum elatius,* Sea radish *Raphanus raphanistrum subsp. maritimus*, Sea spurge *Euphorbia paralias*, Curled dock *Rumex crispus*, Smooth hawk's-beard *Crepis capillaris*, Wild carrot *Daucus carota*, False fox-sedge *Carex otrubae and* Tree-mallow *Lavatera arborea*. This habitat gradually graded into a mosaic with dry calcareous and neutral grassland as other grass and forb species, such as cock's-foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus*, bird's-foot trefoil and red clover *Trifolium pratense*, became more dominated and the percentage cover of stones and pebbles lowered.

This habitat type corresponds to the Annex I habitat perennial vegetation of stony banks (1220). A number of plant species present are positive indicators of this habitat type were identified along this stretch of habitat, *i.e.* sea beet, lyme-grass, curled dock, sea radish, perennial sow-thistle and silverweed (Delaney, *et al.*, 2013). This Annex I habitat is not a qualifying Interest of the Slaney River Valley SAC or the Raven Point Nature Reserve SAC.

**Plate 18a** Shingle and gravel banks habitat type (as indicated by red arrow) located above the strandline directly adjacent to the habitat type of shingle and gravel shores. Photograph taken facing a northerly direction.

**Plate 18b** Shingle and gravel banks habitat type (as indicated by red arrow) located above the strandline directly adjacent to the habitat type of shingle and gravel shores. Photograph taken facing a northerly direction.

*Sea Walls, Piers and Jetties (CC1)*

This habitat type was located south of the existing path within the eastern section of the proposed trail route adjacent to dry meadows and grassy verges, scrub and a mosaic of wet grassland and dry meadows and grassy verges.

*Shingle and Gravel Shores (LS1)*

This habitat type was present on the shoreline, within the intertidal zone, located in the southern section of the proposed trail route adjacent to the habitat type shingle and gravel banks (see **Plate 18a** above). The proposed trail route is located within this habitat type and within the survey area. It consists of large stones, pebbles and gravel material with a limited associated plant cover. There were some plant species present along the upper limit of the shore that were also identified within the habitat type shingle and gravel banks. The transition between these two habitat types was identified by the present of seaweed species, such as bladderwrack *Fucus vesiculosus* and sea lettuce *Ulva lactuca*, indicating the high tide mark, and the gradient of the shoreline.

## 4. MITIGAITON

To avoid potential disturbance and degradation of habitats identified along the route the following measures will be applied;

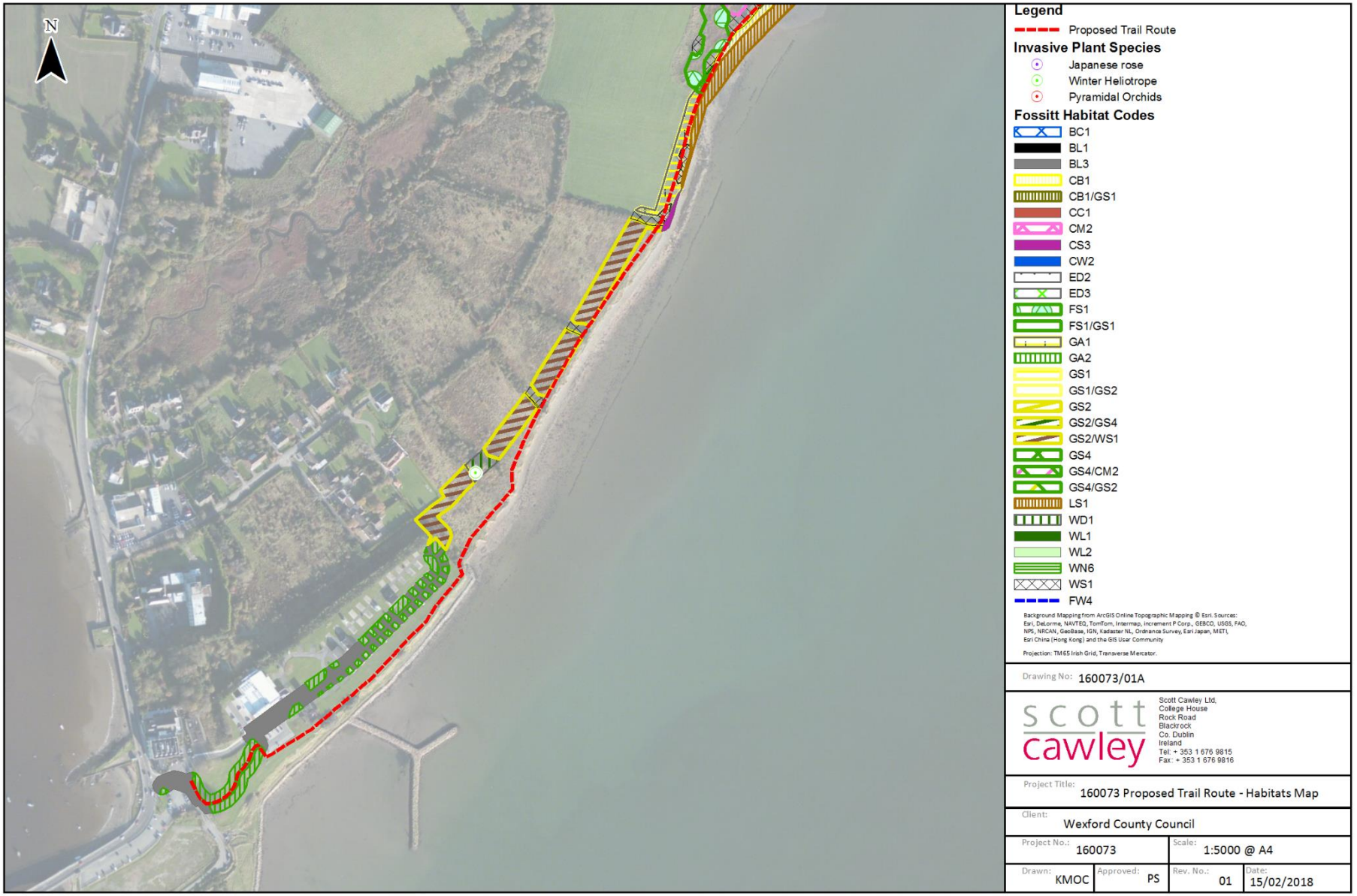
- All working areas will be demarcated prior to the commencement of proposed works to ensure works are confined to this area and do not sprawl into surrounding habitats;
- Fencing will be erected around hedgerows and trees to be retained to protect against accidental damage;
- No storage or dumping of materials will be carried out outside the working area unless otherwise specified in this document; and
- Where possible, following the completion of works habitats within the working area will be reinstated to conditions prior to the commencement of works.

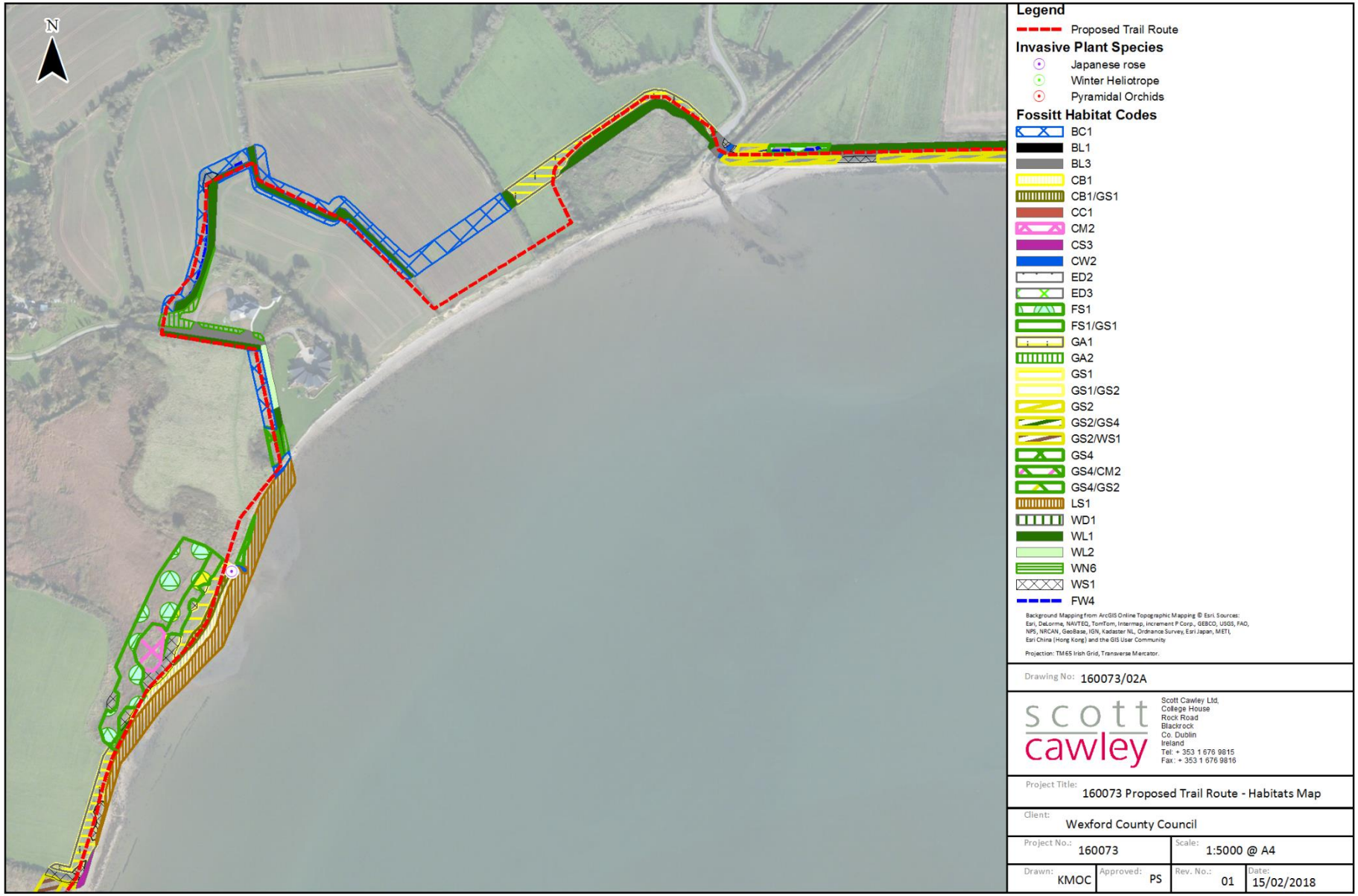
***Annex 1 Habitats***

To avoid potential disturbance to internationally important Annex 1 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] and Mediterranean salt meadows (*Juncetalia maritimi*) [1410], located within the Slaney River Valley SAC, the following measures will be applied;

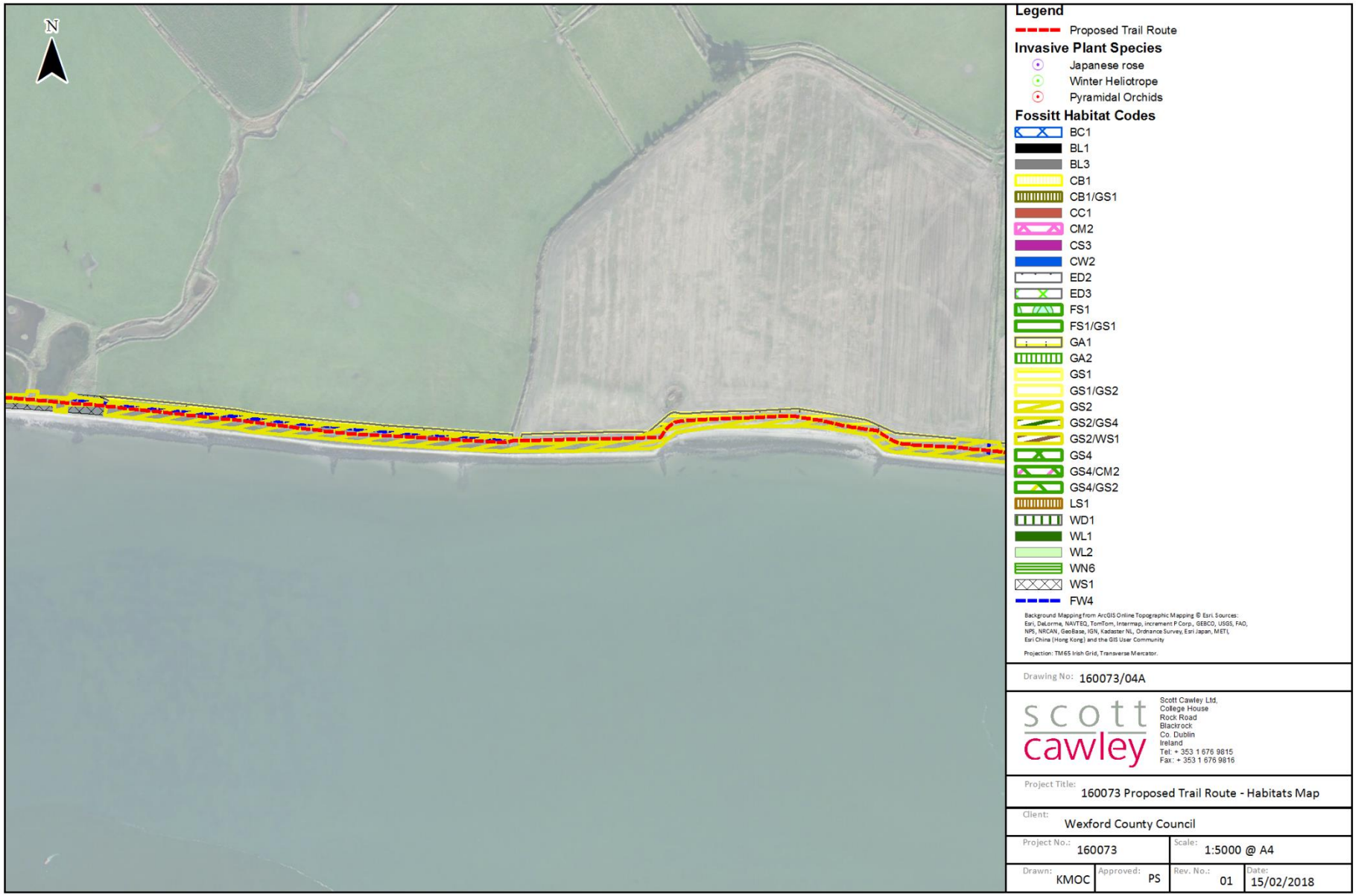
- The extent of the habitat will be demarcated by the suitably qualified ECoW prior to the commencement of construction works. Habitat will be demarcated with wooden post and rail fencing, avoid the use of hazard tape as this could cause visual disturbance to hen harrier roosting nearby ;
- The ECoW will monitor the Annex 1 habitat during construction works in the vicinity to ensure there is no direct or indirect damage or degradation to the habitat;
- Access to the working area in the vicinity of the Annex 1 habitat will be from the shore-side south of the working area rather than the reed-bed north of the working area; and
- Above mitigation for habitats (Fossitt 2000) will also apply in this area.

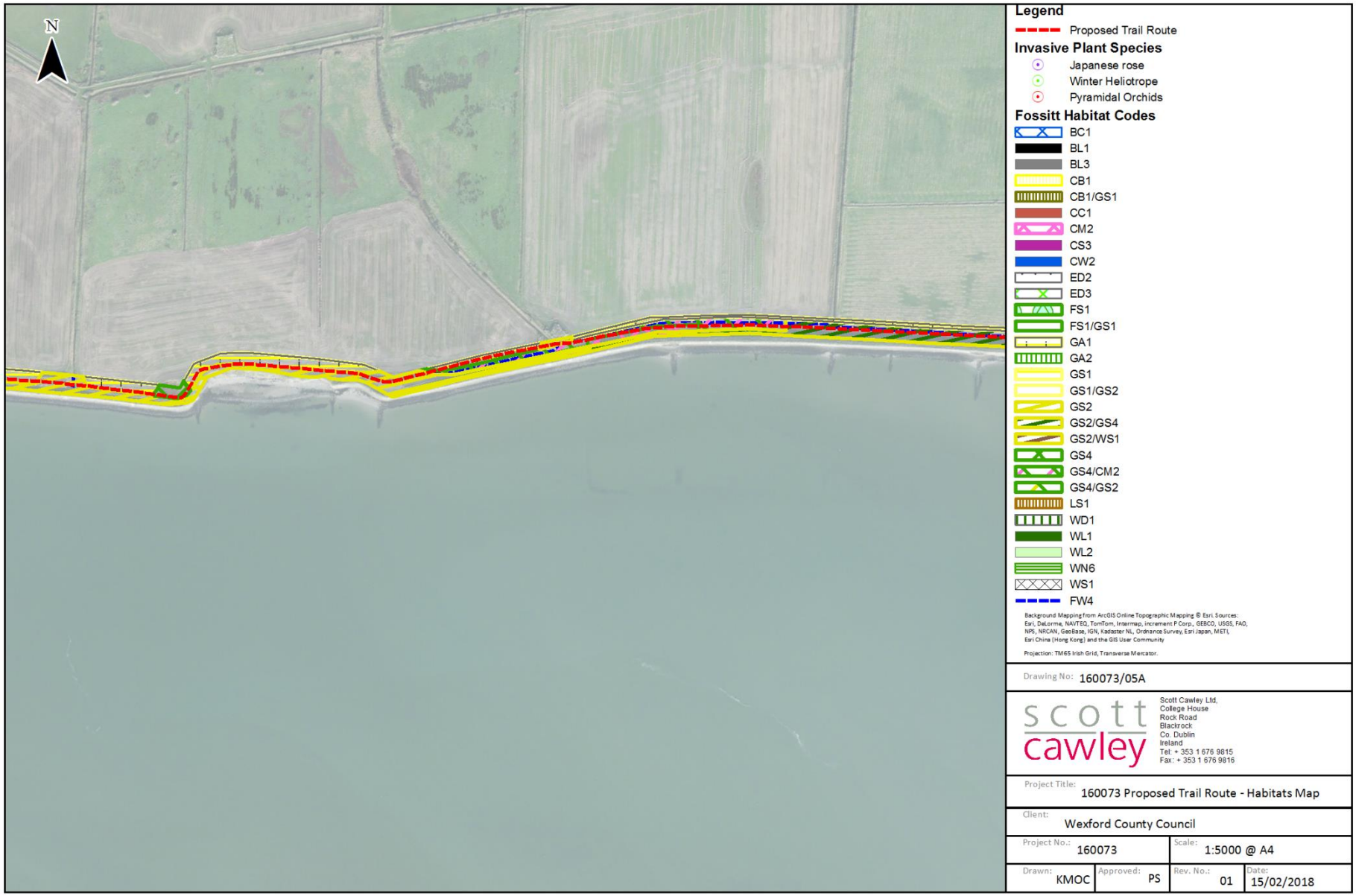
**FIGURES 1-7 HABITATS AND FLORA SURVEY MAPS**

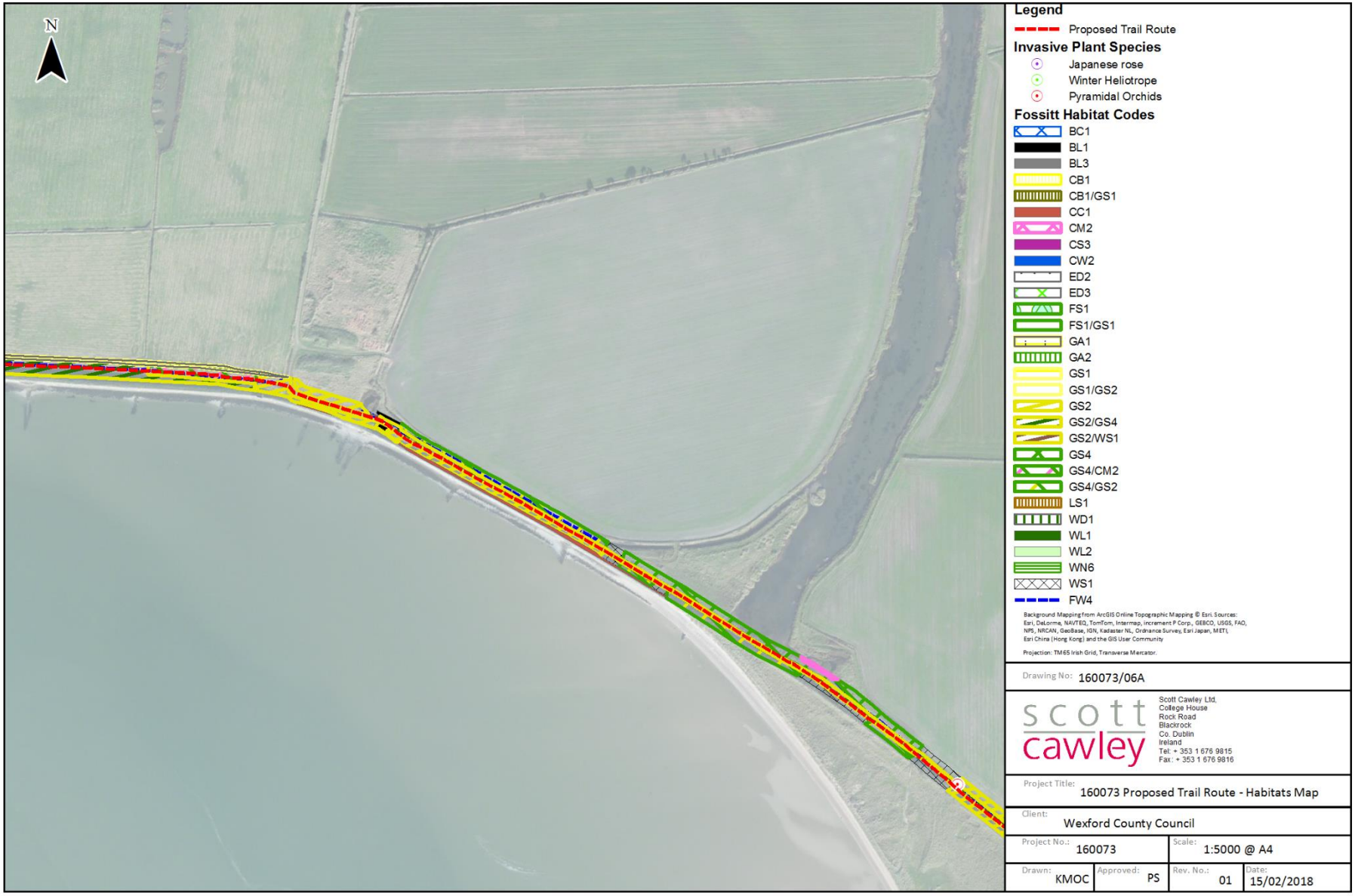

N
Legend
Proposed Trail Route
Invasive Plant Species
Japanese rose
Winter Heliotrope
Pyramidal Orchids
Fossitt Habitat Codes
BC1
BL1
BL3
CB1
CB1/GS1
CC1
CM2
CS3
CW2
ED2
ED3
FS1
FS1/GS1
GA1
GA2
GS1
GS1/GS2
GS2
GS2/GS4
GS2/WS1
GS4
GS4/CM2
GS4/GS2
LS1
WD1
WL1
WL2
WN6
WS1
FW4
Background Mapping from ArcGIS Online Topographic Mapping © Esri. Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong) and the GIS User Community
Projection: TM65 Irish Grid, Transverse Mercator.
Drawing No: 160073/01A
scott cawley
Scott Cawley Ltd.
College House
Rock Road
Blackrock
Co. Dublin
Ireland
Tel: + 353 1 676 9815
Fax: + 353 1 676 9816
Project Title: 160073 Proposed Trail Route - Habitats Map
Client: Wexford County Council
Project No.: 160073
Scale: 1:5000 @ A4
Drawn: KMOC
Approved: PS
Rev. No.: 01
Date: 15/02/2018

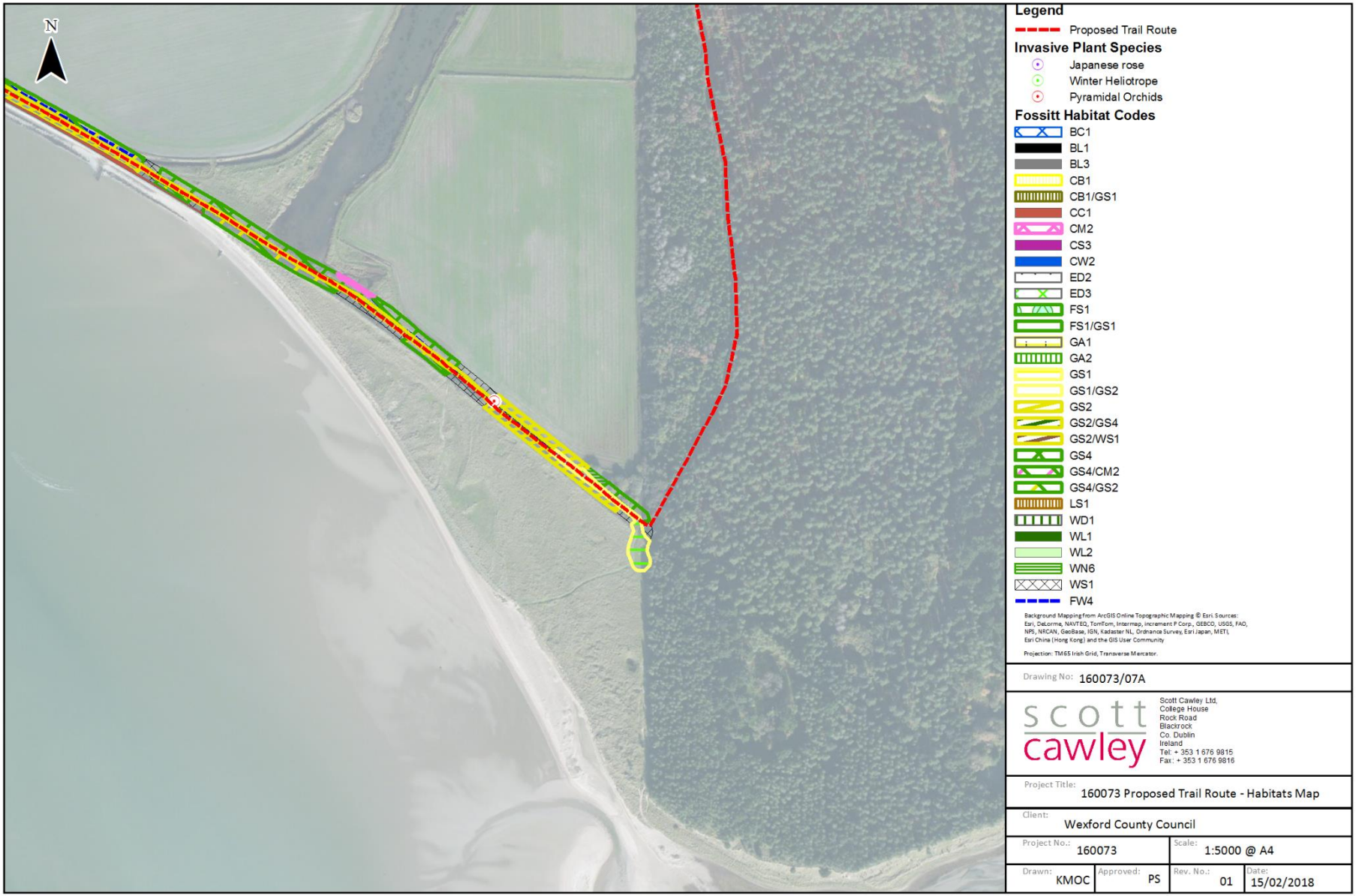

N
Legend
Proposed Trail Route
Invasive Plant Species
Japanese rose
Winter Heliotrope
Pyramidal Orchids
Fossitt Habitat Codes
BC1
BL1
BL3
CB1
CB1/GS1
CC1
CM2
CS3
CW2
ED2
ED3
FS1
FS1/GS1
GA1
GA2
GS1
GS1/GS2
GS2
GS2/GS4
GS2/WS1
GS4
GS4/CM2
GS4/GS2
LS1
WD1
WL1
WL2
WN6
WS1
FW4
Background Mapping from ArcGIS Online Topographic Mapping © Esri. Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong) and the GIS User Community
Projection: TM65 Irish Grid, Transverse Mercator.
Drawing No: 160073/02A
scott cawley
Scott Cawley Ltd,
College House
Rock Road
Blackrock
Co. Dublin
Ireland
Tel: + 353 1 676 9815
Fax: + 353 1 676 9816
Project Title: 160073 Proposed Trail Route - Habitats Map
Client: Wexford County Council
Project No.: 160073
Scale: 1:5000 @ A4
Drawn: KMOC
Approved: PS
Rev. No.: 01
Date: 15/02/2018


N
Legend
Proposed Trail Route
Invasive Plant Species
Japanese rose
Winter Heliotrope
Pyramidal Orchids
Fossitt Habitat Codes
BC1
BL1
BL3
CB1
CB1/GS1
CC1
CM2
CS3
CW2
ED2
ED3
FS1
FS1/GS1
GA1
GA2
GS1
GS1/GS2
GS2
GS2/GS4
GS2/WS1
GS4
GS4/CM2
GS4/GS2
LS1
WD1
WL1
WL2
WN6
WS1
FW4
Background Mapping from ArcGIS Online Topographic Mapping © Esri. Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong) and the GIS User Community
Projection: TM65 Irish Grid, Transverse Mercator.
Drawing No: 160073/03A
scott cawley
Scott Cawley Ltd,
College House
Rock Road
Blackrock
Co. Dublin
Ireland
Tel: + 353 1 676 9815
Fax: + 353 1 676 9816
Project Title: 160073 Proposed Trail Route - Habitats Map
Client: Wexford County Council
Project No.: 160073
Scale: 1:5000 @ A4
Drawn: KMOC
Approved: PS
Rev. No.: 01
Date: 15/02/2018


N
Legend
Proposed Trail Route
Invasive Plant Species
Japanese rose
Winter Heliotrope
Pyramidal Orchids
Fossitt Habitat Codes
BC1
BL1
BL3
CB1
CB1/GS1
CC1
CM2
CS3
CW2
ED2
ED3
FS1
FS1/GS1
GA1
GA2
GS1
GS1/GS2
GS2
GS2/GS4
GS2/WS1
GS4
GS4/CM2
GS4/GS2
LS1
WD1
WL1
WL2
WN6
WS1
FW4
Background Mapping from ArcGIS Online Topographic Mapping © Esri. Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong) and the GIS User Community
Projection: TM65 Irish Grid, Transverse Mercator.
Drawing No: 160073/04A
scott cawley
Scott Cawley Ltd,
College House
Rock Road
Blackrock
Co. Dublin
Ireland
Tel: + 353 1 676 9815
Fax: + 353 1 676 9816
Project Title: 160073 Proposed Trail Route - Habitats Map
Client: Wexford County Council
Project No.: 160073
Scale: 1:5000 @ A4
Drawn: KMOC
Approved: PS
Rev. No.: 01
Date: 15/02/2018


N
Legend
Proposed Trail Route
Invasive Plant Species
Japanese rose
Winter Heliotrope
Pyramidal Orchids
Fossitt Habitat Codes
BC1
BL1
BL3
CB1
CB1/GS1
CC1
CM2
CS3
CW2
ED2
ED3
FS1
FS1/GS1
GA1
GA2
GS1
GS1/GS2
GS2
GS2/GS4
GS2/WS1
GS4
GS4/CM2
GS4/GS2
LS1
WD1
WL1
WL2
WN6
WS1
FW4
Background Mapping from ArcGIS Online Topographic Mapping © Esri. Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong) and the GIS User Community
Projection: TM65 Irish Grid, Transverse Mercator.
Drawing No: 160073/05A
scott cawley
Scott Cawley Ltd,
College House
Rock Road
Blackrock
Co. Dublin
Ireland
Tel: + 353 1 676 9815
Fax: + 353 1 676 9816
Project Title: 160073 Proposed Trail Route - Habitats Map
Client: Wexford County Council
Project No.: 160073
Scale: 1:5000 @ A4
Drawn: KMOC
Approved: PS
Rev. No.: 01
Date: 15/02/2018


N
Legend
Proposed Trail Route
Invasive Plant Species
Japanese rose
Winter Heliotrope
Pyramidal Orchids
Fossitt Habitat Codes
BC1
BL1
BL3
CB1
CB1/GS1
CC1
CM2
CS3
CW2
ED2
ED3
FS1
FS1/GS1
GA1
GA2
GS1
GS1/GS2
GS2
GS2/GS4
GS2/WS1
GS4
GS4/CM2
GS4/GS2
LS1
WD1
WL1
WL2
WN6
WS1
FW4
Background Mapping from ArcGIS Online Topographic Mapping © Esri. Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong) and the GIS User Community
Projection: TM65 Irish Grid, Transverse Mercator.
Drawing No: 160073/06A
scott cawley
Scott Cawley Ltd.
College House
Rock Road
Blackrock
Co. Dublin
Ireland
Tel: + 353 1 676 9815
Fax: + 353 1 676 9816
Project Title: 160073 Proposed Trail Route - Habitats Map
Client: Wexford County Council
Project No.: 160073
Scale: 1:5000 @ A4
Drawn: KMOC
Approved: PS
Rev. No.: 01
Date: 15/02/2018


N
Legend
Proposed Trail Route
Invasive Plant Species
Japanese rose
Winter Heliotrope
Pyramidal Orchids
Fossitt Habitat Codes
BC1
BL1
BL3
CB1
CB1/GS1
CC1
CM2
CS3
CW2
ED2
ED3
FS1
FS1/GS1
GA1
GA2
GS1
GS1/GS2
GS2
GS2/GS4
GS2/WS1
GS4
GS4/CM2
GS4/GS2
LS1
WD1
WL1
WL2
WN6
WS1
FW4
Background Mapping from ArcGIS Online Topographic Mapping © Esri. Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong) and the GIS User Community
Projection: TM65 Irish Grid, Transverse Mercator.
Drawing No: 160073/07A
scott cawley
Scott Cawley Ltd,
College House
Rock Road
Blackrock
Co. Dublin
Ireland
Tel: + 353 1 676 9815
Fax: + 353 1 676 9816
Project Title: 160073 Proposed Trail Route - Habitats Map
Client: Wexford County Council
Project No.: 160073
Scale: 1:5000 @ A4
Drawn: KMOC
Approved: PS
Rev. No.: 01
Date: 15/02/2018

**APPENDIX B**

# WEXFORD TO CURRACLOE GREENWAY

# BREEDING BIRD SURVEY REPORT 2017

**PREPARED FOR**

**WEXFORD COUNTY COUNCIL**

| **Project Reference:** | | **160073** | | | |
|---|---|---|---|---|---|
| **Rev.** | **Status** | **Author** | **Reviewed By** | **Approved By** | **Issue Date** |
| R01 | Final | MMW | PS | PS | 23/2/18 |

Scott Cawley, College House, 71-73 Rock Road, Blackrock, Co. Dublin, A94 F9X9

Tel+353(1)676-9815 Fax +353(1) 676-9816

**TABLE OF CONTENTS**

# 1. INTRODUCTION

Scott Cawley were commissioned by Wexford County Council (WCC) to carry out breeding bird surveys along the proposed Wexford to Curracloe Greenway route during the 2017 breeding season.

The Greenway commences at a trailhead in the carpark at Ferrybank Bridge where the route proceeds north following the coast line passing the reedbeds at Burgess then diverting in-land and crossing Orchard Lane. The trail continues back to the coast and connects at a new carpark at Ardcavan Lane at ch:2+500. Trail users at this point have an option of following the Ferrybank Loop Trail inland west or proceeds east along the access road to the Wildfowl Reserve Visitor Centre, ch:3+700. The route follows the sea wall east past the reserve and sloblands to the Raven Wood, ch:7+130. Then the route turns north on to an existing 3.5km long trail through the Raven Wood where it terminates at an existing carpark at Culleton's Gap, Curracloe, ch:10+700.

The Ferrybank Looped Trail heads north out along the R741 Regional Road from Wexford to Ardcavan Business Park where it heads through the business park, then follows field boundaries before connecting with Ardcavan Lane. It follows the road east to the coast where it links with the greenway route at a new carpark at the end of Ardcavan Lane.

## 1.1. LEGISLATION

All bird species are protected under both European and Irish legislation including:

- *Wildlife Act 1976 and Wildlife (Amendment) Act, 2000 (S.I. No. 38 of 2000)*; and,
- *Directive 2009/147/EEC;* hereafter the 'Birds Directive'.

Wild birds, their nests, eggs and unflown young are protected under Section 22 of the *Wildlife Acts 1976-2012*. Furthermore, restrictions apply to the destruction of vegetation during the period 1st March through 31st August (i.e. coinciding with the bird breeding season), inclusive as outlined in Section 40 of the Wildlife Acts (as amended).

## 1.2. SURVEY AREA

The survey area was based around the greenway route provided by WCC at the time of surveys and cover the route and a 50n buffer on either side for the route. The route has gone through a number of alterations since the breeding bird surveys were conducted, however the survey area largely covered the final greenway route. See Figure 1a-1d for survey area.

## 1.3. LIMITATIONS

Survey visits were carried out in late April and early May which are optimal times for breeding bird detection. At the time of surveys the final route was not fixed, therefore the survey area was based around a previous version of the route which varies slightly from the final route. It is not considered this limitation has significant implication on the survey results.

## 2. METHODOLOGY

### 2.1. DESK STUDY

A desk study was carried out to collect any available information on the local avian fauna. The following resources were utilised for the purpose of this desk study:

- Ordnance Survey Ireland mapping and aerial photography www.osi.ie – Utilised for desk review of potential habitats within the subject lands and their surroundings;
- National Parks and Wildlife Service (NPWS) mapviever www.npws.ie/npwsviewer – the 10km grid square within which the proposed development is located was queried for species records;
- Data on species that are rare, protected or threatened located within the zone of influence of the proposed development, as held by the National Biodiversity Data Centre www.biodiversityireland.ie – A query for the aforementioned species within a 500m radius of the subject lands;
- British Trust for Ornithology and Birdwatch Ireland Bird Atlas 2007-2011 – Bird distribution records for the tetrad within which the subject lands are located (T02 and T12);
- Information on the status of bird species in Ireland from *Birds of Conservation Concern in Ireland 2014-2019* (Colhoun & Cummins, 2013) and is presented in parentheses after each bird species name; and,
- Information on the location, nature and design of the proposed development supplied by the applicant's design team.

### 2.2. FIELD SURVEY

Three breeding bird surveys were undertaken by Maeve Maher-McWilliams within the survey area on 9th May, 30th May and 20th June 2017 between 06:00 and 12:00. Breeding bird surveys followed an adapted methodology of Breeding Bird Survey (BBS) as described in Gilbert *et. al* (1998). A route was walked through the survey area to cover all areas within 50m and to incorporate all habitat types in order to provide an accurate representation of birds breeding within the survey area. The route was walked at a slow and steady pace and birds within the surveyor's field of vision and hearing were recorded. Additionally, nesting activity such as carrying nesting material, and food, and displaying activity was noted where observed.

## 3. SURVEY RESULTS

### 3.1. DESK STUDY

The desk study returned records of 92 birds of conservation concern, either Annex 1, red or amber listed species, within *c.* 2km radius of the survey area. 85 of these records were recorded within the last 10 years. The records include seabirds, waterfowl, waders, farmland and hedgerow species and a number of birds of prey. 29 of 85 records are SCI species of the Wexford Harbour and Slobs SAP and/or The Raven SPA.

### 3.2. FIELD SURVEY

A total of 50 species were recorded during three breeding bird visits to the survey area. 26 species were confirmed as breeding with 24 recorded as non-breeding within the survey area. Of the

confirmed breeders, 8 are birds of conservation concern, 1 red-listed species and 7 amber-listed species. Of the non-breeding species, 16 are birds of conservation concern, 3 red-listed species and 13 amber-listed species. See Table 1 for a summary of results and Figure 2 for location of breeding bird territories.

The majority of breeding birds were located in the western section of the survey area where habitats including scrub, hedgerows and treelines are more prevalent. The eastern section of the survey area is dominated improved grassland for agricultural land use. Non-breeding birds recorded included birds in transit over the survey area, birds roosting, loafing or foraging along the shoreline.

*Table 1: Summary of Confirmed Breeding Birds recorded within the Survey Area*

| Species | Conservation status | No. of territories | Notes |
|---|---|---|---|
| Moorhen | Green | 2 | Two breeding territories were recorded in the Curracloe Channel within the survey area. |
| Ringed plover | Green | 1 | One breeding territory was recorded in the east of the survey area towards the Raven Point. A number of non-breeding individuals were also recorded along the shoreline west of the survey area, but there was evidence of only breeding pair. |
| Wood pigeon | Green | 4 | Territories were recorded in the east of the survey area, all were |
| Magpie | Green | 1 | One breeding territory was confirmed during the survey in an area of woodland. |
| Goldcrest | Green | 2 | Two breeding territories were recorded within the coniferous treeline west of the Wexford Wildfowl Reserve. |
| Great tit | Green | 1 | One breeding territory was recorded in area of woodland. |
| Blue tit | Green | 5 | Breeding territories were recorded in hedgerow and scrub habitat. |
| Skylark | Amber | 4 | Breeding territories were recorded in open grassy fields in the east of the survey area. |
| Sand martin | Amber | 5 | Five nesting holes were noted along sandy substrate banks within the western section of the survey area. Sand martin were recorded foraging along the survey area and along the North Slobs shoreline. |
| Swallow | Amber | | Individuals, pairs and family groups foraging throughout the survey area over. No structures suitable for nesting identified within the survey area therefore assumed to be nesting in structures just outwith the survey area. |
| Willow warbler | Green | 8 | Breeding territories scattered throughout the survey area in areas of hedgerow, scrub and treelines. |
| Whitethroat | Green | 6 | Breeding territories scattered throughout the route in areas of hedgerow and scrub. |
| Sedge warbler | Green | 12 | Breeding territories were recorded throughout the survey area in scrub habitat and often close |

| Species | Conservation status | No. of territories | Notes |
|---|---|---|---|
| | | | to drainage ditches or in wetland habitat where *juncus* and reed vegetation was high. |
| Reed warbler | Amber | 2 | Breeding territories were recorded close to drainage ditches where *Juncus* and reed vegetation was high. |
| Wren | Green | 14 | Breeding territories scattered throughout the route in areas of hedgerow, scrub, and treelines. |
| Starling | Amber | | Juvenile birds recorded on the shoreline within the western section of the survey area. Nests not identified but assumed to be breeding close to the survey area. |
| Blackbird | Green | 5 | Breeding territories scattered throughout the route in areas of hedgerow, scrub, and treelines. |
| Song thrush | Green | 2 | One breeding territory was recorded in a treeline within the survey area. |
| Robin | Amber | 11 | Breeding territories scattered throughout the survey area in areas of hedgerow, scrub and treelines. |
| Stonechat | Amber | 5 | Breeding territories scattered throughout the route in areas of scrub, and often close to drainage ditches or in wetland habitat. |
| Dunnock | Green | 15 | Breeding territories scattered throughout the route in areas of hedgerow, scrub, and treelines. |
| House sparrow | Amber | 1 | One breeding territory was recorded in scrub close to the Ferrybank Caravan & Camping Park. |
| Pied wagtail | Green | 1 | It is likely that there is more than one breeding territory within the survey area as a number of other birds were recorded during surveys, however they were not showing any breeding behaviour. |
| Meadow pipit | Red | 20 | Breeding territories were recorded in open grassy fields, along field boundaries and in the west of survey area along the margins of scrub habitat. |
| Chaffinch | Green | 9 | Breeding territories were recorded along hedgerow and treeline habitat within the survey area. |
| Bullfinch | Green | 2 | Two breeding territories were recorded in scrub habitat within the survey area. |
| Linnet | Amber | 6 | Breeding territories were mostly recorded in the west of the survey area in gorse dominated scrub habitat. |
| Reed bunting | Green | 11 | Breeding territories were recorded throughout the survey area in scrub habitat and often close to drainage ditches or in wetland habitat where *juncus* and reed vegetation was high. |

*Table 2: Summary of Birds Recorded within the Survey Area but not confirmed breeding*

| Species | Conservation status | Notes |
|---|---|---|
| Greylag geese | Amber | Two birds were flushed from the shoreline in the east of the survey area. These birds are expected to be resident birds associated with the Wexford Wildfowl reserve. |
| Shelduck | Amber | Pairs and individuals recorded in transit over the survey area and loafing in wet areas of agricultural fields in the east of the survey area. |
| Mallard | Green | Small flocks roosting and foraging in wet areas of agricultural fields and in areas of standing water, such as ponds at the Wexford Wildfowl Nature Reserve and Curracloe Channel. |
| Cormorant | Amber | Individuals were recorded feeding in the near-shore waters along the survey area, in transit flying over the survey area and loafing/wing-drying in the west of the survey area. |
| Grey heron | Green | Recorded occasionally within the survey area either along the shoreline or in transit overhead. |
| Little egret | Green | Individuals recorded along the shoreline of the survey area. Although not recorded breeding within the survey area a known little egret breeding colony is located at Beggerin island within the north slobland *c.* 1.3km north of the proposed greenway. |
| Buzzard | Green | Individuals were infrequently recorded foraging over agricultural fields and shoreline in the east of the survey area. It is likely that buzzard are breeding in the surrounding lands. |
| Whimbrel | Green | Individuals recorded along the shoreline during the first BBS visit but not during later visits. |
| Curlew | Red | Individual birds and small flocks of up to 7 birds recorded along the shoreline and in agricultural fields in the east of the survey area. Birds were loafing and foraging. |
| Bar-tailed godwit | Amber | Flocks of up to 17 birds recorded loafing and roosting along the shoreline in the west of the survey area. |
| Turnstone | Green | Small flocks 9 birds recorded in transit over the near-shore waters in the east of the survey area. |
| Common sandpiper | Amber | Small number of common sandpiper recorded along the shoreline in the west of the survey area. |
| Oystercatcher | Amber | Non-breeding individuals and small flocks 17 were recorded along the shoreline feeding, roosting and loafing, often in flock associated with other waders or gulls. |
| Little tern | Amber | Individuals and pairs recorded feeding over near-shore area close to Raven Point. Little tern are known to nest on sandbars in Wexford Harbour with the closest off Raven Point. Little tern were |

| | | |
|---|---|---|
| | | not recorded nesting in the proximity of the survey area. |
| Sandwich tern | Amber | Individuals and pairs recorded feeding over near-shore along the length of the survey area. Are assumed to breed in suitable coastal habitat outside the survey area. |
| Black-headed gull | Red | Individuals and small flocks recorded loafing, roosting and foraging along the shoreline, near sea and in wet areas of agricultural fields in the east of the survey area. Often associated with other gull species. |
| Herring gull | Red | Individuals and small flocks recorded loafing, roosting and foraging along the shoreline, near-shore and in wet areas of agricultural fields in the east of the survey area. Often associated with other gull species. |
| Great-black backed gull | Amber | Small number recorded loafing on the near-shore, shoreline or in flocks with other gulls in wet areas of agricultural fields in the east of the survey area. |
| Swift | Amber | Individuals recorded foraging throughout the survey area. Birds assumed to be breeding in suitable buildings in Wexford town. |
| Kestrel | Amber | A foraging kestrel was recorded on one occasion over intertidal habitat at Raven Point. |
| Hooded crow | Green | Individuals and pairs recorded within the survey, likely to nest in the surrounding lands. |
| Goldfinch | Green | Small flocks of goldfinch foraging within the survey area, likely to breed in the surrounding area. |

*Figure 1a: Breeding bird survey results within the survey area*

*Figure 1b: Breeding bird survey results within the survey area (continued)*

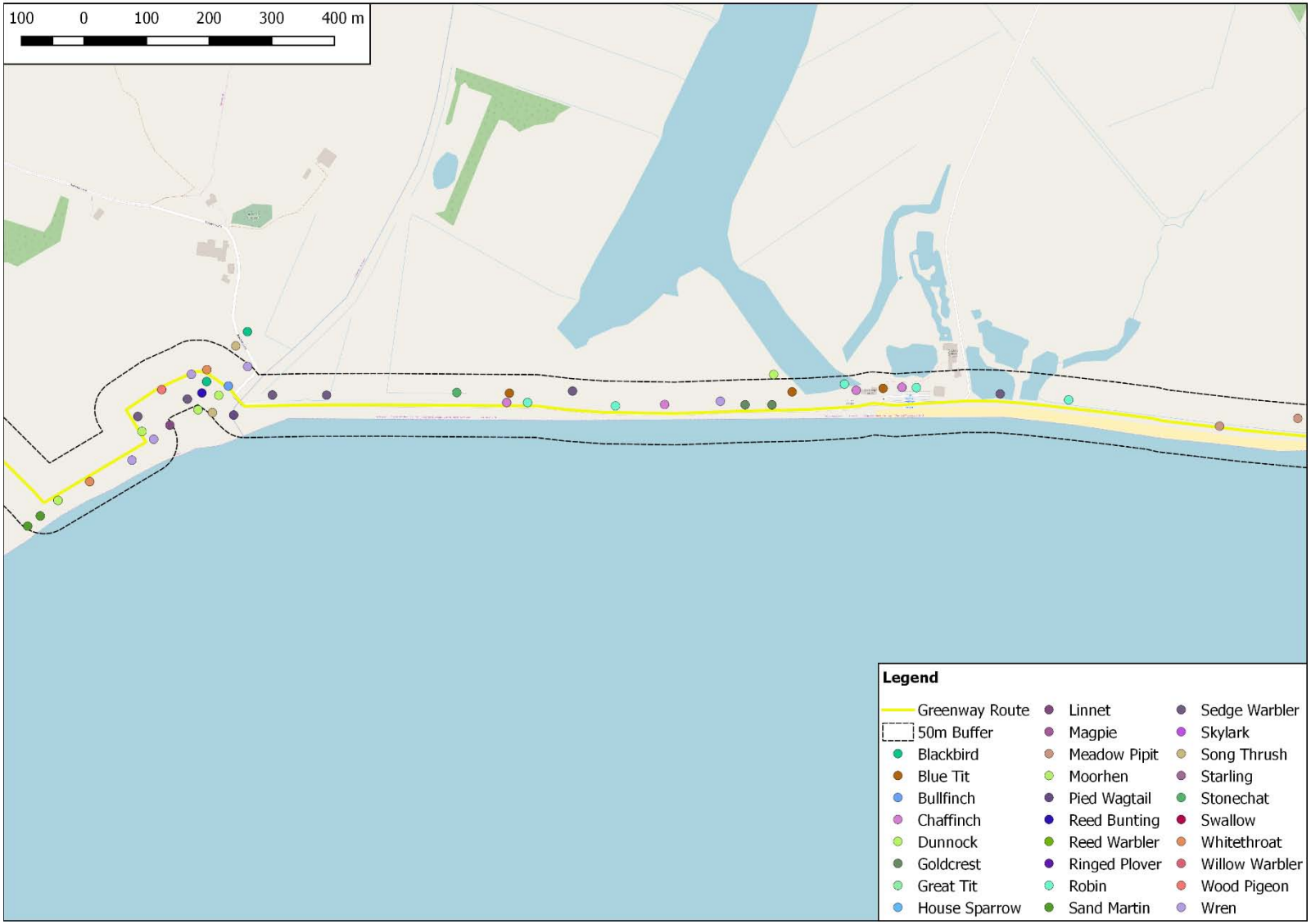


*Figure 1c: Breeding bird survey results within the survey area (continued)*

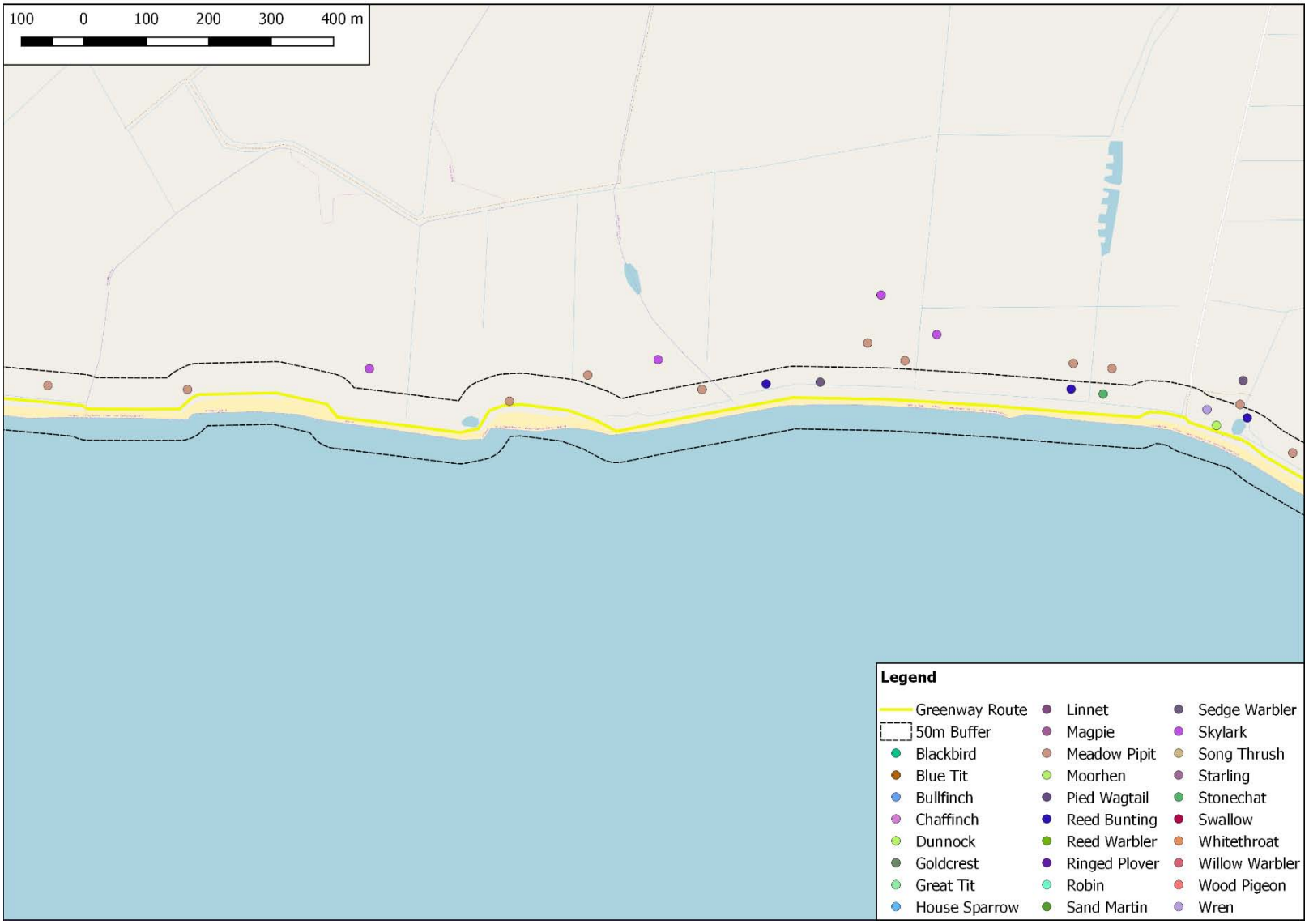


*Figure 1d: Breeding bird survey results within the survey area (continued)*

## 4. MITIGATION AND IMPACTS OF PROPOSED GREENWAY

The potential impacts of the proposed greenway on breeding birds and how they will be mitigated are discussed below. This section does not assess species individually but provides an overall impact assessment of the proposed greenway on birds typically found along the route and within habitats that will be affected by the proposed development.

### 4.1. LOSS OF BREEDING SITES

Breeding bird territories were recorded within the working area of the proposed greenway. Suitable breeding habitats along the route include scrub, hedgerow and grassland. Where vegetation removal of such suitable breeding bird habitat is proposed breeding sites are likely to be lost.

If a precautionary approach is taken, approximately 26% of the breeding sites identified (41 of 155) during the 2017 season will be potentially lost as a result of the proposed works and associated vegetation removal. This impact is regarded to be significant at a local scale.

Proposed landscaping, including hedgerow and treeline planting, as part of the greenway route, once suitably established is likely to provide nesting habitat which would reduce the overall loss of breeding bird habitat.

In order to avoid disturbance of breeding birds, their nests, eggs and/or their unflown young the following measures will be implemented;

- All works involving the removal of vegetation will be undertaken outside of the nesting season (1st March to 31st August inclusive). This measure will not be possible within the Winter Geese and Hen Harrier Construction Exclusion Zones as indicated on Figures 1 and 2 above.

Where this seasonal restriction cannot be observed then:

A breeding bird check will be undertaken by the suitably qualified ECoW in order to assess whether birds are nesting within the working area. Should nesting birds be encountered during surveys, removal of vegetation may be required to be delayed within a confined area identified by the ECoW until after the nesting season (1st March to 31st August inclusive) or until such time that the nest can be confirmed vacant or in-active.

### 4.2. DISTURBANCE TO BREEDING BIRDS

The construction phase will cause disturbance to breeding birds in the vicinity of the works, however the working area will be restricted to a tight corridor lining the proposed route and it is not considered likely that it will cause disturbance to the areas outside 500m of the works areas, and for the majority of species recorded disturbance impacts would be negligible over this distance. Disturbance to breeding birds during construction will be monitored by the suitably qualified Ecological Clerk of Works and where necessary works causing disturbance will be stopped and postponed until such time that the breeding birds have vacated the nesting area.

Movements of people along the greenway route post-construction and during the operational phase may cause disturbance however it is likely that habituation will occur over time for the majority of species recorded. A worst-case scenario would see the displacement of breeding birds further away from the greenway route. Landscaped screening along sensitive areas of the route will somewhat contain visual disturbance to the route and will minimise disturbance to birds breeding within the reedbed at Burgess, to waterbirds nesting in man-made ponds east of the Wildfowl Reserve Visitor Centre, and further east at the Curracloe Channel.

The overall disturbance impact during the construction phase is expected to be significant on a short-term temporary basis at a local scale. Disturbance during the operational phase is expected to be short-term at a local scale until such time as birds become habituated to the more frequent human presence along the route, and with the potential for impacts to be long-term for species that are more sensitive to frequent human presence.

## 5. REFERENCES

**Gilbert, G., Gibbons, D.W. & Evans, J. (1998)** Bird Monitoring Methods. RSPB, Sandy**.**

**CIEEM (2016)** *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*. Chartered Institute of Ecology and Environmental Management.

**Colhoun, K., and Cummins, S. (2013).** *Birds of Conservation Concern in Ireland 2014-2019.* Irish Birds 9:523-544.