
# EIS FOR A PROPOSED WASTE SOILS RECOVERY FACILITY AND ECO-PARK AT PRETTY BUSH, KILCOOLE, CO. WICKLOW

## VOLUME 3 OF 3 – APPENDICES

## AUGUST 2016

Wicklow County Council
Comhairle Contae Chill Mhantáin

FEHILY TIMONEY & COMPANY

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**User is Responsible for Checking the Revision Status of this Document**

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**Client:** Wicklow County Council

**Keywords:** Pretty Bush, inert dredge spoil, placement, ecology, consultation, impacts, mitigation

**Abstract:** Fehily Timoney and Company (FTC) was retained by Wicklow County Council to prepare an environmental impact statement (EIS) for the proposed development of a waste soils recovery facility and eco-park at Kilquade, Kilcoole, County Wicklow. The potential impacts on the human environment, air and climate, roads and traffic, noise, ecology, geology, hydrogeology, hydrology and water quality, landscape, archaeology and cultural heritage, and material assets are evaluated. This document comprises the Appendices (Volume 3) to the information provided in the main volume (Volume 2) of the Environmental Impact Statement (EIS) which accompanies the planning application to An Bord Pleanála for the proposed development.

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# Appendix 1

## Waste Acceptance Plan


# PRETTY BUSH WASTE SOILS RECOVERY FACILITY

# WASTE ACCEPTANCE PLAN

## AUGUST 2016

Wicklow County Council
Comhairle Contae Chill Mhantáin

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# PRETTY BUSH WASTE SOILS RECOVERY FACILITY

# WASTE ACCEPTANCE PLAN

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**Client:** Wicklow County Council.

**Keywords:** Kilquade soils recovery facility, waste placement, dredging spoil, greenfield soil and stones

**Abstract:** This document is the Waste Acceptance Plan for the waste soils recovery facility at Council owned lands at Pretty Bush, Kilquade, Co. Wicklow. The purpose of this report is to outline the procedures to be followed when accepting waste at the facility.

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# 1 INTRODUCTION

This document forms the Waste Acceptance Plan for the proposed waste soils recovery facility to be developed by Wicklow County Council (WCC) at its lands at Pretty Bush, Priestsnewtown, Kilquade, Kilcoole, Co. Wicklow.

The site in question is known locally as "the Rocks" and is currently covered in heavy gorse vegetation. A portion of the site is used as a mini depot for road maintenance work by WCC.

The proposed facility will provide a recovery outlet for the dredge spoil material produced as part of the River Dargle Flood Defence Scheme. The scheme works include deepening and widening of approximately 3.5 km of the river in Bray town, for a depth of approximately 1 m.

It is envisaged that up to 200,000 tonnes (100,000 $m^3$) of dredging spoil will be generated by these works and this material will be deposited at the Kilquade site.

Post placement of this material, it is proposed to develop the site as an Eco-park for community use.

Activities to be undertaken during the waste placement phase of the development will include:

- Phased placement of imported, inert dredge spoil onsite to pre-determined contour levels
- Temporary stockpiling of dredge spoil prior to placement
- Importation, placement and temporary storage of subsoil and topsoil for Eco-park development
- Installation of temporary and long term drainage works onsite
- Monitoring of environmental emission in relation to noise, dust, surfacewater and groundwater during placement works and for duration of licence requirements.

All material to be accepted onsite will be generated from the River Dargle Flood Defence Scheme works, with the exception of clean subsoil and topsoils for the Eco-park development.

Prior to the acceptance of dredge spoil, site clearance work will be undertaken to remove the extensive vegetation onsite such that the site is in ready position to acceptance material for placement.

# 2 WASTE ACCEPTANCE

## 2.1 Wastes to be Accepted

Only inert dredge spoil and clean subsoils and topsoil for pitch development will be accepted at the site for recovery in accordance with the Waste Management Act 1996, as amended. Dredge spoil will be generated by the River Dargle Flood Defence works and subsoils and topsoils will be accepted from greenfield developments that Wicklow County Council has access to. Small quantities of virgin crushed rock/gravel will be imported to the site for haul road creation.

The materials to be accepted are classified according to the European Waste Catalogue as follows.

### Table 2-1: Classification of waste to be accepted

| EWC Code | Waste Description |
|---|---|
| **20 02 02** | Soils & stones |
| **17 05 06** | Dredging spoil other than those mentioned in 17 05 05 |

Haulage of dredge spoil to the site will be undertaken under contract by the appointed Contractor as part of the River Dargle Flood Scheme Defence works. A requirement of this appointment will be the requirement for appropriate waste collection permits. Similarly, haulage of topsoils will required to be undertaken by a haulage contractor with all valid waste collection permit requirements.

The approach to waste acceptance at the site is informed by previous EPA waste soils recovery facility licences[1] and the approach taken in considering the degree of characterisation/classification to be undertaken for each material type to be accepted. This approach is based on that taken by the EPA in relation to Article 27[2] by-product notification for soil and stones.

This is based on the classification of the spoil/soil & stone material as either 'greenfield soil/stone' and 'non-greenfield soil/stone'.

Greenfield soil/stone is defined as "*soil and stone from land that has not been previously developed and is not contaminated soil and stone*[3]*"* while non-greenfield soil and stone is defined as "*soil and stone that is not greenfield soil and stone*."

Both types of material to be accepted at the facility i.e. 20 02 02 & 17 05 06 will originate from lands that have not been previously developed and as such will be "greenfield soils/stone".

## 2.2 Waste Acceptance Criteria

Based on the identification of the waste to be accepted at the site as "greenfield soils" and in keeping with conditions applied in recent EPA licences for similar type developments, the waste acceptance criteria to be applied on site are as follows:

- Prior to placement of dredge spoil material at the site, a letter of suitability, as to the nature and suitability of the material for placement, shall be provided by a suitable person[4] for the first 10,000

[1] W0272-01, Milverton Waste Recovery Facility; W0277-01, Huntstown Inert Waste Recovery Facility; W0280-01, Brownswood Inert Waste Recovery Facility
[2] of the European Communities (Waste Directive) Regulations (S.I. No. 126 of 2011)
[3] Contaminated soil and stone is defined as "soil and stone that contains anthropogenic or man-made substances (such as rubble, concrete, bricks, metal and bitumen), that are not natural to the environment from which the material was extracted"
[4] A suitable, qualified, trained and experienced person who is a registered professional with chartered status (or equivalent) awarded by a relevant professional body and who has the requisite knowledge and experience required to issue a letter of suitability.

tonnes of material and a further letter of suitability shall be provided for each subsequent 10,000 tonnes of material.

- Prior to placement of clean topsoil, a letter of suitability, as to the nature and suitability of the material for placement, shall be provided by a suitable person for the first 5,000 tonnes of material from each source and a further letter of suitability shall be provided for each subsequent 5,000 tonnes of material from each source.

### 2.2.1 Basic Characterisation

The EPA, in granting approvals for the acceptance of greenfield soil/stones at waste soils recovery facilities, make allowance for the carrying out of basic characterisation of the materials, at the Agency's discretion.

To this end, basic characterisation will be carried out at the Kilquade facility on a weekly basis on a randomly selected delivery each of dredge spoil, sub soil and top soil, as delivered.

Information to be recorded will include:

- source and origin of the waste
- vehicle registration
- physical appearance of the waste (smell, colour, physical form)
- photographs
- classification code according to European waste list (CD 2014/995/EC)

A log of the weekly characterisations shall be maintained and kept on site for the duration of the works and for a period as required by the Agency in the facility licence. Should further basic characterisation be required by the EPA, as part of the facility licence, this will be agreed in advance with the Agency.

## 2.3 Waste Acceptance Procedures

### 2.3.1 Weighing of Input Material

Given the homogeneity of the materials to be accepted at the facility, it is proposed that weighing of loads be carried out on an intermittent basis during the haulage phase to verify weights of material being transported. The haulage of the dredge spoil material will be undertaken under contract through a tendering process and Wicklow County Council, as awarding entity, will stipulate within the contractual documentation, the requirement for diversion of a set number of haulage trucks to a designated Council weighing facility, over the duration of the haulage contract, suggested at one per day for the first month of the haulage contract, reducing thereafter.

This will provide certainty to Wicklow County Council in terms of verification of contractual obligation with the selected haulage contractor, as well as providing sufficient data to the EPA as part of the applicable waste licence information recording.

### 2.3.2 Waste Acceptance

The following procedures will be followed when accepting materials for recovery at the Kilquade site.

1. Waste shall only be accepted at the facility from holders of valid waste collection permits issued under the Waste Management (Collection Permit) Regulations 2007, as amended), unless exempted or excluded.

2. Waste shall only be accepted at the facility from known contractors in accordance with any contract assigned by WCC for the haulage of dredge spoil, sub soils and topsoil. No other third party waste shall be accepted at the facility.

3. Waste arriving at the facility shall be visually inspected (on-site verification) before and after unloading to confirm the nature of the waste and that it is as allowed for under the facility licence.

4. The documentation of waste arriving at the facility shall be checked at the point of entry to the facility. Subject to its verification, the truck number waste shall be recorded, a weighbridge docket provided to the gate attendant if applicable, and directed to its appropriate location onsite, as appropriate.

5. In the case of suspicion of contamination (from visual inspection) the waste shall be directed to a designated Waste Quarantine Area. Waste shall be stored under appropriate conditions in the quarantine area to avoid any nuisance or objectionable condition. The origin and nature of this material shall be examined and should any error or inconsistency be identified, the waste shall be rejected.

6. Rejected waste shall be removed from the facility at the earliest possible time to an off-site authorised facility.

# 3 WASTE HANDLING & PLACEMENT

- Prior to waste acceptance, an area will firstly be cleared on a centralised, flat location of the site that will be used as the staging area for the clearance works, and thereafter for placement works. A quantity of crushed rock/gravel material will be imported for construction of temporary access route to the centralised staging area

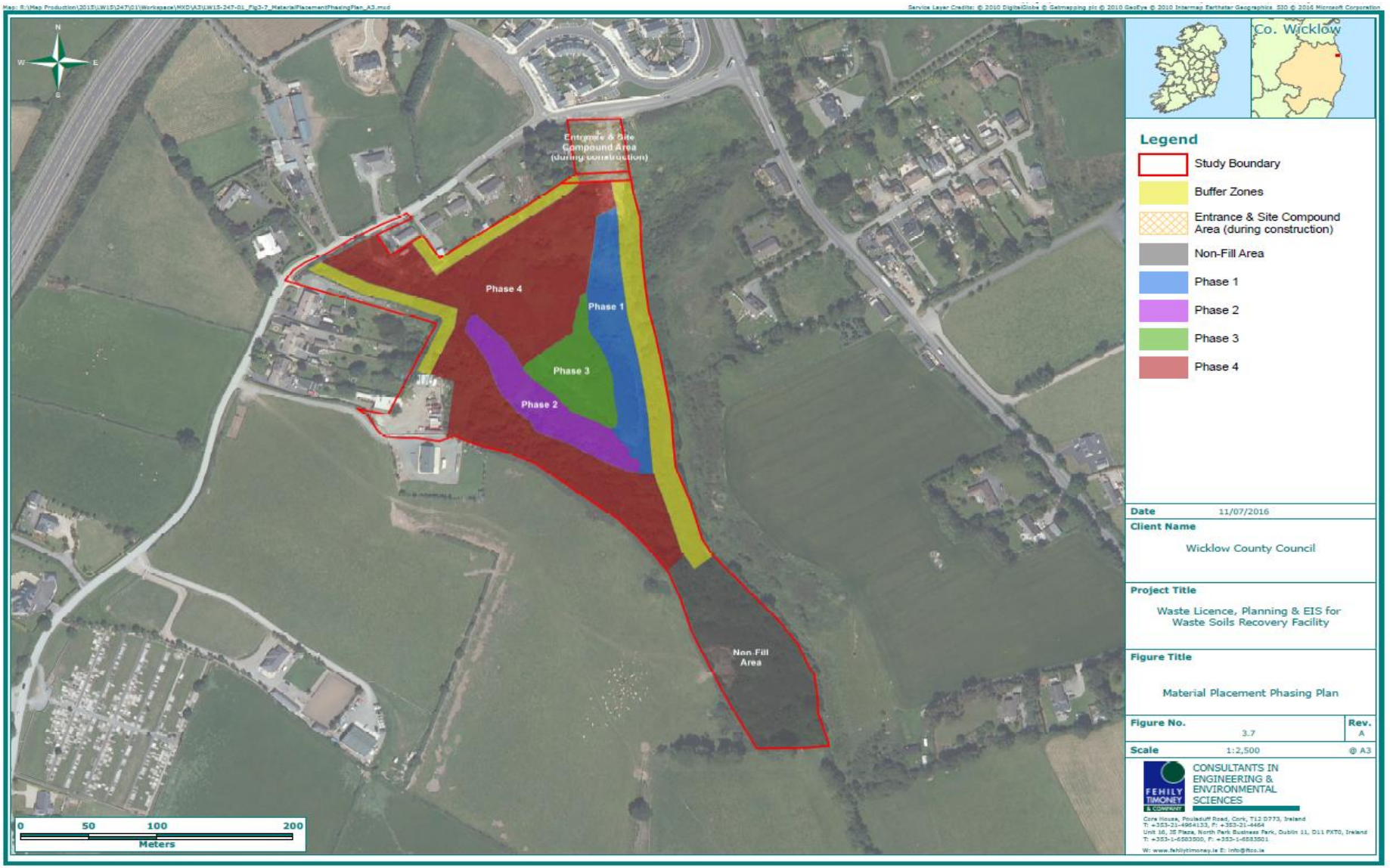
- A temporary haul will be created during the site clearance phase. This haul route will run from the main site entrance to the central staging area and shall be constructed of imported crushed rock.

- Upon commencement of waste acceptance, a visual verification of the material accepted at the site will be undertaken by the site engineer/foreman, and the material will then either be immediately spread and compacted using an excavator or placed in a temporary stockpile, dependent on the stage of placement the development is at. A Placement Plan has been described in the EIS that accompanies the application for the proposed development, which described a phased approach to the placement of incoming material as follows, and as shown in Figure 3-1.

    - Material stockpiled within the central staging area will be loaded into the dumper using the loading shovel, brought to the placement location and tipped, where it will be spread , compacted and graded using an excavator. 2 no. excavator will work simultaneously per phase.

    - Incoming dredge spoil material will be placed in 300 mm layers, with a number of layers being applied on each other. A 200 mm layer of topsoil, either imported to site or reclaimed from the site during the site

## Figure 3-1: Material Phasing Plan



# 4 PREVENTION OF INVASIVE SPECIES INFLUX

No invasive plant species were recorded within the study area during surveys. However Japanese knotweed (*Fallopia japonica*) and giant hogweed (*Heracleum mantegazzianum*) have been recorded along the banks of the River Dargle.

Other invasive species which were not recorded in the area but measures will be put in place to ensure they shall not be spread to the site include Himalayan balsam (*Impatiens glandulifera*), Curly waterweed (*Lagarosiphon major*) and New Zealand pigmyweed (*Crassula helmsii*), along with more terrestrial species such as giant rhubarb (*Gunnera tinctoria*).

Ecological walkover surveys shall be undertaken by a qualified ecologist, at intervals over the construction phase of the project to examine the study area for newly established invasive species. If an invasive species is recorded within the site NPWS and Wicklow County Council shall be informed immediately and a specific invasive species management plan will be drawn up, in that event.

### 4.1.1 General Invasive Species Management

Measures will be taken to prevent the entrance of invasive species and disease into the streams on-site during the construction phase. All equipment and all footwear/waders that will be placed within the water shall be steam-cleaned prior to arrival on site to prevent the spread of invasive species or disease entering the water. After use, all equipment will be cleaned once more and treated with a disinfectant prior to being fried completely before moving to another area. This will avoid the accidental spread of the disease to other areas. A sign off sheet will be maintained to confirm cleaning. The use of equipment that has been used in known infested waters should be avoided. All site personnel shall be instructed to adopt a 'Check – Clean – Dry' approach for potential invasive species on their equipment or clothing.

### 4.1.2 Management of Japanese Knotweed (*Fallopia japonica*)

Should Japanese Knotweed be identified on site, the following recommendations will be adhered to:

- Japanese Knotweed root systems can extend for up to 7m underground from stands of the plants visible above the ground. Staff shall be made aware of this buffer zone when working within areas of infestation.
- Areas of infestation to be fenced from other works areas including a buffering distance of up to 7m around the areas of infestation.
- Areas of infestation shall be treated on site by injecting stems of Japanese knotweed with herbicides.
- Care will need to be taken at areas of infestation recorded in close proximity to the two streams on site to avoid the potential contamination of watercourses.
- The continual monitoring of areas of infestation will be required for the successful treatment of Japanese knotweed. Herbicides may need to be applied on more than one occasion to completely eradicate the species on site.
- No works to take place in these areas without supervision.
- All machinery and vehicles operating within areas of infestation to be thoroughly checked and if necessary cleaned prior to leaving the area due protect against further spreading of Japanese knotweed.
- During vegetation clearance and the removal of rubbish and other waste materials from infested areas care must be taken to ensure that Japanese knotweed is not carried with these materials out of the site. Japanese knotweed plants (or other invasive species) should not be removed along with other vegetation during clearance works.

- No material shall be taken from areas of infestation.
- All staff shall be made aware of nature of threat.
- Wheel washes shall be put in place at entry and exit points. Waste water from the facility will need to stored and treated to avoid further outbreaks.
- If operating within an area of known infestation all machinery, vehicles, equipment, foot ware and clothing will need to cleaned thoroughly (if necessary using steam cleaners) in a contained area to avoid further contamination.

### 4.1.3 Management of Giant Hogweed (*Heracleum mantegazzianum*)

Should Giant Hogweed be identified on site, the following recommendations will be adhered to:

Digging

A shallow excavation to about 20cm will remove the growing crown. This should be done in April or May. Spoil should be disposed of by deep burial or gathering on site into one area to be monitored for any regrowth. Any regrowth should subsequently be treated with a recommended herbicide.

Chemical Control

In order to be effective, spraying must be carried out before (March – June) the plant flowers and sets seed. Otherwise there will be thousands of additional seeds on the ground ready to grow at some point in the future. Following the early season spray, checks should be carried out on a monthly basis for any late germinating seeds which are spot sprayed as necessary.

Glyphosate based products can be successful in controlling this species between March and May/June when the plants are smaller to enable them to be worked more safely around. Herbicides such as Glyphosate based products can be applied as a spot treatment to individual plants, using hand-held equipment, or as an overall spray using machine mounted spray booms.

The only herbicides known to control giant hogweed and with the necessary approval for use in or near water are glyphosate based products.

# Appendix 2

## Outline Construction and Environmental Management Plan

ENVIRONMENTAL BALANCE IN DESIGN AND CONSTRUCTION



# WICKLOW COUNTY COUNCIL

# PRETTY BUSH WASTE SOILS RECOVERY FACILITY & ECOPARK

# OUTLINE CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN

## JULY 2016

FEHILY TIMONEY & COMPANY

# WICKLOW COUNTY COUNCIL

# PRETTY BUSH WASTE SOILS RECOVERY FACILITY & ECOPARK

# OUTLINE CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN



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**Client:** Wicklow County Council

**Keywords:** CEMP, environmental management, construction, monitoring, health and safety

**Abstract:** This document is the outline Construction and Environmental Management Plan (CEMP) for the proposed waste soils recovery facility at Pretyy Bush, Kilcoole, Co. Wicklow. It sets out the key construction and environmental management issues associated with the proposed development. This plan will be developed further at the construction stage, by the client and on the appointment of the main Contractor to the project. This documents should be read in conjunction with the EIS that accompanies the planning application for the development.

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# 1. INTRODUCTION

## 1.1 General Introduction and Purpose

This document is the Outline Construction and Environmental Management Plan (CEMP) for the proposed Pretty Bush waste soils recovery facility and Eco-park and has been prepared for Wicklow County Council. on a preliminary (outline) basis to accompany the Environmental Impact Statement (EIS) and Natura Impact Statement (NIS) for the proposed development.

It sets out the key construction and environmental management issues associated with the proposed development. This plan will be developed further at the post-planning and construction stages, by the developer and on the appointment of the main Contractor to the project. Any adjustments to the CEMP will be carried out on the basis that they do not increase the impacts as addressed in the EIS and NIS.

This document should be read in conjunction with the Environmental Impact Statement (EIS) prepared for the proposed development, along with other relevant drawings and documentation. In the case of any ambiguity or contradiction between this Outline CEMP and the EIS, the EIS shall take precedence.

This Outline Construction and Environmental Management Plan sets out the key environmental management issues associated with the construction of the proposed development, to ensure that during this phase of the development, the environment is protected and impacts on the environment are minimised.

The document is divided into six sections:

**Section 1:** *Introduction* provides details on the existing site and the proposed development

**Section 2:** *Existing Site Environmental Conditions* provides details of the main existing geotechnical, hydrological, ecological and archaeological conditions onsite. These conditions are to be considered by the Contractor in the construction, operation and decommissioning of this proposed development.

**Section 3:** *Overview of Construction Works*, this section provides an overview of the construction works proposed, including drainage and sediment controls to be installed.

**Section 4:** *Environmental Management Plan (EMP)*, this section outlines the main requirements of the EMP and outlines operational controls for the protection of the environment including soil management, habitat and species, site drainage control, archaeology, construction traffic, site reinstatement and decommissioning, waste management.

**Section 5:** *Safety & Health Management Plan,* this section defines the work practices, procedures and management responsibilities relating to the management of safety and health during the design, construction and operation of the proposed facility

**Section 6:** *Outline Emergency Response Plan* contains predetermined guidelines and procedures to ensure the safety, health and welfare of everybody involved in the project and to protect the environment during the construction phase of proposed facility

## 1.2 The Applicant

TO REFLECT EIS CONTENT

## 1.3 The Site

TO REFLECT EIS CONTENT

## 1.4 The Proposed Development

TO REFLECT EIS CONTENT

## Figure 1.1: Site Location Map

TO REFLECT EIS CONTENT

# 2. EXISTING SITE ENVIRONMENTAL CONDITIONS

This section of the Outline CEMP describes the existing site. The information contained in this section is an abridged version of the text contained in the EIS. The EIS should be consulted for a more extensive description of the existing site.

## 2.1 Existing Site Description

TO REFLECT EIS CONTENT

## Figure 2.1: Site Layout Map

TO REFLECT EIS CONTENT

## 2.2 Geological Conditions

TO REFLECT EIS CONTENT

## 2.3 Hydrological Conditions

TO REFLECT EIS CONTENT

## 2.4 Ecological Conditions

TO REFLECT EIS CONTENT

## 2.5 Archaeological Conditions

TO REFLECT EIS CONTENT

# 3. OVERVIEW OF CONSTRUCTION WORKS

## 3.1 Description of the Proposed Development

TO REFLECT EIS CONTENT

## 3.2 Site Layout

TO REFLECT EIS CONTENT

## 3.3 Construction Period

TO REFLECT EIS CONTENT

## 3.4 Overview of the Construction Sequence (Preliminary Only)

TO REFLECT EIS CONTENT

## 3.5 Construction Working Hours

TO REFLECT EIS CONTENT

# 4. ENVIRONMENTAL MANAGEMENT PLAN

## 4.1 Introduction

This environmental management plan (EMP) defines the work practices, environmental management procedures and management responsibilities relating primarily to the construction phase of the Kilquade waste soils recovery facility and Eco-park development.

This EMP describes how the Contractor for the main construction works will implement a site environmental management system (EMS) on this project to meet the specified contractual, regulatory and statutory requirements and environmental impact statement mitigation measures. This plan will be further developed and expanded following the grant of planning permission and appointment of the Contractor for the main construction works. Please note that some items in this plan can only be finalised with appropriate input from the Contractor who will actually carry out the main construction works and once the planning conditions attached to any grant of planning are known. It is the Contractor's responsibility to implement an effective environmental management system to ensure that Wicklow County Council's environmental requirements for the construction of this project are met.

All site personnel will be required to be familiar with the environmental management plan's requirements as related to their role on site. The plan describes the project organisation, sets out the environmental procedures that will be adopted on site and outlines the key performance indicators for the site.

- The EMP is a controlled document and will be reviewed and revised as necessary.
- A copy of the EMP will be located on the site office.
- All employees, suppliers and Contractors whose work activities cause/could cause impacts on the environment will be made aware of the EMP and its contents.

## 4.2 Project Obligations

In the construction of the proposed development there are a number of environmental management obligations on the developer and the Contractor. As well as statutory obligations, there are a number of specific obligations set out in the EIS. These obligations are set out below. When planning is granted, there are also likely to be planning conditions, with which the developer must comply. The outline CEMP will be updated following the completion of the planning phase to incorporate these obligations. The Contractor and all of its sub-Contractors are to be fully aware of and in compliance with these environmental obligations.

### 4.2.1 EIA Obligations

The EIS identified mitigation measures that will be put in place to mitigate the potential environmental impacts arising from construction of the project.

### 4.2.2 Planning Permission Obligations

Should the proposed development be granted planning permission, the conditions of the planning grant issued will be adhered to.

### 4.2.3 Waste Soils Recovery Licence

As outlined in the EIS, the facility will also require an EPA waste soils recovery licence for which a separate application has been made. The waste soils recovery licence that will relate to the proposed development will require, at a minimum, annual monitoring of environmental receptors and reporting of same to the EPA in the format of an annual report.

### 4.2.4 Other Obligations

As identified in the EIS, certain interactions with the National Parks and Wildlife Service (NPWS) will be required prior to, and during, construction works in relation to timing of the development with respect to ecological seasonal constraints and other specific works.

## 4.3 Environmental Management Programme

### 4.3.1 Noise, Light, Dust and Air Control

*Noise Control*

Noise will be generated from construction related plant and machinery during the site clearance phase and the material placement phase. The main control measure will be the suppression of noise at source by the use of plant and equipment in good working order, new or for all other plant with a full maintenance schedule. All plant operatives will contact their foremen in the event that their machine becomes defective with resulting high noise emissions. Any defective plant will be kept out of service until the necessary repairs are done.

For the site clearance and waste placement phases, confirmatory noise monitoring will be carried out to determine the actual noise emissions resulting from these activities at the nearest noise sensitive locations.

If predicted levels described in EIS occur, moveable acoustic fencing will be installed around the works area where the noise levels exceed the respective limits and/or have the potential to cause adverse impacts at the nearest residential properties. This screening will be sufficient to reduce the noise levels generated during the site clearance and waste placement phases to below the necessary limits.

A site point of contact will be made available to the local community who can regularly advise those nearest properties of the works stages and the measures being put in place. This person will also be contacted should any excessive noise levels be generated so the screening can be evaluated and further noise reduction measures be put in place such as quieter plant and/or change in site work practices.

Operational noise monitoring will be carried out in compliance with the anticipated noise planning condition and as per the requirements of the waste soils recovery licence.

Complaints regarding construction noise will be entered into the site complaints log and the relevant site environmental officer will arrange to meet with those affected. The situation will be acted upon immediately and reviewed by the Construction/Environmental Manager. If nuisance is occurring then the project manager will decide what action is necessary to reduce to acceptable levels or eliminate the disturbance.

Other management practices, in line with the recommendations of the BAT Guidance Note for the Waste Transfer and Material Recovery facilities, will be incorporated during facility development:

- During the hours of 19:00 to 07:00 no waste handling activities will happen on-site
- The speed limit on the site for all vehicles will be a maximum limit of 15 kph
- Maintenance of plant and machinery will occur on a regular basis and will ensure correct operation of these items to manufacturers' specifications.

*Lighting*

In determining the lighting arrangements for the worksite, consideration will be given to residents and other sensitive receptors that may experience a nuisance by the light. Where appropriate measures will be implemented to reduce obtrusive light (including consideration of hours of lighting, provisions for dimming or switching off light, equipment to be used and lighting position).

Reference to and consideration of the Bat Conservation Trust's best practice guide shall be made (Bats and Lighting in the UK, Bats and the Built Environment Series).

Where possible, a daylight only construction schedule will be adopted to minimise adverse lighting effects as different phases are completed. It is unavoidable that construction work may require work during the hours of darkness in consideration of shorter daylight availability during winter months.

Where appropriate the following measures will be considered for implementation:

- do not “over” light
- dim or switch off lights
- use specifically designed equipment
- keep glare to a minimum, and
- position lights sensibly.

### *Dust and Air Quality Control*

The principal source of air emissions during the construction phase will be dust arising from earthworks (where earthworks may include the excavating, haulage, tipping and stockpiling of material as well as levelling the site and landscaping)

The amount of dust generated and emitted from a working site and the potential impact on surrounding areas varies according to:

- The type and quantity of material and working methods
- Distance between site activities and sensitive receptors
- Climate/local meteorology and topography

An assessment undertaken in the EIS identified the site and receptors as being low risk, Nevertheless, the following control measures have been identified and will be implemented during the construction phase:

1. The name and contact details of person(s) accountable for air quality and dust issues will be displayed on the site boundary. This may be the environment manager/engineer or the site manager.

2. A Dust Management Plan (DMP) will be developed and implemented as part of the Construction Environmental Management Plan (CEMP).

3. Any dust and air quality complaints will be recorded, causes(s) will be identified, appropriate measures to reduce emissions in a timely manner will be taken, and the measures taken will be recorded. This will be a requirement of the EPA licence to be applied to the facility.

4. In addition to the dust monitoring requirements of the EPA licence to be applied to the site, weekly on-site and off-site inspections will be undertaken where receptors (including roads) are nearby, to monitor dust and record inspection results. This will include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.

5. The frequency of site inspections by the person accountable for air quality and dust issues on site will be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

6. Site layout will be planned so that machinery and dust causing activities are located away from receptors, as far as is possible.

7. Site runoff of water or mud will be avoided.
8. Site fencing, barriers etc. will be kept clean using wet methods.

9. It will be ensured that all vehicles switch off engines when stationary - no idling vehicles.

10. A maximum-speed-limit of 15 kph on facility roads and work areas will be imposed and sign posted.

11. It will be ensured that an adequate water supply is available on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.

12. Enclosed chutes and conveyors and covered trailer will be used during the construction phase site clearance works

13. Drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment will be minimised.

14. Bonfires and burning of waste materials will be prohibited.

15. Earthworks and exposed areas/soil stockpiles will be re-vegetated to stabilise surfaces as soon as possible.

### 4.3.2 Outline Site Drainage Management Plan

This Outline Site Drainage Management Plan should be read in conjunction with the EIS. The Site Drainage Management Plan shall be finalised in accordance with this outline plan following the appointment of the Contractor for the main construction works.

#### *General Preparation in Advance of Implementing Site Drainage Management Plan*

Long range weather forecasts should be examined and the construction phases planned taking cognisance of expected weather conditions. Regular meetings should be held to re-assess construction phases with weather conditions as the project progresses.

#### *Personnel Qualifications and Key Contacts*

All those carrying out work on site must have a Solas Safe Pass Card. All works must be supervised by a competent supervisor. Workers must be adequately trained in the tasks they are required to carry out. The key contact names and contact details should be supplied to all personnel entering the site. All site staff should be informed of the emergency procedures for the site.

#### *Drainage of Development site*

The proposed drainage system has the capacity to introduce hydrological links from the proposed development to the receiving environment during the construction of the development. An appropriate drainage design will be the primary mitigation measure for the Eco Park which will incorporate silt protection control measures and a reduction in the rate of surface water run-off from the proposed development. The proposed drainage for the development is set out below.

Two drainage routes exist through the site at present, and these will be preserved in the layout for Pretty Bush Eco Park. Both of these drainage routes convey overland flows towards the Kilcoole Stream. These are both described below.

The primary drainage route on the site runs from the north-west of the site towards the south-east. This watercourse will be re-profiled as it lies within the portion of the site where materials will be placed. The filled areas will be designed such that continuity is provided along this drain where it runs from the buffer zone towards the area subject to filling. A settlement pond will be constructed in-line with this stream at the downstream reach to allow any suspended solids to be removed from the runoff before being discharged off site.

Another watercourse in the form of a small ditch runs along the eastern boundary of the site from north to south, where it joins with the watercourse described above before draining towards the Kilcoole Stream. This watercourse is in the buffer zone and as such no material will be placed in its vicinity.

The proposed drainage system for the Eco Park will incorporate drainage ditches/swales which are specified to convey overland flows southwards and reduce the potential for erosion on the imported material. It is anticipated that these ditches will be shallow (<400m) and have shallow side-slopes.

*Proposed New Site Walkways and Hard Surfaces*

The proposed new walkways and hardstanding areas will be drained via percolation and over the edge drainage to the reinstated surfaces, with a stilling pond at the end of the drainage run.

The settlement ponds will drain diffusely overland, over existing vegetated areas, within the site boundary. The settlement pond has been sized with a surface area of 18m x 14m and a depth of 1m.

In all it is proposed to construct 1.23km of new walkways as part of the Eco-Walk to be constructed on the site. The walkways will be permeable and of hoggin path, mulch or gravel construction.

The flood risk identification and assessment prepared for this development determined that any increase in run-off would be of very low significance. It is nonetheless recommended that any potential for an increase in the velocity of the surface water run-off should be reduced. Walkways will drain via percolation or over the edge to the reinstated vegetated eco-park. Silt fencing will be provided at strategic locations, particularly at the location of any stockpiled material and close to drainage flow paths, to further protect the perimeter ditches of the site during the construction stage.

It is not expected that overland flows will be obstructed to any great extent as a result of the layout of the development. However where required, interceptor channels will collect overland flows on the upslope side of the temporary haul roads and hard standing areas. The overland flow will then discharge diffusely on the downslope side.

There is the potential for increased sediment to enter the drains on site due to the uncompacted nature of the soils to be deposited on the site during the construction stage. Silt Protection Controls (SPCs) are proposed at the location of the drain crossings. It is recommended that the SPCs will consist of a minimum of silt traps containing filter stone and filter material staked across the width of the swales and upstream of the outfall to any watercourse.

*Drainage of Temporary Site Compound*

The Temporary Site Compound will be set back from the drain that runs alongside the eastern site boundary. Drains around the hard-standing areas of the site compound will be in the form of shallow swales to minimise the disturbance to sub-soils.

Filter drains may be used where trafficking by site staff is required to access the temporary site compound. The filter drains/swales will drain to a stilling pond. The stilling pond will be backfilled following the construction period and the vacation of the temporary site compound.

Refuelling of plant during construction will be carried out at a dedicated refuelling station on site, which will be a minimum of 100m from any watercourse. The station will be fully equipped for a spill response and a specially trained and dedicated environmental and emergency spill response team will be appointed before commencement on site. Drip trays and spill kits will be kept available on site, to ensure that any spills from the vehicle are contained and removed off site. Only emergency breakdown maintenance will be carried out on site and appropriate containment facilities will be provided to ensure that any spills from breakdown maintenance vehicles are contained and removed off site.

Any diesel or fuel oils stored at the temporary site compound will be bunded. The bund capacity will be sufficient to contain 110% of the tank's maximum capacity. Where there is more than one tank within the bund, the capacity will be sufficient to accommodate 110% of the largest tank's maximum capacity or 25% of the total maximum capacities of all tanks, whichever is the greater. Design and installation of fuel tanks will be in accordance with best practice guidelines BPGCS005 (Oil Storage Guidelines).

Portaloos and/or containerised toilets and welfare units with storage tanks will be used to provide toilet facilities for site personnel during construction. The sanitary waste will be removed from site by a licensed waste disposal contractor. All portaloo units located on site during the construction phase will be operated and maintained in accordance with the manufacturer's instructions, and will be serviced under contract with the supplier. All such units will be removed off-site following completion of the construction phase. There will be no permanent sanitary facilities provided for the proposed development.

*Drainage of Stockpiled Material*

Any stockpiles of material will be set back a minimum of 50m from the stream at the eastern site boundary. It is proposed to drain all exposed surfaces and imported material to settlement ponds. At the upslope side of any stockpiles, interceptor drains will be constructed where required to prevent ingress of water into stockpiled material.

Stockpiles on site will be kept to a minimum of 2m in height, and will be profiled such that runoff from the stockpiles is directed towards a silt trap or 'dirty water' drain.

Reinstated areas and berms will be re-planted, and further measures will be undertaken, in the form of erosion control matting for example if deemed to be required.

*Construction Stage Settlement Pond*

A settlement pond will be provided at the south of the site. This is sized at 18m x 14m, with a depth of 1m. Prior to discharge off-site, runoff from the imported materials on the site will pass via the site drainage system through this settlement pond in order to minimise the suspended solids and protect the receiving watercourses.

### 4.3.5 Archaeological Management

During the construction phase all mitigation measures will be undertaken in compliance with national policy guidelines and statutory provisions for the protection of the archaeological, architectural and cultural heritage.

Attention is drawn to national monuments legislation (1930-2004), which states that in the event of the discovery of archaeological finds or remains, the Heritage and Planning Division of the Department of the Environment, Heritage and Local Government (now Department of Arts Heritage and the Gaeltacht) and the National Museum of Ireland shall be notified immediately. If features are revealed, the archaeological finds or remains will need to be investigated, and no further development will take place in that area until the site is fully identified, recorded and excavated or alternatively avoided to the satisfaction of the statutory authorities.

### 4.3.6 Outline Waste Management Plan

This Outline Construction Waste Management Plan has been prepared for the proposed development in line with the "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects" (2006) as published by the Department of the Environment, Community and Local Government.

The Outline Waste Management Plan shall be finalised in accordance with this outline plan following the appointment of the Contractor for the main construction works. This plan should be read in conjunction with the EIS.

It is an objective of this plan to prevent, reduce, reuse and recover as much of the waste generated on site as practicable and to ensure the appropriate transport and disposal of residual waste off site. This is in line with the relevant National Waste Management Guidelines and the European Waste Management Hierarchy.

*Assignment of Responsible Personnel*

It will be the responsibility of the Contractor for the main construction works (when appointed) to nominate a suitable site representative such as a Project Manager, Site Manager or Site Engineer as Waste Manager who will have overall responsibility for this waste management plan. The waste manager will have overall responsibility to instruct all site personnel including sub-Contractors to comply with the specifications of this plan.

They will ensure that at an operational level that crew foreman/gangers are assigned direct responsibility for its implementation.

*Waste Generated*

It is envisaged that the following categories of waste may be generated during the construction of the project;

- Municipal solid waste (MSW) from the welfare facilities
- Waste oil/hydrocarbons from hand tools & plant
- C&D waste related to the Eco-park development

A permitted waste collection contractor will be appointed prior to construction works commencing. This contractor will provide appropriate receptacles for the collection of the various waste streams and will ensure the regular emptying/and or collection of these receptacles.

*Waste Reduction*

All efforts will be made by site management to minimise the creation of waste throughout the project. This will be done by:

- Materials ordering will be optimised to ensure only the necessary quantities of materials are delivered to site.
- Materials storage areas will be of a suitable design and construction to adequately protect all sorted materials to ensure no unnecessary spoilage of materials occurs which would generate additional waste.
- All plant will be serviced before arriving on site. This will reduce the risk of breakdown and the possible generation of waste oil/hydrocarbons on site.
- Prefabrication of design elements will be used where suitable to eliminate waste generation on site.
- If materials such as concrete are being ordered great care will be practiced in the calculation of quantities to reduce wastage.

*Waste Reuse*

When possible, materials shall be re used onsite for other suitable purposes e.g.

- Re use of excavate materials for screening, berms etc.
- Re use of excavated material etc. – where possible will be used as suitable fill elsewhere on site for the new site tracks, the hardstanding areas and embankments where possible.

*Waste Recovery*

In accordance with national waste policy, source separation of recyclable material will take place. This will include the provision of receptacles for the separation and collection of dry recyclables (paper, cardboard, plastics etc.), biological waste (canteen waste) and residual waste.

Receptacles will be clearly labelled, signposted and stored in dedicated areas.

The following sourced segregated materials container will be made available on site at a suitable location:

- Timber
- Ferrous Metals
- Aluminium
- Dry Mixed Recyclables
- Packaging Waste
- Food waste

*Waste Disposal*

Residual waste generated on-site will require disposal. This waste will be deposited in dedicated receptacles and collected by a contractor permitted under the Waste Management (Collection Permit) Regulations 2007 as amended and transported to an appropriate facility. All waste movements will be recorded, of which records will be held by the waste manager on-site.

*Training*

Copies of the waste management plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the Project Waste Management Plan and informed of the responsibilities that fall upon them as a consequence of its provisions.

It will be the responsibility of the Contractors' appointed Waste Manager to ensure that all personnel are made aware of their responsibilities under the plan via a toolbox talk or otherwise.

### 4.3.7 Outline Construction Traffic Management Plan

This document is the Outline Construction Traffic Management Plan (CTMP) for the proposed development. The Construction Traffic Management Plan shall be finalised in accordance with this outline plan following the appointment of the Contractor for the main construction works.

Please note that some items in this plan can only be finalised with appropriate input from the Contractor who will actually carry out and schedule the works. Furthermore, it is appropriate that the Project Supervisor Construction Stage (PSCS), when appointed, should have an active role in the preparation/review of the Traffic Management Plan. This plan should be read in conjunction with Section 9 Traffic and Transportation of the EIS.

The Contractor is required to prepare the necessary Site Specific Traffic Management Plans prior to the construction works commencing in accordance with Chapter 8 of the Traffic Signs Manual and subject to load permits. The Contractor will be responsible for the implementation of all requirements of the Roads Authority.

As with any construction development project, the transport of materials onto the site will give rise to increased traffic and associated impacts. However due to the very nature of construction these impacts will be temporary.

Public perception of the construction phase will be influenced primarily from the impact of traffic movements. The degree of traffic disturbance caused by the construction phase depends on the volume of material imported/exported, the associated civil engineering requirements and the length of the construction period.

This Outline Construction Traffic Management Plan (CTMP) deals with the traffic generated during the construction of the proposed development. It concentrates on the traffic arising from each element of the works which includes the site clearance works, the material importation phase and the Eco-park development works.

Construction traffic will require regular access to the site at varying times throughout the construction phase. The aim of this CTMP is to put in place procedures to manage traffic effectively on site and in the immediate vicinity of the development, to ensure the continued movement of traffic on the public roads and to minimise disturbance during transportation of materials. The correct implementation of this CTMP will ensure that appropriate procedures are in place to minimise any effects on the safety and movement of the general public.

Prior to the commencement of construction, the CTMP will be reviewed by the main Contractor (and any sub-contractors), and will be updated as necessary.

*Construction Staging*

In terms of traffic impacts, it is proposed to carry out the project in a number of phases, with an overall construction programme expected of between 12-24 months. The most intensive period of traffic will be associated with the material importation phase, which in a worst case i.e. shortest duration scenario will occur over an 8 month period.

Construction operations shall generally be restricted to between 07:00 to 19:00 Monday to Friday and 08:00 to 13:00 Saturday.

Construction commencement dates are yet to be confirmed at this stage; these will be made known to the Planning Authority by way of formal Commencement Notice.

*Road Improvements and Modifications*

During the construction phase, the existing ghost island (line markings) outside the main entrance will be modified to allow for vehicles exiting the site to turn right without crossing the ghost island illegally.

These improvement works are required; to facilitate the delivery of material to the site,

*Access to/from the National Road Network*

Site Access

All construction traffic will use the L1042 local road from the R761 to gain access to the proposed development and will enter through the existing entrance road to the site, which will be widened as part of the construction works, prior to development of a new Eco-park entrance.

Section 9 of the EIS presents the proposed haul route for the material from the River Dargle Flood Defence Scheme that will be the only route used for importation of the dredge spoil. Other construction related traffic may utilise other routes than this but this traffic will be limited to cars or LGVs. All HGV traffic will be required to access the site via the L1042 from the R761 only.

Road Cleaning

Public roads shall be kept free of mud, dust, spillages and debris from the construction site, construction plant or haulage vehicles. Any necessary measures shall be put in place at the site entry/exit points.

A dry wheel clean system will be deployed to ensure cleaning of vehicles prior to leaving site. This system is based on a vibratory action as a delivery truck drives over a metals grid, thereby knocking debris from vehicles wheels.

In addition to the dry wheel clean system, a mobile road sweeper will be on constant operation at the site during the Construction Phase, to ensure that there is no impact from debris from haulage on the L1042 local road.

*Construction Plant and Vehicles*

The typical construction plant and vehicles accessing the development site may include:

- Excavator (brought to site via articulated lorry)
- Dump Trucks (brought to site via articulated lorry)
- HGV tipper lorries for dredge spoil and topsoil importation
- General construction material delivery vehicles e.g. flatbed LGV
- Private vehicles of those employed on site for the construction phase

It should be noted however that final selection of construction plant and vehicles may vary depending on suitability, availability, contractor's choice, etc.

Plant operators will be responsible for the upkeep and maintenance of construction plant and vehicles, ensuring good working order prior to use. Should emergency maintenance need to be carried out on site, this will be carried out at a designated area away from sensitive receptors and will ensure that a spill kit is nearby.

Parking for all site staff vehicles during the Construction phase will be provided adjacent to the construction compound. Parking of construction related vehicles (or queuing) will not be permitted outside the facility gate. This will be achieved using a combination of signage, suitable bollards (if required) and by enforcement by site management

*Consultation and Notification*

Traffic Management Co-ordinator

The Contractor will appoint a dedicated competent Traffic Management Coordinator for the duration of this project and this person will be the main point of contact for all matters relating to traffic management on the project.

Induction

Prior to the works commencing, the Traffic Management Coordinator will carry out an induction for the dredge spoil haulage contractor staff to inform them of the traffic requirements in relation to this intensive period of vehicle movements. Traffic consideration shall form part of the induction process for all site staff also.

An Garda Síochána

Following the appointment of the successful Contractor for this project, this Outline Transport Management Plan shall be finalised following the appointment of the Contractor for the main construction works. The Traffic Management Coordinator will liaise directly with An Garda Síochána in relation to the plan and any concerns/requirements they have will be incorporated in to the plan. The necessary permits (including approved route permits) will be applied for and obtained from An Garda Síochána.

County Council

The Contractor will liaise directly with Wicklow County Council Roads Department in relation to the plan and any necessary permits (including standard permits) will be applied for and obtained from the Roads Department.

## 4.4 Environmental Management Team - Structure and Responsibility

A preliminary organisation chart is included in Figure 4.1. Revisions to the project organisation chart shall be controlled independently of this plan following the appointment of the Contractor for the main construction works.

The Contractor's Project Manager will be responsible for the delivery of all elements of the Environmental Management Plan.

The Contractor's Project Manager will retain all responsibility for issuing, changing and monitoring the Environmental Management Plan throughout.

## 4.5 Training, Awareness and Competence

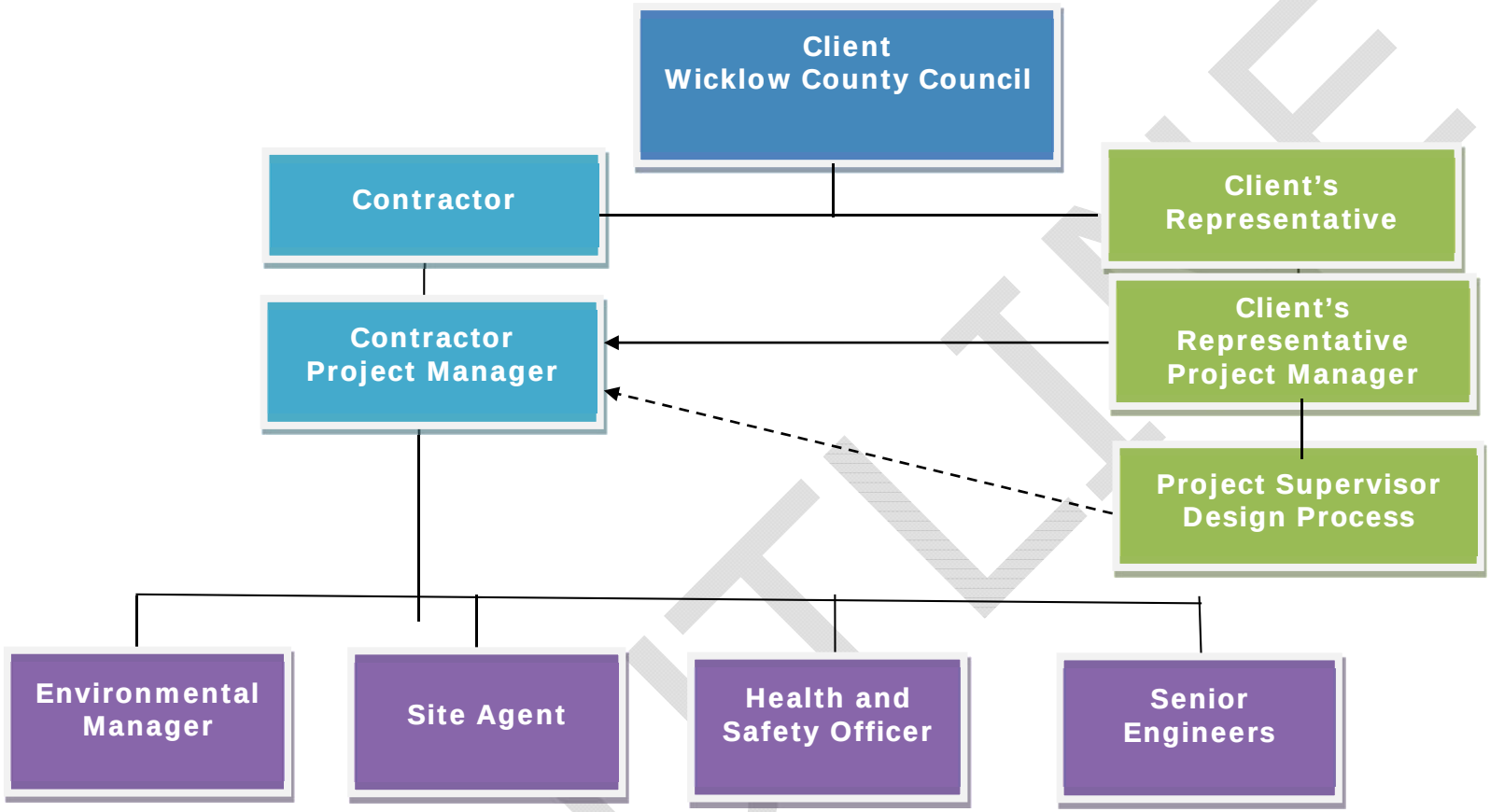
All site personnel will receive environmental awareness information as part of their initial site briefing. The detail of the information should be tailored to the scope of their work on site. The Contractor for the main construction works may decide to conduct the environmental awareness training at the same time as Health and Safety Training (often referred to as Site Inductions).

This will ensure that personnel are familiar with the environmental aspects and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures.

The CEMP will be retained in the management office during the project. The environmental performance at the site is on the agenda of the monthly project management meetings for the project.

Elements of the CEMP will be discussed at these meetings including objectives and targets, the effectiveness of environmental procedures etc. Two-way communication will be encouraged by inviting all personnel to offer their comments on environmental performance at the site.

**Figure 4.1: Project Management Team Organogram**




- **Note- the Contractor PM may fulfil one or all of the sub roles identified**

## 4.6 Environmental Policy

The Contractor is responsible for preparing and maintaining an Environmental Policy for the site. The policy should be appropriate to the project, commit to continuous improvement and compliance with legal requirements and provide a framework for objectives and targets. This will be communicated to all site personnel and will be available on site notice boards.

## 4.7 Register of Environmental Aspects

The Contractor is responsible for preparing and maintaining a *Register of Environmental Aspects* pertaining to the site. This register will identify the environmental aspects associated with activities onsite and determine which aspects have or can have a significant impact on the environment.

## 4.8 Register of Legislation

The Contractor is responsible for preparing and maintaining a register of key environmental legislation pertaining to the site. This register will reference all current environmental legislation and will be inspected, reviewed and updated regularly to ensure compliance.

## 4.9 Objectives and Targets

Objectives and targets are required to be set to ensure that the project can be constructed and operated in full accordance with the EIS, planning conditions and legislative requirements, with minimal impact on the environment.

Environmental objectives are the broad goals that the Contractor must set in order to improve environmental performance. Environmental targets are set performance measurements (key performance indicators or KPI's) that must be met in order to realise a given objective.

The Contractor will set objectives based on each significant environmental impact. Key objectives are likely to include the following:

- To ensure that the rivers and streams are not negatively impacted by construction works.
- To ensure that humans are not negatively impacted by dust generated by construction works.
- To ensure that humans are not negatively impacted by noise generated by construction works.
- To ensure that impacts to habitats and wildlife are minimised during works.
- To ensure that a waste management plan for this site will be fully implemented.
- To ensure that the visual impact during the construction work is minimised.
- To ensure that the proposed development is constructed in compliance with the EIS

Performance in relation to each of these objectives will be reviewed on a regular basis by means of inspections, audits, monitoring programmes, etc.

In addition, the requirement of the waste soils recovery licence to be applicable to the site will define the specific environmental objectives and targets during the construction phase.

## 4.10 Non-Conformance, Corrective and Preventative Action

Non-Conformance Notices will be issued where there is a situation where limits associated with activities on the project are exceeded, or there is an internal/external complaint associated with environmental performance.

Non-Conformance is the situation where essential components of the EMS are absent or dysfunctional, or where there is insufficient control of the activities and processes to the extent that the functionality of the EMS in terms of the policy, objectives and management programmes, is compromised. A Non-Conformance register should be controlled by the Contractor.

The EMS and all its components must conform to the EMP, objectives and targets and the requirements of the ISO 14001 management standard.

In the event of non-conformance with any of the above, the following must be undertaken:

- Cause of the non-compliance;
- Develop a plan for correction of the non-compliance;
- Determine preventive measures and ensure they are effective;
- Verify the effectiveness of the correction of the non-compliance;
- Ensure that any procedures affected by the corrective action taken are revised accordingly.

Responsibility must be designated for the investigation, correction, mitigation and prevention of non-conformance.

## 4.11 EMS Documentation

The Contractor is required to keep the following documentation in relation to the environmental management of the project (as a minimum):

- Construction Environmental Management Plan for the proposed development
- Register of Environmental Impacts
- Register of Planning Conditions
- Monitoring Records
- Minutes of Meetings
- Training Records
- Audit and Review Records

All of these documents and records are to be available for inspection in the site office. The documentation shall be to date and shall be reviewed on a regular basis with revisions controlled in accordance with the site quality plan.

It will be a requirements of the EPA waste soils recovery licence applicable to the site to develop and maintain an Environmental Management programme for the facility.

## 4.12 Control of Documents

The Contractor will establish, implement and maintain a procedure to control CEMP documents and records so they are clearly identifiable, organised, current, easily located and revised when necessary.

# 5. SAFETY & HEALTH MANAGEMENT PLAN

TO REFLECT SAFETY & HEALTH MANAGEMENT PLAN, TO BE DEVELOPED BY APPOINTED PSCS

# 6. OUTLINE EMERGENCY RESPONSE PLAN

TO REFLECT EMERGENCY RESPONSE PLAN TO BE DEVELOPED BY APPOINTED PSCS

# Appendix 3

## Natura Impact Statement


# NATURA IMPACT STATEMENT FOR PRETTY BUSH WASTE SOILS RECOVERY FACILITY AND ECO-PARK

## July 2016

Wicklow County Council
Comhairle Contae Chill Mhantáin

FEHILY TIMONEY & COMPANY

# NATURA IMPACT STATEMENT FOR PRETTY BUSH WASTE SOILS RECOVERY FACILITY AND ECO-PARK

**User is Responsible for Checking the Revision Status of This Document**

| Rev Nr. | Description of Changes | Prepared by: | Checked by: | Approved by: | Date: |
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| 0 | Issue to Client | JK/MG | DFM | DFM | 14.07.2016 |

**Client:** Wicklow County Council

**Keywords:** Stage One Screening Report, Stage Two Natura Impact Statement, Article 6 of the Habitats Directive, Natura 2000 sites, Pretty Bush Waste Soils Recovery Facility, Eco-park, European Sites, Special Protection Areas, Special Areas of Conservation, Planning, Part 8

**Abstract:** This document comprises the Stage One Screening Report and Stage Two Natura Impact Statement for the proposed Pretty Bush Waste Soils Recovery Facility. Appropriate Assessment is required under Article 6 (3) and (4) of the Habitats Directive for any project or plan that may give rise to significant effects on a Natura 2000 site.

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# 1 INTRODUCTION

Wicklow County Council commissioned Fehily Timoney & Company (FT) to prepare an Appropriate Assessment Screening Report and a Natura Impact Statement in respect of the Pretty Bush Waste Soils Recovery Facility and Eco-park. An Appropriate Assessment Screening Report and Natura Impact Statement has been prepared in respect of the proposed facility, as required by Article 6 of Council Directive 92/43/EEC (Habitats Directive).

In compliance with the provisions of Article 6 of the Habitats Directive, as implemented by Part XAB of the Planning and Development Act 2000, as amended, in circumstances where a proposed plan or project is likely to have a significant effect on a European (or a Natura 2000) site, either individually or in combination with other plans or projects, an Appropriate Assessment (AA) must be undertaken by the competent authority, of the implications for the site in view of the site's conservation objectives.

European sites comprise both Special Protection Areas (SPAs) for birds and Special Areas of Conservation (SACs) for habitats and species. The Habitats Directive formed a basis for the designation of SACs. Similarly, SPAs are legislated for under the Birds Directive (Council Directive 79/409/EEC on the Conservation of Wild Birds). In general terms, European sites are considered to be of exceptional importance in terms of rare, endangered or vulnerable habitats and species within the European Community.

Article 6 of the Habitats Directive envisages a two-stage process, which is implemented in some detail by the provisions of sections 177U and 177V of the Planning and Development Act. Screening for appropriate assessment in accordance with section 177U is the first stage of the AA process (Stage One), in which the possibility of there being a significant effect on a European site is considered. Plans or projects that have no appreciable effect on a European site are thereby excluded, or screened out, at this stage of the process. Where screening concludes that there is the potential for significant effects, then it is necessary to carry out an AA (Stage Two) for the purposes of Article 6(3), and a Natura Impact Statement (NIS) is produced. The NIS, which forms the basis of the AA, considers the impact of a project or plan on the integrity of a European site and on its conservation objectives, and where necessary, draws up mitigation measures to avoid/minimise negative impacts.

The competent authority, in this case An Bord Pleanála, in carrying out an AA, is required to make an examination, analysis, evaluation, findings, conclusions and a final determination as to whether or not the proposed development would adversely affect the integrity of the relevant European site in view of its conservation objectives.

This report comprises of the Stage One Screening Report (in Section 3) and a Natura Impact Statement (in Section 4) to evaluate the potential impact(s) of Pretty Bush Waste Soils Recovery Facility & Eco-park on the European sites located within a 15 km radius.

There are no European sites within 1.5 km of the proposed development. Ten European sites are located within 15 km of the proposed development:

- The Murrough Wetlands SAC (site code 002249)
- Glen of the Downs SAC (site code 000719)
- The Murrough SPA (site code 004186)
- Bray Head SAC (site code 000714)
- Carriggower Bog SAC (site code 000716)
- Wicklow Mountains SPA (site code 004040)
- Wicklow Mountains SAC (site code 002122)
- Ballyman Glen SAC (site code 000713)
- Knocksink Woods SAC (site code 000725)
- Rockabill to Dalkey Island (site code 003000)

* At present most SACs in Ireland are currently 'candidate' SACs, and referred to as cSACs. The relevant Statutory Instruments for the cSACs in Ireland have not yet been made, however, these "candidate" sites must still be afforded the same level of protection as if they were SACs as designated in accordance with the EU Habitats Directive.

### 1.1.1 Legislative Requirements

The requirements for an AA are set out in the Habitats Directive 92/43/EEC. Articles 6(3) and 6(4) of this Directive state:

*6(3) Any plan or project not directly connected with or necessary to the management of the site (Natura 2000 sites) but likely to have significant effect thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment of its implications for the site in view of the sites conservation objectives.*

*In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*

*6(4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.*

The statutory agency responsible for European sites is the National Parks and Wildlife Service (NPWS) of the Department of Arts, Heritage and the Gaeltacht (DAHG). In December 2009 'Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government' was published (DoEHLG, 2009). This guidance document was prepared jointly by the NPWS and Planning Divisions of DoEHLG (now DAHG), with input from local authorities. Previously, in 2001, the European Commission issued a guidance document. This NIS has been prepared in accordance with the relevant Irish and European Commission Guidance.

### 1.1.2 Regulatory Context

In 1997, the Habitats Directive was transposed into Irish National Law by the European Communities (Natural Habitats) Regulations, SI 94/1997 (as amended by S.I. 233/1998 & S.I. 378/2005). The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477/2011) revoked the 1997 Regulations (and amendments) as well as the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010. The purpose of the 2011 Regulations was to address transposition failures identified in the Court of Justice of the European Union (CJEU) judgements. Following additional amendments in 2013 (S.I. 499/2013) and 2015 (S.I. 355/2015) the regulations are now cited as the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015.

The Regulations have been prepared to address several judgments of the CJEU against Ireland, notably cases C-418/04 (*Commission v Ireland*) and C-183/05 (*Commission v Ireland*), in respect of failure to transpose elements of the Birds Directive and the Habitats Directive into Irish law.

## 1.2 Relevant Planning History

A number of previous applications have been made that relate to proposals for development within the proposed site boundary.

**015286** In October 2001, Wicklow County Council under took a 'Part 8' process for land development and re-instatement and construction works at the site, which was approved in December 2001 but which did not proceed.

**041109** The Electricity Supply Board (ESB) applied for the diversion of a section of the existing Fassaroe – Greystones/Kilcoole 38 Kv line in the townland of Priestnewtown in June 2004, for which permission was granted by Wicklow County Council in August 2004.

**041253** Eircom applied to Wicklow County Council for the development of an 89 sq.m single storey telephone exchange and site works, including underground cable ducts/chambers, vehicle access from the Kilquade road, the provision of 2 no. car parking spaces and security railings and gates, in July 2004. Permission was refused on the grounds of sufficiency of rights to carry out the development.

## 1.3 Proposed Works

It is proposed to utilise this site of the deposition of up to 200,000 tonnes of riverbed material, mainly silt, clay and gravel at a Wicklow County Council (WCC) owned site at Kilquade, Kilcoole, Co. Wicklow, arising from the flood defence works being carried on the River Dargle in Greystones. The scheme works include deepening and widening of approximately 3.5 km of the river in Bray town, for a depth of approximately 1 m.

These flood defence works were authorised by An Bord Pleanála in 2008 and, as part of these works, it was identified that material not reused in the flood defence works would be "removed off-site to suitably licensed disposal facility". The proposed development satisfies this requirement as the site will be required hold a waste soils recovery facility licence from the EPA that approves the deposition of dredge spoil waste at the site.

Upon completion of the placement of riverbed spoil material, the site will be developed into an Eco-Park that will provide long term environmental and social benefits and recreational amenity for the local community.

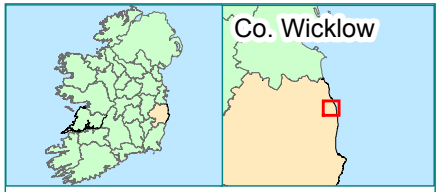
The proposed works will comprise:

- Clearance of vegetation from the existing site and chipping/shredding of vegetation prior to movement offsite for appropriate management
- Redevelopment of existing entrance, incorporating boundary treatment
- Placement of up to 200,000 tonnes of dredge spoil at the site
- Installation of temporary (construction period) and longer term surfacewater management infrastructure
- Access improvement works on the L1042 at the site entrance
- Importation and placement of topsoil to facilitate Eco-park planting
- Development of Pretty Bush Eco-park features including looped walking tracks, nature trails, waymarkers and information signage

The duration of the clearance and placement works is expected to be between 8- 15 months, while the development of the Eco-park will occur in stages thereafter in line with appropriate planting seasons.

The existing site entrance will be developed initially to support the access and egress of the vehicles delivering material to and from the site and subsequently to facilitate the future access of users of the site

The location of the site in shown in Figure 1-1 while an aerial view is provided in Figure 1-2.


## Legend

Study Boundary

| | |
|---|---|
| Date | 20/01/2016 |
| Name Of Client | Wicklow County Council |
| Name Of Job | Waste Licence, Planning & EIS for Waste Soils Recovery Facility |
| Title Of Figure | Site Location Map |
| Scale Used | 1:25,000 @ A4 |
| Figure No. | 1.1 |
| Rev | A |

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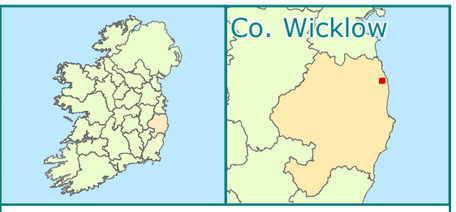
Map: R:\Map Production\2015\LW15\247\01\Workspace\MXD\A3\LW15-247-01_Fig3-9_ProposedLandscapingPlan_A3.mxd




## Legend

- Study Boundary
- Buffer Zones
- Vegetation/Trees
- Fencing
- Bottom of Bank
- Eco-Walk Track
- 5m Contours
- 1m Contours

**Date** 14/07/2016

**Client Name**

Wicklow County Council

**Project Title**

Waste Licence, Planning & EIS for Waste Soils Recovery Facility

**Figure Title**

Proposed Landscaping Plan

**Figure No. 1.2** **Rev.** A

**Scale** 1:2,500 @ A3

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# 2 METHODOLOGY

## 2.1 Appropriate Assessment Methodology

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures to be addressed in the AA process. Firstly, a project should aim to avoid any negative impacts on European sites by identifying possible impacts early in the project, and should design the project in order to avoid such impacts.

There are four stages in an AA, as outlined in the European Commission Guidance document (2001). The following is a brief summary of these steps.

- Stage One - Screening: This stage examines the likely effects of a project either alone or in combination with other projects upon a European Site and considers whether it can be objectively concluded that these effects will not be significant.
- Stage Two - Appropriate Assessment: In this stage, the impact of the project on the integrity of the European site is considered with respect to the conservation objectives of the site and to its structure and function. Mitigation measures should be applied to the point where no adverse impacts on the site(s) remain.
- Stage Three - Assessment of Alternative Solutions: Should the Appropriate Assessment determine that adverse impacts are likely upon a European site, this stage examines alternative ways of implementing the project that, where possible, avoid these adverse impacts.
- Stage Four - Assessment where no alternative solutions exist and where adverse impacts remain: Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the Natura site will be necessary. European case law highlights that consideration must be given to alternatives outside the project area in carrying out the IROPI test. It is a rigorous test which projects are generally considered unlikely to pass.

In the preparation of this assessment therefore regard has been given to the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations 2011, and with reference to the relevant guidance, in particular:

- *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 2001.
- *Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats Directive' 92/43/EEC*, European Commission, 2000.
- *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin 2009.

### 2.1.1 Impact Assessment

The first step in the screening process is to develop a list of European sites potentially affected by the proposed development. Each European site is reviewed to establish whether or not the proposed development is likely to have a significant effect on the integrity of the site, as defined by its structure and function, and its conservation objectives.

The qualifying interests of each European site are identified and the potential threats are summarised into the following categories for the screening process, and described within the screening matrix as follows:

- Direct impacts refer to habitat loss or fragmentation arising from land-take requirements for development or agricultural purposes. Direct impacts can be as a result of a change in land use or management, such as the removal of agricultural practices that prevent scrub encroachment.
- Indirect and secondary impacts do not have a straight-line route between cause and effect, and it is potentially more challenging to ensure that all the possible indirect impacts of the plan (or project) – in combination with other plans and projects - have been established.

These can arise when a development alters the hydrology of a catchment area, which in turn affects the movement of groundwater to a site, and the qualifying interests that rely on the maintenance of water levels. Deterioration in water quality can occur as both an indirect or direct consequence of development, which in turn changes the aquatic environment and reduces its capacity to support certain plants and animals. The introduction of invasive species can also be defined as an indirect impact, which results in increased movement of vectors (humans, fauna, surface water), and consequently the transfer of alien species from one area to another.

- Disturbance to fauna can arise directly through the loss of habitat (e.g. bat roosts) or indirectly through noise, vibration and increased activity associated with construction and operation.

## 2.2 Desktop Study

Ecological surveys were carried out by FT at the site of Pretty Bush Waste Soils Recovery Facility on the 29th and 30th of September 2015 with a further five days of surveys from the 9th to the 13th of November 2015. The data from these field surveys was used to inform the current Appropriate Assessment Screening Report and Natura Impact Statement.

In order to complete the Screening for Appropriate Assessment and Natura Impact Statement certain information on the existing environment is required. A desk study was carried out to collate available information on the site's natural environment. This comprised a review of the following publications, data and datasets:

- Wicklow County Development Plan 2010 – 2016
- National Parks and Wildlife Service (NPWS) website and metadata available (www.npws.ie)
- OSI Aerial photography and 1:50000 mapping
- National Biodiversity Data Centre (NBDC) (on-line map-viewer)
- BirdWatch Ireland
- Teagasc soil area maps (NBDC website)
- Geological Survey Ireland (GSI) area maps
- Environmental Protection Agency (EPA) water quality data
- The Eastern River Basin District (ERBD) datasets (Water Framework Directive) now Inland Fisheries Ireland (IFI).

## 2.3 Field Assessment

The following describes the individual field surveys carried out for the ecological appraisal of the existing environment of the project. Ecological surveys were carried out by FT at the site of Pretty Bush Waste Soils Recovery Facility on the 29th and 30th of September 2015 with a further five days of surveys from the 9th to the 13th of November 2015 for badger bait marking. The purpose of the ecology surveys was:

- to identify the different habitat types present on the site
- to identify flora and fauna onsite
- to assess the impact of the proposed project on the ecology of the site and surrounding areas

### 2.3.1 Habitats and Flora Investigation

Habitat surveys were carried out to categorise the habitats within the site according to Fossitt (2000) *A Guide to the Habitats in Ireland*. The main habitats within the site are outlined below.

All floral species found during the walkover surveys of the site were identified using the following identification keys:

- Webb, D.A. (1977). *An Irish Flora*.
- Fitter, R., Fitter, A & Blamey, M. (1996). *Wild Flowers of Britain and Northern Europe.*
- Press, B. & Hosking, D. (1992). *Trees of Britain and Europe.*
- Blamey *et al*. (2003) *Wild Flowers of Britain and Ireland.*

### 2.3.2 Fauna Investigation

Any observations of birds and mammals were recorded. Birds on the site were identified using the following identification key:

- Svensson *et al*. 2009 *The Most Complete Guide to the Birds of Britain and Europe*. Collins Bird Guide. 2nd Edition

# 3 STAGE ONE - SCREENING REPORT

## 3.1 Brief Description of the Existing Site

The site is immediately bounded to the east, west and south with agricultural fields. Residential one off and multiple developments bound the site to the north and north west, while the L5542 local road and R461 form boundaries on the northern and eastern flanks of the site. The site itself, which is 5.6 ha in area, undulates between approximately 40 and 50 mOD from north to south, while two small streams run in a north to south direction along the eastern and western boundaries of the site meeting to the south. Both streams can be described as small (30-40cm wet width), overgrown with vegetation and of very low flow. Sections of these streams were dry when surveyed and are considered ephemeral in nature.

The landscape of the study area is rural in nature. The waste soil recovery area is currently semi-natural in nature. The land use classifications for the surrounding area, and as defined by the 2012 CORINE landcover dataset, are classified as 'Pasture' and 'Other Agricultural Land'.

The bedrock of the site area primarily comprises Cambian Metasediments. The soils present in the development area comprise Lithosols / Regosols with surface water gleys / ground water gleys acidic to the west and Renzinas / Lithosols to the east. The subsoils are sandstone and shale till (Cambrian / Precambrian) with matrix of Irish Sea Basin origin to the along the western section of the site and the majority of the site classified as bedrock at the surface.

The Kilcoole stream downslope of the site has not been assigned with a WFD Status.

### 3.1.1 Habitats within and immediately adjacent to the existing site

The main habitat types (according to the Fossitt, 2000 classification system) identified during previous ecological surveys on the site are outlined below.

#### *Scrub (WS1)*

The most dominant habitat within the study area was scrub. Dense stands of common gorse (*Ulex europaeus*) were recorded throughout the site particularly on the centre ridge between the two streams. Brambles (*Rubus fruticosus* agg.) was commonly recorded throughout. Other species recorded included spinose plants such as hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), in addition to a number of willows (*Salix* spp.), elder (*Sambucus nigra*), stunted hazel (*Corylus avellana*) and broom (*Cytisus scoparius*). These species were particularly present on the ridges along the western and eastern boundaries of the site.

#### *Dense bracken (HD1)*

There are patches of dense bracken (*Pteridium aquilinum*) around the centre of the site in open sections of gorse scrub. This habitat is considered to be of relatively low conservation value and is dominated by the fern species.

#### *Grassy verges (GS2)*

Grassland habitat was recorded in open sections of scrub. Grassland was linear in form found along trails through the site and along the verges of the two streams. The most dominant grassland present within the site was Grassy Verges (GS2). A broad diversity of species were recorded particularly along the edges of scrub including white clover (*Trifolium repens*) broad-leaved dock (*Rumex obtusifolius*), common knapweed (*Centaurea nigra*), common mouse-ear (*Cerastium fontanum*), common ragwort (*Senecio jacobaea*), creeping buttercup (*Ranunculus repens*), creeping thistle (*Cirsium arvense*), daisy (*Bellis perennis*), dandelion sp. (*Taraxacum officinale* agg.), herb-robert (*Geranium robertianum*), hogweed (*Heracleum sphondylium*), lesser stitchwort (*Stellaria graminea*), meadow buttercup (*Ranunculus acris*), red clover (*Trifolium pratense*), germander speedwell (*Veronica chamaedrys*)and ribwort plantain (*Plantago lanceolate*).Grass species included cocksfoot (*Dactylis glomerata*), false oat-grass (Arrhenatherum elatius), common bent (*Agrostis capillaris*), creeping bent (*Agrostis stolonifera*) and annual meadow-grass (*Poa annua*). In more disturbed section common nettle (*Urtica dioica*) was noted.

Sections of Wet Grassland (GS4) habitat were not extensive and were confined to wetter area along the banks of the stream with species recorded including Yorkshire fog (*Holcus lanatus*), soft rush (*Juncus effusus*), cuckoo flower (*Cardamine pratensis*), field horsetail (*Equisetum arvense*), lesser spearwort (*Ranunculus flammula*), marsh thistle (*Cirsium palustre*), meadowsweet (*Filipendula ulmaria*), water forget-me-not (*Mysotis scorpoides*), water horsetail (*Equisetum fluviatile*), water mint (*Mentha aquatic*), water speedwell (*Veronica anagallis-aquatica*), water-cress (*Rorippa nastutium-aquatica*), wild angelica (*Angelica sylvestris*) with occasional yellow iris (*Iris pseudacorus*) and tutsan (*Hypericum androsaemum*)

*Riparian woodland (WN5)*

Sections of riparian woodland were recorded along the banks of the narrow stream within the site. Species recorded included grey willow (*Salix cinerea*) and goat willow (*Salix caprea*). Other broad leaved tree species recorded included elder (*Sambucus nigra*), hazel (*Corylus avellana*) and ash (*Fraxinus excelsior*). Primrose (*Primula vulgaris*), water-cress (*Rorippa nastutium-aquatica*), wild angelica (*Angelica sylvestris*), yellow iris (*Iris pseudacorus*), water mint (Mentha aquatic) and tutsan (*Hypericum androsaemum*) were recorded within the undergrowth.

*Treelines (WL2)*

Treelines were recorded along the southern and eastern boundaries of the site. Species recorded included common ash (*Fraxinus excelsior*), elder (*Sambucus nigra*), grey willow (*Salix cinerea*), oak (*Quercus* spp.) and blackthorn (*Prunus spinosa*). Sycamore (*Acer pseudoplatanus*) was recorded to the south of the site. Common ivy (*Hedera helix*), foxglove (*Digitalis purpurea*), hard fern (*Blechnum spicant*) and hart's tongue (*Asplenium scolopendrum*) were recorded in the undergrowth.

### 3.1.2 Fauna within and immediately adjacent to the existing site

*Terrestrial mammals*

A family of badgers (*Meles meles*) are known to utilise the site currently. One main sett was recorded within the site. This sett is considered to be a breeding sett. Six other sub setts were recorded within the study area and an additional sett was recorded outside the site boundary along the south eastern edge. There are recorded of hedgehog (*Erinaceus europaeus*), Irish stoat (*Mustela erminea*), pine marten (*Martes martes*) and pygmy shrew (*Sorex minutus*) within the greater area. The habitats within the site offer potential habitat for these species. The streams within the site are considered too small for otter (*Lutra lutra*) however the species is likely to be utilising Kilcoole Stream particularly the section downstream of Kilcoole village.

Red fox (*Vulpes vulpes*) and European rabbit (*Oryctolagus cuniculus*) droppings were recorded within the site. There are accounts from a local landowner of grey squirrel (*Sciurus carolinensis*) an invasive species being observed within the site. Records retrieved from the Biodiversity Ireland website show that the species has been recorded in close proximity to the site. Three separate records of the species were recorded within 1km east of the site in a residential area known as the 'Russian Village'.

*Bats*

Five species of bats were recorded during bat surveys namely Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Leisler's Bat (*Nyctalus leisleri*), Natterer's Bat (*Myotis nattereri*) and Daubenton's Bat (*Myotis daubentonii*). Common pipistrelle was the most common species recorded. Investigations within the site indicate that there is no suitable roosting habitat available but that bats are foraging within the site.

*Avifauna*

*Desktop Study*

Table 3-1 below gives a list of bird species within the 2km grid square O20Z encompassing the proposed site as part of the Breeding Bird Atlas 2007 - 2011 along with records retrieved from the Biodiversity Ireland. Species highlighted in red represent species that are Red-listed. They are Red-listed because they are of Global Conservation Concern.

Species highlighted in orange represent species that are of European Conservation Concern. They are Amber-listed because of their unfavourable conservation status but not concentrated in Europe. The remaining species are Green-listed, species of favourable conservation status (Colhoun and Cummins, 2013). No Annex I species listed under the Birds Directive (Directive 2009/147/EC), have been recorded within the site. Annex I species require the greatest protection and must have SPAs (Special Protection Areas) designated for them.

**Table 3-1: Bird species recorded within the 2km grid square O20Z encompassing the proposed site as part of the Breeding bird atlas 2007 - 2011 along with records retrieved from the Biodiversity Ireland.**

| Common Name | Latin Name |
|---|---|
| Blackbird | *Turdus merula* |
| Buzzard | *Buteo buteo* |
| Goldfinch | *Carduelis carduelis* |
| Great Tit | *Parus major* |
| Hooded Crow | *Corvus cornix* |
| Jackdaw | *Corvus monedula* |
| Kestrel | *Falco tinnunculus* |
| Linnet | *Carduelis cannabina* |
| Long-eared Owl | *Asio otus* |
| Magpie | *Pica pica* |
| Mistle Thrush | *Turdus viscivorus* |
| Pheasant | *Phasianus colchicus* |
| Pied Wagtail | *Motacilla alba subsp. yarrellii* |
| Raven | *Corvus corax* |
| Rook | *Corvus frugilegus* |
| Sparrowhawk | *Accipiter nisus* |
| Starling | *Sturnus vulgaris* |
| Stonechat | *Saxicola torquata* |
| Yellowhammer | *Emberiza citrinella* |

Yellowhammer is the only red listed species recorded within the 2km grid square in which the site is located. The species is red listed due to a high population decline. Formerly a widespread breeding species in Ireland, it is now restricted mainly to the east and south. The species was not recorded during surveys at the site. Yellowhammer are strongly linked with the cultivation of cereals and has declined in areas where these are no longer grown. The species requires a minimum amount of cereal in the landscape to maintain a population (Balmer *et al*. 2013). There are no cereal fields directly adjacent to the site and the main land use in the greater area is pastures for cattle. An examination of land use within the greater study area was carried via aerial photography from 1995[1] to present day[2]. An extensive area of arable crops was present to the north east of the site in the townland of Charlesland and in Priestsnewtown in the west.

However, the construction of the R774 and house estates at Farrankelly and particularly Charlesland has resulted a significant loss of this resource locally.

[1] http://map.geohive.ie/mapviewer.html accessed January, 2015
[2] https://www.bing.com/maps/ accessed January, 2015

Six amber listed species have been recorded within the 2km square in which the site is located. Two raptor species sparrowhawk and kestrel along with linnet, stonechat, starling and mistle thrush. There is potential nesting habitat for all of these species within the proposed site

*Avian species recorded during ecological surveys*

Avian species both observed and heard calling during ecological surveys were noted. Tables 3-2 below lists the species noted during ecological surveys in both September and November 2015.

**Table 3-2: Bird species noted during ecological surveys in both September and November 2015**

| Common Name | Latin Name |
|---|---|
| Blackbird | *Turdus merula* |
| Blue tit | *Cyanistes caerulus* |
| Bullfinch | *Pyrrhula pyrrhula* |
| Chaffinch | *Fringilla coelebs* |
| Coal tit | *Periparus ater* |
| Dunnock | *Prunella modularis* |
| Goldcrest | *Regulus regulus* |
| Goldfinch | *Carduelis carduelis* |
| Great tit | *Parus major* |
| Hooded crow | *Corvus cornix* |
| Jackdaw | *Corvus monedula* |
| Magpie | *Pica pica* |
| Pied wagtail | *Motacilla alba* |
| Robin | *Erithacus rubecula* |
| Rook | *Corvus frugilegus* |
| Song thrush | *Turdus philomelos* |
| Stonechat | *Saxicola turquatus* |
| Starling | *Sturnus vulgaris* |
| Willow Warbler | *Phylloscopus trochilus* |
| Woodpigeon | *Columba polambus* |

No red listed bird species were noted within the site during surveys. Three passerine 'Amber listed' species were recorded namely goldcrest, robin and stonechat. All three species were upgraded from Green to Amber in the latest BOCCI list (Colhoun and Cummins, 2013). The extensive scrub and section of broadleaved trees offer potential nesting and foraging habitat for these species within the site.

*Barn owl*

The Barn Owl (*Tyto alba*) is a characteristic farmland bird which has undergone a documented decline in its geographical range in recent times. They are a Red-listed Bird of Conservation Concern in Ireland due to a decline of over 50% in their population during the past 25 years (Colhoun and Cummins, 2013). They are also listed as a Species of European Conservation Concern (SPEC3) having an unfavourable conservation status in Europe.

The reasons for the Barn Owls decline are not fully understood, but can most likely be attributed to the loss of suitable habitat due to various aspects of agricultural intensification and the increased use of harmful second generation anti-coagulant rodenticides. Other factors that have been implicated in their decline are the loss of suitable nest sites, an expansion of major road networks and the increased severity of winters.

Consultation with National Park and Wildlife indicated that there is a barn owl roost within the local area. Roosting habitat for the species was not noted within the site during surveys however potential foraging habitat was noted particularly within rough grassland clearings. Areas of dense scrub dominate the habitats within the site and would not be deemed optimal foraging habitat. However, these areas do provide shelter for small mammals offering potential prey for barn owl.

### *Atlantic Salmon*

The Atlantic salmon is listed under Annexes II and V of the EU Habitats Directive and Appendix III of the Bern Convention. It is an economically important species and salmon recreational and commercial fisheries occur throughout Ireland. Atlantic salmon are an anadromous species, meaning they are spawned in freshwater habitats and then migrate to the sea. Salmon habitats are usually fast flowing riffle and glide habitats with cobble or gravel substrates. Salmon angling areas are usually located on main river channels or small rivers in deep glides of 1.5m depth or more.

Crisp (2000) notes that salmonid spawning site selection is governed by a complex of environmental factors including intra-gravel flow, gravel size, water depth as well as stream velocity and cover, which are all essential for successful spawning, egg survival and hatching.

One of the most important factors for salmon egg survival is oxygen supply, which is dependent upon dissolved oxygen concentration and inter-gravel flow. High concentrations of suspended solids in the river are undesirable as they are likely to result in infilling of the gravel pores with fine material (Cowx and Fraser, 2003).

The small streams within the site are deemed to be mainly ephemeral in nature, with a low flow and overgrown with vegetation. They do not offer suitable habitat for fish species. Kilcoole stream is highly modified particularly around the village of Kilcoole and is not deemed to be of high value for Atlantic salmon. Atlantic salmon populations in Ireland have been recently assessed as being 'unfavourable - inadequate' by NPWS in the 2013 Article 17 Conservation Status Assessments (2013). A review of the NPWS distribution map of the species in Ireland indicated that the 10km grid square that encompasses the site (O20) is located within the range but not the distribution of the species. The size of and the degree of modifications along sections of the stream would indicate that the species is not likely to utilise Kilcoole Stream.

### *White-clawed crayfish*

The streams within the site and the Kilcoole Stream do not lie within the range or distribution of white-clawed crayfish in Ireland. Therefore, the species is not considered to be within the site or downstream of the site.

### *Brook, River and Sea Lamprey*

Three species of lamprey have been recorded in Ireland brook, river and sea lamprey. All three are listed in Annex II of the Habitats Directive and also in Appendix III of the Bern Convention. Kilcoole stream or and the proposed site do not lie within the range or known distribution of sea lamprey (NPWS, 2013). These feature are located within the range but not distribution of both Brook and River lamprey. A review of Kurtz and Costelloe, (1999), *An outline of the biology, distribution and conservation of lampreys in Ireland. Irish Wildlife Manuals No. 5* was undertaken to assess the potential for lamprey to utilise habitats downstream of the site. The proposed site and watercourses downstream of the site is located in hydrometric area 10. However, there is no mention of lamprey species within Kilcoole Stream.

The Brook lamprey is the smallest of the three lampreys native to Ireland and it is the only one of the three species that is non-parasitic and spends all its life in freshwater (Maitland and Campbell, 1992). Brook lampreys are the most common and widespread of the three Irish lamprey species (Kurtz and Costello, 1999). Brook lampreys live for up to five years burrowed into silt deposits in rivers. They metamorphose into adults and spawn in the early spring in fast flowing streams with gravel substrates. Unlike the other two Irish lamprey species they are not parasitic as adults, and undertake only localised migrations.

Although still common in Ireland they are under significant threat from drainage and navigation maintenance works and also from water quality deterioration.

Brook lampreys are also doing less well across the rest of the European Union. In this regard Irish populations of Brook Lampreys are of International Importance. Ireland has failed to protect lampreys with a close season for instream works during their spawning season so they are vulnerable due to the lack of this type of protection. Responsibility for protecting lampreys in Ireland falls within the remit of Inland Fisheries Ireland; although there are no (and never have been any) fisheries for this species in Ireland. Brook Lamprey populations in Ireland have been recently assessed as being 'favourable' by NPWS in the 2013 Article 17 Conservation Status Assessments (2013). Taking account of the generally poor to sub-optimal larval habitats for lampreys in the watercourses potentially affected by the proposed development, it is unlikely that lampreys would be adversely affected.

*European Eel (Anguilla anguilla)*

The European eel *Anguilla anguilla* is a native fish of significant ecological importance. In recent decades, this species has undergone a dramatic decline throughout its range. In response to the decline in European eel populations European Council Regulation 1100/2007 "Establishing Measures for the Recovery of the Stock of European Eel" has now been adopted in member states. European eel is listed as 'Critically endangered' and is now 'Red Listed' according to the recently published 'Red List No. 5: Amphibians, Reptiles & Freshwater Fish' (King *et al*., 2011).

There are no records of European eels within the Kilcoole stream. However, there are records of the species within two other watercourse that drain into Kilcoole Marsh. There is a single record was recorded on the Newtownmountkennedy Stream (O295062) by the EPA on the 16th of July 2009. Two records of the species have also been recorded on the stream north of Newcastle (O303041) again by the EPA. The records both at the same location date from 2006 and 2009. Due to the location of the species within the greater catchment with connectivity to Kilcoole Marsh and based on the precautionary principal there is the potential for the species to occupy at least the lower reaches of the Kilcoole stream.

*Other Invertebrates*

Butterfly species Small Tortoiseshell (*Aglais urticae*), Meadow Brown (*Maniola jurtina*), Speckled Wood (*Pararge aegeria*), Common Blue (*Polyommatus Icarus*), Red Admiral (*Vanessa atalanta*) and Painted Lady (*Vanessa cardui*) has all been recorded within the greater area. Other invertebrate species recorded include 7-spot Ladybird (*Coccinella septempunctata*), Common Blue Damselfly (*Enallagma cyathigerum*), Four-spotted Chaser (*Libellula quadrimaculata*) and Large Red Damselfly (*Pyrrhosoma nymphula*).

A review of species recorded within 2km[3] of the proposed site showed records of *Andrena scotica*, Small Garden Bumble Bee (*Bombus hortorum*), Large Red Tailed Bumble Bee (*Bombus lapidarius*), Common Carder Bee (*Bombus pascuorum*) and Slender Mining Bee (*Lasioglossum calceatum*).

### 3.1.3 Sites of National Importance

There are 10 pNHAs within 10 km of the proposed development site (see below). The closest pNHAs are the Murrough pNHA (site code 000730) located approximately 1.75 km to the east and the Glen of the Downs pNHA (site code 000719) north west of the proposed project. All other pNHAs are greater than 4.3 km from the site. The only pNHA linked hydrologically to proposed site is the Murrough pNHA (000730) which lies almost entirely within the boundary two Natura 2000 sites the Murrough Wetlands SAC (002249) and the Murrough SPA (004186).

The pNHAs, along with their site codes, and distance from the proposed development are listed in Table 3.3, along with a brief description of each site. The full site synopses are available on www.npws.ie.

- Glen of the Downs pNHA (000719)
- Bray Head pNHA (000714)
- Carriggower Bog pNHA (000716)
- The Murrough pNHA (000730)
- Kilmacanoge Marsh pNHA (000724)
- Great Sugar Loaf pNHA (001769)
- Vartry Reservoir pNHA (001771)

[3] www.biodiversityireland.ie accessed January 2016

- Dargle River Valley pNHA (001754)
- Powerscourt Waterfall pNHA (001767)
- Powerscourt Woodland pNHA (001768)

## Table 3-3: Summary of the sites of national importance within 10 km of the proposed project

| Designated Site | Site Code | Features of Interest | Summary Description of Site | Distance from proposed project (Km) |
|---|---|---|---|---|
| The Murrough pNHA | 000730 | • Annex I bird species listed as qualifying species of the SPA<br>• Annex I habitats listed as qualifying features | The Murrough is a coastal wetland complex which stretches for 15 km from Ballygannon to north of Wicklow town, and in parts, extends inland for up to 1 km. A shingle ridge stretches the length of the site and carries the mainline Dublin-Wexford railway.<br>At the southern end of the site, Broad Lough, a brackish, partly tidal lake, has a well-developed saltmarsh community. Saltmarsh is also present in the northern end of the site in the vicinity of the Breaches. An area of fen occurs at Five Mile Point. | 1.75 |
| Glen of the Downs pNHA | 000719 | • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] | Glen of the Downs is a semi-natural oak wood situated within an impressive glacial overflow channel. It is located on the Dublin-Wexford road, about 7 km south of Bray, Co. Wicklow. The underlying rock is mostly quartzite and it outcrops in a few places. The soil is a sandy loam, brown earth to brown podzolic, and is very dry over much of the site. Most of the site has been a Nature Reserve since 1980. | 2.17 |
| Bray Head pNHA | 000714 | • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]<br>• European dry heaths [4030] | This coastal site is situated in the north-east of Co. Wicklow between the towns of Bray and Greystones. The bedrock geology is Cambrian quartzites and shales (with mudstones and greywackes). Bray Head consists of a plateau of high ground, with five prominent quartzite knolls and has a maximum height of 241 m. The more exposed higher ground has a covering of shallow acidic soils, with protruding bedrock and scree. Elsewhere, deeper soils are formed by drift deposits and are calcareous in character. | 4.36 |

| Designated Site | Site Code | Features of Interest | Summary Description of Site | Distance from proposed project (Km) |
|---|---|---|---|---|
| Carriggower Bog pNHA | 000716 | • Transition mires and quaking bogs [7140] | Carriggower Bog is situated on Calary plateau at the eastern edge of the Wicklow Mountains. The site is an area of wet bog and poor fen, flanked by the Vartry River on the south-western side. The bog was exploited for peat extraction until 100 years ago and the peat cuttings are now flooded. The remaining bog vegetation is characterised by bog moss (Sphagnum spp.) hummocks. | 5.66 |
| Kilmacanoge Marsh pNHA | 000724 | • A diversity of species-rich wetland habitats within a relatively small area<br>• Scare fly species *Oxycera falleni* (Order Diptera)<br>• Scare fly species *Oxycera morrisii* (Order Diptera)<br>• Scare fly species *Parhelophilus consimilis* (Order Diptera) | This site is located off the main Dublin to Wexford road, just south of Kilmacanoge and at the base of the Great Sugarloaf. A small stream links the site to the Great Sugarloaf NHA. The site is a well-developed mosaic of wet woodland surrounded by poor fen and wet grassland.<br>A stream flows through the site in a northerly direction. The whole area is very wet due to the presence of numerous springs and seepage areas, arising from run-off from the Sugarloaf on the western side of the site and Kilmurry on the eastern side. | 5.63 |
| Great Sugar Loaf pNHA | 001769 | • A rare liverwort, *Cryptothallus mirabilis*<br>• Heath<br>• Wet Oak woodland known as the Quill | The Great Sugar Loaf is situated about 5 km southwest of Bray. It is a steep mountain, 501 m above sea level, and has been modified greatly by glacial erosion. It stood as a nunatak which was scoured by the Ivernian, Midland and Mountain ice sheets. Its profile thus contrasts with those of a Bray Head and Howth, both over-ridden by ice sheets and flat on top. The main habitats of the site are dry mountain heath and upland grassland. The lower slopes are dominated by Gorse. | 5.44 |
| Vartry Reservoir pNHA | 001771 | • Greylag Geese (*Anser anser*) | The Vartry Reservoir is located to the east of Roundwood, in the upper catchment of the | 7.75 |

| Designated Site | Site Code | Features of Interest | Summary Description of Site | Distance from proposed project (Km) |
|---|---|---|---|---|
| | | • A diversity of habitats, from wetland vegetation to heathland and woodland<br>• Six-stamened Waterwort (*Elatine hexandra*)<br>• Water-purslane (*Lythrum portula*)<br>• Great Crested Grebe (*Podiceps cristatus*)<br>• Little Grebe (*Tachybaptus ruficollis*)<br>• Lapwing (*Vanellus vanellus*)<br>• Teal (*Anas crecca*) | Vartry River. The lower reservoir was constructed in the 1860s and the upper reservoir completed in 1924. Both are owned and managed by Dublin Corporation. The annual fluctuation in water levels is in the order of 4 or 5 metres. Lowest levels are generally reached in September/October, and maximum levels between February and May. With the exception of Poulaphouca Reservoir, Vartry is the largest inland waterway in the southeast of Ireland. | |
| Dargle River Valley pNHA | 001754 | • Red Data Book species, Yellow Archangel (*Lamiastrum galeobdolon*)<br>• A mature oak (*Quercus petraea*) woodland | This site is located about 2 km south-east of Enniskerry. It is a section of the River Dargle with steep wooded banks. At one point along the river a well exposed series of Ordovician volcanic rocks are faulted against well-exposed Bray group Cambrian strata. Such a clear exposed junction is not seen elsewhere in Co. Wicklow.<br>The area is dominated by mature Oak (*Quercus petraea*) woodland, with some Hazel (*Corylus avellana*), Beech (*Fagus sylvatica*), Birch (*Betula* spp.) and Holly (*Ilex aquifolium*). Pockets of mature conifers occur in places. | 8.68 |
| Powerscourt Waterfall pNHA | 001767 | • Steep waterfall,<br>• Rare and scarce flowering plants, ferns, bryophytes and lichens including historic records of Killarney Fern (*Trichomanes speciosum*) and Myxomycete fungus, *Diderma lucidum.* | This site is located at the eastern edge of the Wicklow mountains, about 6 kilometres from Enniskerry. The main feature of the site is a steep waterfall, approximately 100m high, and down which the Dargle River cascades. At the base of the waterfall there is a small corrie and associated small moraines. The waterfall is fringed on both sides by steeply sloping ground covered with a heathy vegetation. | 9.05 |

| Designated Site | Site Code | Features of Interest | Summary Description of Site | Distance from proposed project (Km) |
|---|---|---|---|---|
| Powerscourt Woodland pNHA | 001768 | • Mixed broadleaved woodland<br>• Well-developed fern and moss floras<br>• A rare species of Myxomycete fungus, *Didymium clavus* | Powerscourt Woodland is located about 2 km south-west of Enniskerry. It is largely contained within the two large demesnes of Powerscourt and Charleville, and includes a 4 km stretch of the Dargle River. The topography of the area is rolling hillside sloping down to the river. The site includes some parkland with large specimen trees. Mixed woodland covers most of the site and includes both native and introduced species. | 9.28 |

## 3.2 Brief Description of the European sites within 15 km of the Development

There are no European sites within 1.5 km of the proposed development. Ten European sites are located within 15 km of the proposed development:

- The Murrough Wetlands SAC (site code 002249)
- The Murrough SPA (site code 004186)
- Glen of the Downs SAC (site code 000719)
- Bray Head SAC (site code 000714)
- Carriggower Bog SAC (site code 000716)
- Wicklow Mountains SPA(site code 004040)
- Wicklow Mountains SAC (site code 002122)
- Ballyman Glen SAC (site code 000713)
- Knocksink Woods SAC (site code 000725)
- Rockabill to Dalkey Island (site code 003000)

The full NPWS site synopses for the designated areas are available in Appendix 1. Table 3-4 summarises the details of the European sites, including the qualifying interests, conservation objectives and threats to the sites. Figure 3.1 shows the location of the European sites in relation to the proposed development.

The following summary descriptions are extracted from the NPWS site synopses for each site (www.npws.ie).

The Murrough Wetlands SAC (site code 002249)

The Murrough is a coastal wetland complex which stretches for 15 km from Ballygannon to north of Wicklow town, and in parts, extends inland for up to 1 km. A shingle ridge stretches the length of the site and carries the mainline Dublin-Wexford railway.

On the seaward side of the shingle bank which runs along The Murrough Wetlands SAC site drift line vegetation includes species such as Sea Rocket (*Cakile maritima*), Sea Sandwort (*Honkenya peploides*), Sea-holly (*Eryngium maritimum*) and Yellow Horned-poppy (*Glaucium flavum*). The rare and legally protected Oysterplant (*Mertensia maritima*) (Flora (Protection) Order, 1999) has been recorded on the gravelly shore in the past but is now considered to be extinct from this locality.

Low sand hills occur at Kilcoole, with Marram (*Ammophila arenaria*) and Lyme-grass (*Leymus arenarius*). In other areas and further inland a rich grassy sward, which is most extensive at the south of the site, has developed. Saltmarsh is present within the site in two distinct areas. At the southern end of the site is found Broad Lough. This is a brackish, partly tidal lake, and has a well-developed saltmarsh community which includes Saltmarsh Rush (*Juncus gerardi*), Common Saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Sea Purslane (*Halimione portulacoides*) and Common Scurvygrass (*Cochlearia officinalis*).

Common Reed (*Phragmites australis*) is abundant along the western shore, along with some Sea Club-rush (*Scirpus maritimus*). Saltmarsh is also present in the northern end of the site in the vicinity of The Breaches. Though this has been greatly affected by drainage in the late 1980s and early 1990s. Fen vegetation is well developed in the Murrough wetlands, with both alkaline and calcareous fen with Great Fen-sedge (*Cladium mariscus*) represented. The fens occur mostly between Five Mile Point and Six Mile Point, especially in the townland of Blackditch and also in the Leamore and Grange areas. The rare, Narrow-leaved Marsh-orchid (*Dactylorhiza traunsteineri*) has also been recorded here.

A fine wet woodland occurs at Blackditch. Downy Birch is the dominant species, with some Alder (*Alnus glutinosa*), willows (*Salix* spp.) and Ash (*Fraxinus excelsior*) also present. The ground flora of this wooded area is often quite dense. This wood also contains a rich invertebrate community with at least eight rare or notable species of fly (Order Diptera) occurring, including *Syntormon setosus*, a species unknown elsewhere in Britain or Ireland.

A wide range of freshwater and brackish marsh habitats occur within the site. These vary from reed-marsh dominated by reeds and rushes (*Juncus* spp.), to those of sedges (*Carex* spp.), with other areas supporting a mixture of sedges and Yellow Iris (*Iris pseudacorus*).

This site is of importance as it is the largest coastal wetland complex on the east coast of Ireland. Although much affected by drainage, it still contains a wide range of coastal and freshwater habitats, including six listed on Annex I of the E.U. Habitats Directive, some of which contain threatened plants. Areas on the site contain a rich invertebrate fauna, including several rarities. It is an important site for both wintering and breeding birds and supports a variety of species listed on Annex I of the E.U. Birds Directive.

The Murrough SPA (site code 004186)

The Murrough SPA comprises a coastal wetland complex that stretches for 13 km from Kilcoole Station, east of Kilcoole village in the north to Wicklow town in the south, and extends inland for up to 1 km in places. The site includes an area of marine water to a distance of 200m from the low water mark. A shingle ridge runs along the length of the site and carries the Dublin-Wexford railway line.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Red-throated Diver, Greylag Goose, Light-bellied Brent Goose, Wigeon, Teal, Black-headed Gull, Herring Gull and Little Tern. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The shingle ridge at Kilcoole is a traditional nesting area for Little Tern, and the site now supports one of the largest colonies in the country. Numbers vary between years, with an average of 30 pairs recorded for the four years 1999-2002. In 2005, 100 pairs were recorded here. A tern protection scheme and research programme, co-ordinated by BirdWatch Ireland and the National Parks and Wildlife Service, has been in operation since 1985. Breeding success varies from year to year, largely due to predation by foxes, crows and other species.

During the winter this site is important for a number of waterbirds - all population sizes are the mean of peak counts for the 5 years, 1995/96 – 1999/2000. Light-bellied Brent Goose occurs here in internationally important numbers (859). Other species that visit here in nationally important numbers are Red-throated Diver (32), Greylag Goose (300), Wigeon (1,209), Teal (644), Black-headed Gull (997) and Herring Gull (506). Other species that are known to occur here are Little Grebe, Grey Heron, Cormorant, Mute Swan, Whooper Swan, Greenland White-fronted Goose, Shelduck, Gadwall, Shoveler, Mallard, Golden Plover, Ringed Plover, Lapwing, Dunlin, Curlew, Greenshank and Redshank.

Short-eared Owl is recorded here during the winter. Little Egret has bred locally in recent years and this site is a main feeding area, with several birds present regularly. While formerly a rare bird in Ireland, Little Egret is now well-established with most birds occurring in the south-east and south (Counties Wexford, Waterford and Cork). The Murrough is presently at the edge of the species' range. This site is one of the few sites in Ireland where Reed Warbler breeds regularly. It is considered that 1-4 pairs bred each year during the 1980s and early 1990s, with a minimum of 6 birds in song in 1993. An absence of records since 1996 may be due to under-recording. For some years in the 1980s, Bearded Tit bred - this is the only known site in the country where breeding of this rare species has been proven; there have, however, been no subsequent records.

Kingfisher regularly uses the site. Sandwich Tern are recorded from the site during the autumn. Recent farming and drainage practices and afforestation have greatly reduced the area and quality of the wetlands habitats - the area between Kilcoole and Newcastle is particularly affected. Some levelling of the sand hills near Killoughter has also occurred. Pollution, reclamation and further drainage would adversely affect this site.

The Murrough SPA is an important site for wintering waterbirds, being internationally important for Brent Goose and nationally important for Red-throated Diver, Greylag Goose, Wigeon, Teal, Black-headed Gull and Herring Gull. It is probably the most important site in the country for nesting Little Tern. The regular occurrence of Red-throated Diver, Little Egret, Whooper Swan, Greenland White-fronted Goose, Golden Plover, Little Tern, Sandwich Tern, Short-eared Owl and Kingfisher is of note as these species are listed on Annex I of the E.U. Birds Directive. The site also supports a typical diversity of birds associated with reed swamp, including Reed Warbler, a very localised species in Ireland. The site is also of considerable importance for the wide range of coastal and freshwater habitats that it supports, including several that are listed on Annex I of the E.U. Habitats Directive.

Glen of the Downs SAC (site code 000719)

Glen of the Downs is a semi-natural oak wood situated within an impressive glacial overflow channel. It is located on the Dublin-Wexford road, about 7 km south of Bray, Co. Wicklow. The underlying rock is mostly quartzite and it outcrops in a few places. The soil is a sandy loam, brown earth to brown podzolic, and is very dry over much of the site. Most of the site has been a Nature Reserve since 1980.

Much of the site comprises Sessile Oak (*Quercus petraea*) woodland referable to the Blechno-Quercetum petraeae association. Sessile Oak is especially dominant on the mid to upper slopes. The quality of the Oak-dominated areas is variable - the association is well developed and especially pure on the western side, while in some places it occurs as coppice scrub.

The site includes some areas of mixed woodland, in which Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*), Scots Pine (*Pinus sylvestris*) and other non-native species occur. Bryophytes are notably scarce within the valley and may reflect the dryness of the site. However, some rare species have been recorded. The site is notable for the presence of the rare bryophytes *Cephaloziella turneri*, *Pterigynandrum filiforme* and *Plagiothecium curvifolium*, the last named in its only Irish site. There are also several rare or scarce Myxomycete fungi, namely *Echinostelium colliculosum*, *Licea marginata*, *L. perexigua*, *Perichaena vermicularis*, *Comatricha ellae* (only known Irish site), *Diderma chondrioderma* and *Didymium crustaceum*.

A narrow band of alluvium associated with a small stream occurs on the valley floor. Here, the woodland is dominated by Ash (*Fraxinus excelsior*) and Hazel (*Corylus avellana*), with a species-rich herb layer that includes Ramsons (*Allium ursinum*), Dog Violet (*Viola riviniana*) and Bluebells (*Hyacinthoides non-scripta*).

Glen of the Downs is notable for some rare invertebrates, including *Mycetobia obscura* (Order Diptera) which is found in only one other locality in Britain and Ireland. The rare Wood Warbler has been recorded within the site. Grey Wagtail breeds along the stream.

Although exploited heavily in the past, this woodland is well developed, rich in species and is of high conservation significance. The site supports oak woodland of a type that is listed on Annex II of the E.U. Habitats Directive. The glacial overflow channel is the largest example of such a feature in the country.

Bray Head SAC (site code 000714)

This coastal site is situated in the north-east of Co. Wicklow between the towns of Bray and Greystones. The bedrock geology is Cambrian quartzites and shales (with mudstones and greywackes). Bray Head consists of a plateau of high ground, with five prominent quartzite knolls and has a maximum height of 241 m. The more exposed higher ground has a covering of shallow acidic soils, with protruding bedrock and scree. Elsewhere, deeper soils are formed by drift deposits and are calcareous in character.

Dry heath is the principal habitat over much of Bray Head. The vegetation of the upper plateau area is dominated by dwarf shrubs, mainly Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*) and gorse (*Ulex europaeus* and *U. gallii*). Broom (*Cytisus scoparius*) also occurs, and associated with the gorse and broom is the Red Data Book species Greater Broomrape (*Orobanche rapum-genistae*). The heath communities which occur on the dry slopes above the sea cliffs, especially those south-facing, are more open in character and dominated by grasses rather than dwarf shrubs. An uncommon annual species which can appear abundantly in the heath after a fire event is Yellow Fumitory (*Corydalis claviculata*). Some rare plants are found in this habitat, notably Bird's-foot (*Ornithopus perpusillus*) and Spring Vetch (*Vicia lathyroides*), both Red Data Book species.

Calcareous dry grassland, typically species-rich, occurs on deposits of glacial till. Orchids are a feature of this habitat, with five species known from the area - Pyramidal Orchid (*Anacamptis pyramidalis*), Common Spotted-orchid (*Dactylorhiza fuchsii*), Common Twayblade (*Listera ovata*), Fragrant Orchid (*Gymnadenia conopsea*) and Bee Orchid (*Ophrys apifera*). Bloody Crane's-bill (*Geranium sanguineum*) was re-found recently in this community at Bray Head - this is a typical species of the Burren and associated areas, and is very rare in eastern Ireland.

Rocky sea cliffs, another Annex I habitat, form most of the seaward boundary at this site and extend for approximately 2 km. Steep clay cliffs extend southwards for a further 1 km, with a small area of clay cliff also at the northernmost part of site. The rocky cliffs are divided by a railway track built in the 1800s.

The lower cliffs are fairly steep in places but above the track they are less steep, and often support heath or dry grassland vegetation. In parts the cliffs are up to 60 m in height. The clay cliffs in the southern part of the site are steep and unstable and have little vegetation.

A stand of mostly native woodland occurs in the northern part of the site. This is a fairly pure Sessile Oak (*Quercus petraea*) dominated woodland, with some Ash (*Fraxinus excelsior*) and Downy Birch (*Betula pubescens*). Understorey trees include Holly (*Ilex aquifolium*) and Hawthorn (*Crataegus monogyna*). The wood is on shallow drift and the ground flora often has species more associated with heath than woodland. Other habitats which are found at this site include bedrock shore, a sandy/shingle beach and an area of shallow marine water.

Bray Head has an important seabird colony. A census in 1999 gave the following populations: Fulmar (55 pairs), Shag (8 pairs), Kittiwake (781+ pairs), Guillemots (286 individuals), Razorbills (191 individuals) and Black Guillemots (123 individuals). A few pairs of gulls also breed. Both the Kittiwake and Black Guillemot populations are of national importance. Peregrine Falcon, an Annex I species of the E.U. Birds Directive, breeds at the site, as do Raven and Kestrel. Characteristic bird species of the heath areas include Stonechat, Whitethroat, Linnet and Skylark.

The heath and grassland habitats at this site are threatened by reclamation for agriculture and also by frequent burning. The site is a popular recreational area and is especially used by walkers.

Bray Head is of high conservation importance as it has good examples of two habitats (sea cliffs and dry heath) listed on Annex I of the E.U. Habitats Directive. It also supports a number of rare plant species and has ornithological importance.

Carriggower Bog SAC (site code 000716)

Carriggower Bog is situated on Calary plateau at the eastern edge of the Wicklow Mountains. The site is an area of wet bog and poor fen, flanked by the Vartry River on the south-western side.

The bog was exploited for peat extraction until 100 years ago and the peat cuttings are now flooded. The remaining bog vegetation is characterised by bog moss (Sphagnum spp.) hummocks. Several species of Sphagnum are found including *S. recurvum*. On top of the hummocks Heather (*Calluna vulgaris*) and Cross-leaved Heath (*Erica tetralix*) are dominant. Between the hummocks, in the wet areas, Bog Asphodel (*Narthecium ossifragum*), Bogbean (*Menyanthes trifoliata*) and Common Cottongrass (*Eriophorum angustifolium*) are common, while Purple Moor-grass (*Molinia caerulea*) is locally abundant.

Downy Birch (*Betula pubescens*) and willow (*Salix* spp.) dominate an area of scrub at the centre of the site.

Very wet areas of transition mire occur on the south-western side of the site. The whole area is quaking and is characterised by a mosaic of sedges, grasses and rushes. Bottle Sedge (*Carex rostrata*) is the most abundant sedge, but others include White Sedge (*Carex curta*), Star Sedge (*Carex echinata*) and Carnation Sedge (*Carex panicea*). Purple Moor-grass and Sharp-flowered Rush (*Juncus acutiflorus*) are also present.

This site is of conservation importance because it shows a good transition between fen and bog vegetation (with the fen being colonised by characteristic bog species). Transition mire, which is present at the site, is listed in Annex I of the E.U. Habitats Directive. The area holds a rich and varied flora, and it provides a habitat for some rare invertebrates. Carriggower Bog is the last remaining site in Wicklow from which some of these invertebrates are recorded. It also has ornithological interest, being an important site for Jack Snipe.

Wicklow Mountains SPA(site code 004040)

This is an extensive upland site, comprising a substantial part of the Wicklow Mountains. Most of the site is in Co. Wicklow, but a small area lies in Co. Dublin. The underlying geology of the site is mainly of Leinster granites, flanked by Ordovician schists, mudstones and volcanics. The area was subject to glaciation and features fine examples of glacial lakes, deep valleys and moraines. Most of site is over 300 m, with much ground being over 600 m; the highest peak is Lugnaquillia (925 m). The substrate over much of site is peat, with poor mineral soil occurring on the slopes and lower ground. Exposed rock and scree are features of the site. The predominant habitats present are blanket bog, heaths and upland grassland.

A series of surveys of the Wicklow Mountains SPA indicates that up to 9 pairs of Merlin breed within the site in any one year. Traditionally a ground-nesting species, Merlin in the Wicklow Mountains are usually found nesting in old crows nests in conifer plantations. The open peatlands provide excellent foraging habitat for Merlin with small birds such as Meadow Pipit being their main prey. The cliffs and crags within the site also provide ideal breeding locations for Peregrine (20 pairs in 2002). Other birds of the open peatlands and scree slopes that have been recorded within the site include Ring Ouzel and Red Grouse.

The Wicklow Mountains SPA is of high ornithological importance as it supports nationally important populations of Merlin and Peregrine, both species that are listed on Annex I of the E.U. Birds Directive.

Wicklow Mountains SAC (site code 002122)

Wicklow Mountains SAC is a complex of upland areas in Counties Wicklow and Dublin, flanked by the Blessington reservoir to the west and Vartry reservoir in the east, Cruagh Mountain in the north and Lybagh Mountain in the south. Most of the site is over 300 m, with much ground over 600 m. The highest peak is 925 m at Lugnaquilla. The Wicklow uplands comprise a core of granites flanked by Ordovician schists, mudstones and volcanics. The form of the Wicklow Glens is due to glacial erosion. The topography is typical of a mountain chain, showing the effects of more than one cycle of erosion. The massive granite has weathered characteristically into broad domes. Most of the western part of the site consists of an elevated moorland, covered by peat. The surrounding schists have assumed more diverse outlines, forming prominent peaks and rocky foothills with deep glens. The dominant topographical features are the products of glaciation. High corrie lakes, deep valleys and moraines are common features of this area. The substrate over much of the area is peat, usually less than 2 m deep. Poor mineral soil covers the slopes, and rock outcrops are frequent. The Wicklow Mountains are drained by several major rivers including the Dargle, Liffey, Dodder, Slaney and Avonmore. The river water in the mountain areas is often peaty, especially during floods.

The vegetation over most of Wicklow Mountains SAC is a mosaic of heath, blanket bog and upland grassland (mostly on peaty soil, though some on mineral soil), stands of dense Bracken (*Pteridium aquilinum*), and small woodlands mainly along the rivers. Mountain loughs and corrie lakes are scattered throughout the site.

Wicklow Mountains is important as a complex, extensive upland site. It shows great diversity from a geomorphological and a topographical point of view. The vegetation provides examples of the typical upland habitats with heath, blanket bog and upland grassland covering large, relatively undisturbed areas. In all, eleven habitats listed on Annex I of the E.U. Habitats Directive are found within the site. Several rare or protected plant and animal species occur, adding further to its value.

Ballyman Glen SAC (site code 000713)

Ballyman Glen is situated approximately 3 km north of Enniskerry and straddles the County boundary between Dublin and Wicklow. It is orientated in an east-west direction with a stream running through the centre. The glen is bounded mostly by steeply sloping pasture with Gorse (*Ulex europaeus*) and areas of wood and scrub.

Ballyman Glen contains a small strip of alkaline fen which is associated with petrifying spring/seepage areas that have given rise to thick deposits of marl. Associated with the fen, and also with the woodland elsewhere in the site, are petrifying springs. These lime-encrusted seepage areas are rich in bryophytes including such diagnostic species as *Cratoneuron commutatum* and *C. filicinum*. Wet woodland and scrub occur along the margins of the stream for most of the length of the glen, extending outwards in areas to create inaccessible and species-rich patches of woodland. There is an area of broadleaved woodland on the steeper southern slopes of the glen.

The fen vegetation at this site is well developed, with an unusually large number of sedge species present. The presence of alkaline fen and of petrifying spring/seepage areas is also particularly notable, as these habitats are listed, the latter with priority status, on Annex I of the E.U. Habitats Directive. Fens are rare in Wicklow and Dublin, and this is one of only two sites in Wicklow for the Narrow-leaved Marsh-orchid.

Knocksink Woods SAC (site code 000725)

Knocksink Wood is situated in the valley of the Glencullen River, just north-west of Enniskerry in Co. Wicklow. The fast flowing Glencullen River winds its way over granite boulders along the valley floor. The steep sides of the valley are mostly covered with calcareous drift, and support extensive areas of woodland.

Some of the slopes of Knocksink Wood are dominated by Sessile Oak (*Quercus petraea*), with a sparse shrub layer of Holly (*Ilex aquifolium*) and Hazel (*Corylus avellana*). A notable feature of the wooded slopes are the frequent and extensive springs and seepage areas, and there is tufa formation in several places. Bryophytes are abundant in some areas, and species include *Cratoneuron filiciinum*, *Palustriella commutata*, *P. falcata* and *Leiocolea turbinata*. Associated vascular plant species include Golden-saxifrage (*Chrysosplenium oppositifolium*), Water-cress (*Nasturtium officinale*) and Great Horsetail (*Equisetum telmateia*).

Associated with the springs and the river are stands of wet alluvial forest. These areas are dominated by Ash and Alder (*Alnus* spp.), and are assigned to the group Carici remotae-Fraxinetum. Other species which occur include willows (*Salix* spp.), Downy Birch (*Betula pubescens*) and Hazel. A number of scarce or rare plants occur within the site including Blue Fleabane (*Erigeron acer*), Ivy-leaved Bellflower (*Wahlenbergia hederacea*) and Yellow Archangel (*Lamiastrum galeobdolon*).

The importance of this site lies in the diversity of woodland habitats which occur. Two habitats listed in Annex I of the E.U. Habitats Directive, both with priority status, occur at this site (petrifying springs and alluvial woodland). The presence of rare or threatened plants and invertebrates adds to the interest. Much of this site has been designated a Statutory Nature Reserve and there is an educational centre within the site.

Rockabill to Dalkey Island SAC (site code 003000)

This site includes a range of dynamic inshore and coastal waters in the western Irish Sea. These include sandy and muddy seabed, reefs, sandbanks and islands. This site extends southwards, in a strip approximately 7 km wide and 40 km in length, from Rockabill, running adjacent to Howth Head, and crosses Dublin Bay to Frazer Bank in south Co. Dublin. The site encompasses Dalkey, Muglins and Rockabill islands.

Reef habitat is uncommon along the eastern seaboard of Ireland due to prevailing geology and hydrographical conditions. Expansive surveys of the Irish coast have indicated that the greatest resource of this habitat within the Irish Sea is found fringing offshore islands which are concentrated along the Dublin coast. These reefs are subject to strong tidal currents with an abundant supply of suspended matter resulting in good representation of filter feeding fauna such as sponges, anemones and echinoderms.

The area selected for designation represents a key habitat for the Annex II species Harbour Porpoise within the Irish Sea. Population survey data show that porpoise occurrence within the site boundary meets suitable reference values for other designated sites in Ireland. The species occurs year-round within the site and comparatively high group sizes have been recorded. The site also supports Common Seal and Grey Seal, Bottle-nosed Dolphins has also occasionally been recorded in the area. A number of other marine mammals have been recorded in this area including Minke, Fin and Killer Whales and Risso's and Common Dolphins

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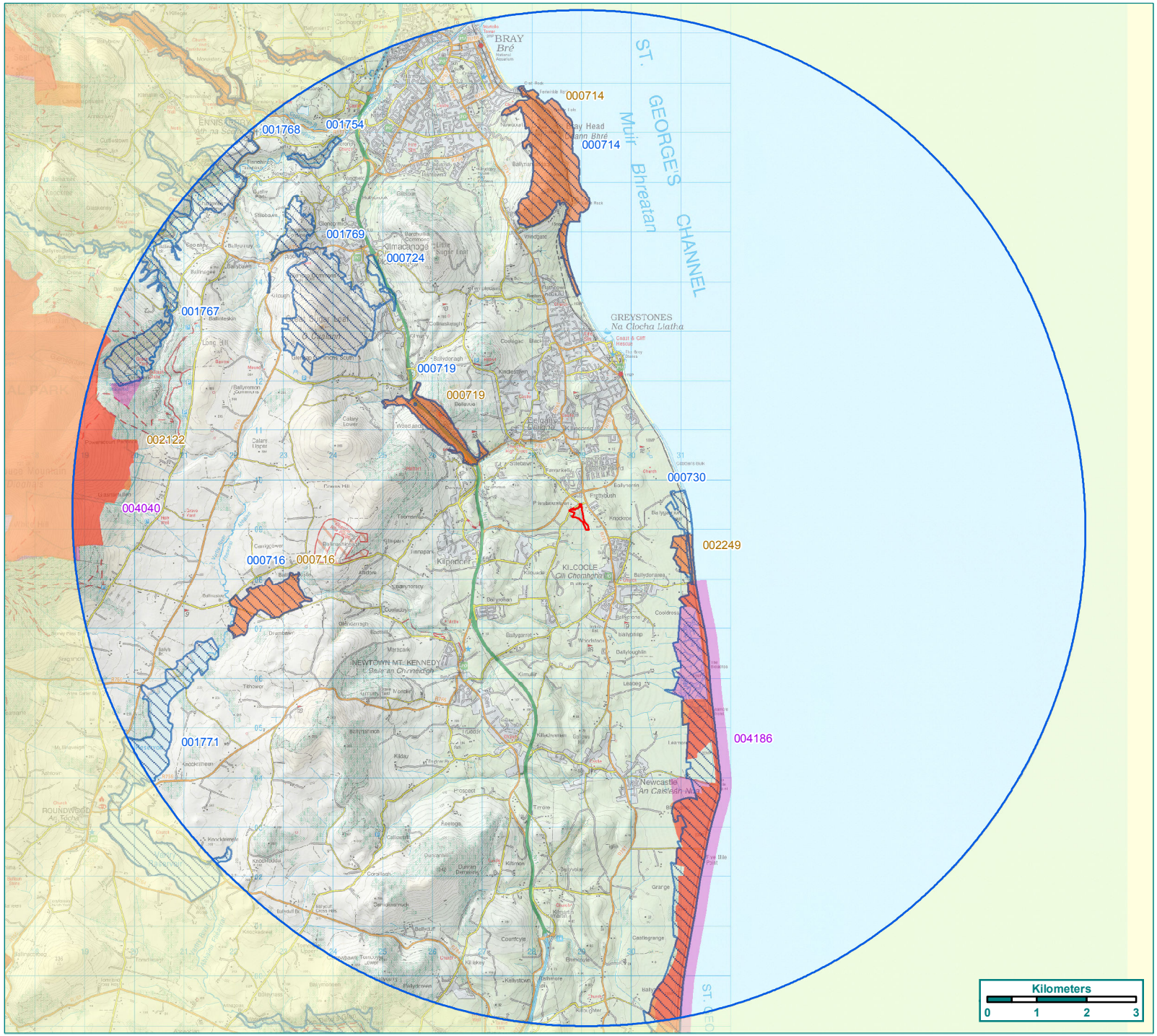


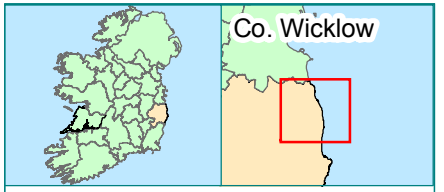


## Legend

- Study Boundary
- 10km Buffer of Study Boundary
- Natural Heritage Areas
- Proposed Natural Heritage Areas
- Special Areas of Conservation
- Special Protection Areas

**Special Protection Areas**

004040, Wicklow Mountains SPA
004186, The Murrough SPA

**Special Areas of Conservation**

000714, Bray Head SAC
000716, Carriggower Bog SAC
000719, Glen Of The Downs SAC
002122, Wicklow Mountains SAC
002249, The Murrough Wetlands SAC

**Proposed Natural Heritage Areas**

000714, Bray Head
000716, Carriggower Bog
000719, Glen Of The Downs
000724, Kilmacanoge Marsh
000730, The Murrough
001754, Dargle River Valley
001767, Powerscourt Waterfall
001768, Powerscourt Woodland
001769, Great Sugar Loaf
001771, Vartry Reservoir
004040, Wicklow Mountains SPA
004186, The Murrough SPA

Date 15/10/2015

Name Of Client

Wicklow County Council

Name Of Job

Waste Licence, Planning & EIS for Waste Soils Recovery Facility

Title Of Figure

Designated Sites within 10 km of the Proposed Development

Scale Used 1:110,000 @ A4

Figure No. 3.1

Rev A

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## Table 3-4: The Characteristics of the European Sites within 15km of the proposed Pretty Bush Waste Soils Recovery Facility and Eco-park

| Designated Site | Qualifying Interests | Conservation Objectives | Threats | Distance from Proposed Project |
|---|---|---|---|---|
| The Murrough Wetlands cSAC (002249) | • Annual vegetation of drift lines [1210]<br>• Perennial vegetation of stony banks [1220]<br>• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]<br>• Mediterranean salt meadows (*Juncetalia maritimi*) [1410]<br>• Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] *<br>• Alkaline fens [7230] | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected. | Recent farming and drainage practices and afforestation have greatly reduced the area and quality of the wetlands habitats - the area between Kilcoole and Newcastle is particularly affected. In 1997 there was some levelling of the sand hills below Killoughter station. Pollution, reclamation and further drainage would adversely affect this site. | 1.96 Km |
| Glen of the Downs cSAC (000719) | • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected. | Threats include invasive species, the construction of the N11 motorway, grazing, a golfcourse near the site, attraction park, conifer plantation, walking, horse riding and non-motorised vehicles. | 2.18 Km |
| The Murrough SPA (004186) | • Red-throated Diver (*Gavia stellata*) [A001]<br>• Greylag Goose (*Anser anser*) [A043] | To maintain or restore the favourable conservation condition of the wetland habitat at The Murrough SPA as a resource for | Recent farming and drainage practices and afforestation have greatly reduced the area and quality of the wetlands habitats - the area between Kilcoole and Newcastle is particularly affected. Some levelling of the sand hills near Killoughter has also occurred. Pollution, reclamation and further drainage would adversely affect this site. | 2.65 Km |

| Designated Site | Qualifying Interests | Conservation Objectives | Threats | Distance from Proposed Project |
|---|---|---|---|---|
| | • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]<br>• Wigeon (*Anas penelope*) [A050]<br>• Teal (*Anas crecca*) [A052]<br>• Black-headed Gull (*Chroicocephalus ridibundus*) [A179]<br>• Herring Gull (*Larus argentatus*) [A184]<br>• Little Tern (*Sterna albifrons*) [A195]<br>• Wetland and Waterbirds [A999] | the regularly-occurring migratory waterbirds that utilise it. | | |
| Bray Head cSAC (000714) | • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]<br>• European dry heaths [4030] | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected. | The heath and grassland habitats at this site are threatened by reclamation for agriculture and also by frequent burning. The site is a popular recreational area and is especially used by walkers. | 4.42 Km |
| Carriggower Bog cSAC (000716) | • Transition mires and quaking bogs [7140] | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected. | Threats include the hand cutting of peat, grazing, roads and the planting of conifer plantation. | 5.62 Km |

| Designated Site | Qualifying Interests | Conservation Objectives | Threats | Distance from Proposed Project |
|---|---|---|---|---|
| Wicklow Mountains SPA (004040) | • Merlin (*Falco columbarius*) [A098]<br>• Peregrine (*Falco peregrinus*) [A103] | To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. | The most common land use is traditional sheep grazing, but others include turf cutting, mostly hand-cutting but some machine-cutting also occurs. These activities are largely confined to the Military Road, where there is easy access. Large areas which had been previously hand-cut and are now abandoned are regenerating. In the last 40 years, forestry has become an important land use in the uplands, and has affected both the wildlife and the hydrology of the area. Amenity use is very high, with Dublin city close to the site. Peat erosion is frequent on the peaks. This may be a natural process, but is likely to be accelerated by activities such as grazing. | 8.98 Km |
| Wicklow Mountains cSAC (002122) | • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]<br>• Natural dystrophic lakes and ponds [3160]<br>• Northern Atlantic wet heaths with *Erica tetralix* [4010]<br>• European dry heaths [4030]<br>• Alpine and Boreal heaths [4060]<br>• Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] *<br>• Blanket bogs (* if active bog) [7130] | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected. | Threats include paths, tracks, cycling tracks; conifer plantation; peat extraction; loam and clay pits; and grazing. | 8.99 Km |

| Designated Site | Qualifying Interests | Conservation Objectives | Threats | Distance from Proposed Project |
|---|---|---|---|---|
| | • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110]<br>• Calcareous rocky slopes with chasmophytic vegetation [8210]<br>• Siliceous rocky slopes with chasmophytic vegetation [8220]<br>• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]<br>• *Lutra lutra* (Otter) [1355] | | | |
| Ballyman Glen cSAC (000713) | • Petrifying springs with tufa formation (Cratoneurion) [7220] *<br>• Alkaline fens [7230] | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected. | An area of land that slopes towards the fen has been used as a landfill site for domestic refuse. The site is also used for a clay pigeon shoot and shattered clay pigeons are scattered throughout the area. | 10.43 Km |
| Knocksink Woods cSAC (000725) | • Petrifying springs with tufa formation (Cratoneurion) [7220] *<br>• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] * | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected. | Threats include forest exploitation without replanting or natural regrowth; interpretative centres; improved access to site; disposal of household / recreational facility waste; removal of forest undergrowth; camping and caravans; paths, tracks, cycling tracks; walking, horseriding and non-motorised vehicles; and grazing. | 10.79 Km |
| Rockabill to Dalkey Island cSAC (003000) | • Reefs [1170] | To maintain the favourable conservation | Threats include noise nuisance, noise pollution; utility and service lines; shipping lanes; siltation rate changes, dumping, depositing of dredged; discharges; | 14.14 KM |

| Designated Site | Qualifying Interests | Conservation Objectives | Threats | Distance from Proposed Project |
|---|---|---|---|---|
| | • *Phocoena phocoena* (Harbour Porpoise) [1351] | condition of Reefs and Harbour Porpoise in Rockabill to Dalkey Island SAC, which is defined by a list of attributes and targets outlined in the conservation objective report. | fishing and harvesting aquatic resources; and removal of sediments (mud, etc). | |

* denotes a priority habitat

## 3.3 Conservation Objectives

According to the Habitat's Directive, the *conservation status of a natural habitat* will be taken as 'favourable' within its biogeographic range when:

- its natural range and areas it covers within that range are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable as defined below.

According to the Habitat's Directive, the conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' within its biogeographic range when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The specific conservation objectives for each site are available on www.npws.ie. These have been accessed for the sites listed in table 3-2 above on the [4th July 2016].

Site specific and more detailed conservation objectives were available for only one European Site namely, Rockabill to Dalkey Island SAC:

- Rockabill to Dalkey Island SAC (003000) Great NPWS (2013) Conservation Objectives: Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. 07th May 2013

The following conservation objectives supporting documents have been produced for Rockabill to Dalkey Island SAC (site code: 3000):

- Rockabill to Dalkey Island SAC (site code: 3000) Conservation objectives supporting document - marine Habitats and Species – [Version 1] - April 2013

Generic conservation objective reports are available for nine European Sites listed below. All of these generic conservation objectives reports were published on the 13th February 2015.

- Bray Head SAC (site code 000714)
- Wicklow Mountains SPA (site code 004040)
- Wicklow Mountains SAC (site code 002122)
- Carriggower Bog SAC (site code 000716)
- The Murrough SPA (site code 004186)
- The Murrough Wetlands SAC (site code 002249)
- Glen of the Downs SAC (site code 000719)
- Knocksink Woods SAC (site code 000725)
- Ballyman Glen SAC (site code 000713)

Management plans were not available for any sites. However, Wicklow Mountains SAC (site code 002122) were covered under the Management Plan for Wicklow Mountains National Park 2005-2009

## 3.4 Summary of Main Characteristics of the Project

A summary of the main characteristics of the proposed Pretty Bush Waste Soils Recovery Facility and Eco-park are described below.

### Table 3-5: Summary of Main Characteristics of the Project

| ***Size, scale, area, land-take*** | **The development is not located within any Natura 2000 Site.** |
|---|---|
| *Details of physical changes that will take place during the various stages of implementing the proposal* | The development is not located within any Natura 2000 Site.<br><br><u>Proposed development</u><br>It is proposed to utilise this site of the deposition of 200,000 tonnes of riverbed material, mainly silt, clay and gravel arising from the flood defence works being carried on the River Dargle in Greystones. The total area to be infilled is approximately 47,650 sq.m. upon completion of the placement of riverbed spoil material, the site will be developed into an Eco-Park that will provide long term environmental and social benefits and recreational amenity for the local community.<br><br>The proposed works will comprise:<br>• Clearance of vegetation from the existing site and chipping/shredding of vegetation prior to movement offsite for appropriate management<br>• Redevelopment of existing entrance, incorporating boundary treatment<br>• Placement of up to 200,000 tonnes of dredge spoil at the site<br>• Installation of temporary (construction period) and longer term surfacewater management infrastructure<br>• Access improvement works on the L1042 at the site entrance<br>• Importation and placement of topsoil to facilitate Eco-park planting<br>• Development of Pretty Bush Eco-park features including looped walking tracks, nature trails, waymarkers and information signage |
| *Description of resource requirements for the construction/operation and decommissioning of the proposal (water resources, construction material, human presence etc.)* | <u>Construction period</u><br><br>The construction phase of the proposed project shall involve the following elements:<br>• Clearance of vegetation from the existing site and chipping/shredding of vegetation prior to movement offsite for appropriate management<br>• Redevelopment of existing entrance, incorporating boundary treatment to include new gates and 8 no. car-parking spaces and Wicklow County Council chippings yard with associated long term drainage<br>• Placement of up to 200,000 tonnes of dredge spoil at the site to pre-determined contour levels<br>• Installation of temporary (construction period) and longer term surfacewater management infrastructure<br>• Access improvement works on the L1042 at the site entrance<br>• Importation and placement of topsoil to facilitate Eco-park planting<br>• Development of Pretty Bush Eco-park features including looped walking tracks, nature trails, waymarkers and information signage |

| *Size, scale, area, land-take* | **The development is not located within any Natura 2000 Site.** |
|---|---|
| | Operational period<br><br>The operational phase of the development shall require minimal maintenance including the collect of rubbish at the site and landscaping works (the mowing of the wildflower meadow).<br><br>Decommissioning shall not be required. The Eco-park shall remain as a permanent community recreational outlet. |
| *Description of timescale for the various activities that will take place as a result of implementation (including likely start and finish date)* | It is estimated that the site clearance works, the dredge spoil placement works and the Pretty Bush Eco-park development will occur over a 12 - 24-month period, dependent on progression of the River Dargle Flood Defence Works and considering potential seasonal ecological constraints that may apply.<br><br>This project will be sequenced, so the degree of activity will vary over the period of construction and consequently, the number of people employed on site will vary with progress. The works will be progressed during normal working hours. |
| *Description of wastes arising and other residues (including quantities) and their disposal* | • Dredge material approximately 200,000 tonnes of inert soil shall be deposited within the site.<br>• Construction waste: fuel, chemicals associated with construction, wastewater, solid waste.<br>• Subsoil and suitable excavated soil to be reused for landscaping<br>• Vegetative wastes shall be generated during site clearance works at an estimated quantity of 5,000 to 8,000 tonnes |
| *Identification of wastes arising and other residues (including quantities) that may be of particular concern in the context of the Natura 2000 network* | • Fuel waste<br>• Dredge material soil to be infilled within the site<br>• Vegetation currently growing within the site to be cleared/cut prior to the infilling works. |
| *Description of any additional services required to implement the project or plan, their location and means of construction* | • Refuelling, chemical spillage or other polluting substance associated with construction. |

## 3.5 Screening Assessment Criteria

Throughout this section the line items in *italics* refer to suggested instructions for information to be contained in a screening assessment, and in an appropriate assessment from the guidance document '*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, 2001). The standard 'Screening Matrix' and 'Finding of No Significant Effects Report Matrix' in Annex 2 of this guidance document are also followed.

In considering whether the proposed development, by itself or in combination with other plans and projects, has the potential to affect the conservation objectives of the designated sites within 15 km of the proposed development, the following documents were considered:

- Wicklow County Development Plan 2010–2016
- Draft Wicklow County Development Plan 2016-2022
- Greystones-Delgany & Kilcoole Local Area Plan 2013–2019

- Wicklow County Council Online Planning Query System http://wicklow.maps.arcgis.com/apps/webappviewer/index.html
- Previously permitted projects in the vicinity of the development
- Proposed projects in the vicinity of the development

### Table 3-6: Assessment of the Potential Impact of the Proposed Project either Alone or in Combination with Other Plans or Projects on Natura 2000 Sites

| ***Assessment criteria*** | |
|---|---|
| *Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 sites.* | The individual elements of the proposed development that *could* give rise to impacts on European (Natura 2000) sites are:<br>• Potential for pollutants or dredge material (sediment) to enter the two unnamed ephemeral streams within the site and flow into European Sites downstream of the project area during infilling.<br>• Disturbance and displacement impacts on birds due to an impact of habitats or prey items within the Murrough SPA (004186). |
| *Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of:*<br>▪ *Size and scale;*<br>▪ *Land-take;*<br>▪ *Distance from Natura 2000 site or key features of the site;*<br>▪ *Resource requirements;*<br>▪ *Emissions;*<br>▪ *Excavation requirements;*<br>▪ *Transportation requirements;*<br>▪ *Duration of construction, operation etc.;*<br>▪ *Other.* | **Predicted Impacts:** *A potential cumulative impact on water quality during the construction phase (infilling works). A neutral impact on water quality locally during the operational phase*. A cumulative impact arises from incremental changes caused by other past, present or reasonably foreseeable actions together with the proposed development. The surrounding environment is dominated by residential properties and agricultural grassland.<br><br>The main potential impacts and threats to the regions ecological resources is the impact of agricultural practises as well as commercial, industrial and residential development and associated pressures on ecological resources including water quality and habitat loss. The deposition of chemicals, domestic and industrial waste into watercourse can have a negative effect on the water quality of watercourses further downstream in Kilcoole Marsh i.e. the Murrough cSAC and SPA.<br><br>Vegetation clearance, drainage and habitat loss associated with the management of land for agricultural practises (grazing, fertilisation, etc.) as well as the development of road infrastructure, residential properties and commercial development.<br><br>**Size and scale, land-take and distance from Natura 2000 sites**<br><br>**Predicted Impacts:** *Indirect impact on water quality.* As the project is not located within any European site, there will be no direct impact as a result of the size and scale of the project. There will be no direct habitat removal (land take) from any European site as a result of the project.<br><br>There are downstream hydrological links between the proposed project and two European sites namely the Murrough SPA and the Murrough Wetlands SAC. The cSAC and SPA are located at direct distances of c. 1.96 km and c. 2.65 km from the proposed site respectively.<br><br>The eight other European sites (Bray Head SAC, Wicklow Mountains SPA, Wicklow Mountains SAC, Carriggower Bog SAC, Glen of the Downs SAC, Knocksink Woods SAC and Ballyman Glen SAC) are not hydrologically connected to the proposed project site. There is no direct link between these eight European sites and the development site and therefore an indirect impact is not envisaged. |

| *Assessment criteria* | |
|---|---|
| | Once the deposition of dredge material has been completed the site shall be landscaped to develop an Eco-park. Once the dredge material has revegetated a potential impact on water quality shall be significantly reduced. No impact is envisaged during the operational phase of the proposed Eco-park.<br><br>**Resource requirements and Excavation requirements**<br><br>**Predicted Impacts:** *Indirect impact on water quality and potential habitat alteration during the construction phase.* Approximately 200,000 tonnes of inert dredge material shall be deposited within the proposed site. There is a potential risk of pollution or siltation through spillages/contaminated runoff to the two ephemeral streams within the site particularly during periods of high precipitation during the infilling of the site with dredge material. Fuels oils and other hydrocarbons as well as concrete could also without proper mitigation measures be discharged into the adjacent streams flow into Murrough SPA and the Murrough Wetlands SAC downstream of the development site. Based on the precautionary principal principle it is best practise to include mitigation measures to reduce the likelihood of this potential impact.<br><br>The eight other European sites (Bray Head SAC, Wicklow Mountains SPA, Wicklow Mountains SAC, Carriggower Bog SAC, Glen of the Downs SAC, Knocksink Woods SAC and Ballyman Glen SAC) are not hydrologically connected to the proposed project site. There is no direct link between these eight European sites and the development site and therefore an indirect impact is not envisaged.<br><br>**Emissions**<br><br>**Predicted Impacts:** *None.*<br><br>Silt laden water from the deposition area could be discharged into the adjacent streams and flow into the Murrough SPA and the Murrough Wetlands SAC downstream of the proposed site.<br><br>The eight other European sites (Bray Head SAC, Wicklow Mountains SPA, Wicklow Mountains SAC, Carriggower Bog SAC, Glen of the Downs SAC, Knocksink Woods SAC and Ballyman Glen SAC) are not hydrologically connected to the proposed project site. There is no direct link between these eight European sites and the development site and therefore an indirect impact is not envisaged<br><br>**Transportation requirements,**<br>**Predicted Impacts:** *None.*<br><br>Access to the site is already provided from the L5542 local road running immediately north of the proposed site. As the project is not located within the boundary of any European site, no direct impacts by way of transportation requirements are predicted.<br><br>**Duration of Construction and Operation**<br>**Predicted Impacts:** *None.* Duration of construction is anticipated to be approximately 24 months. The duration of operational phase (the Eco-park) will be ongoing for the foreseeable future. |

| ***Assessment criteria*** | |
|---|---|
| *Describe any likely changes to the site arising as a result of:*<br>▪ *Reduction of habitat area;*<br>▪ *Disturbance of key species;*<br>▪ *Habitat or species fragmentation;*<br>▪ *Reduction in species density;*<br>▪ *Changes in key indicators of conservation value;*<br>▪ *Climate change.* | **Predicted Impacts:** *Potential impact in relation to water quality during the construction phase of the development.*<br><br><u>Construction phase</u><br><br>There will be no direct reduction in habitat area within any European site as a result of the project. There is the potential for habitat alteration due to the ingress of sediment and/or pollutants within the Murrough SPA and the Murrough Wetlands SAC downstream of the proposed site. The Murrough SPA and the Murrough Wetlands SAC are located 3.35 and 3.5 river kilometres[4] downstream of the proposed project respectively. However, based on the precautionary principle it is best practise to include mitigation measures to further reduce the likelihood of this potential impact.<br><br>The Murrough SPA is designated for eight bird species of conservation interest along with Wetland and Waterbirds [A999]. The Murrough Wetlands SAC is designated for six Annex I habitat types only and no species of fauna. There is a large degree of overlap between both of these European sites which extend along the coastline between Kilcoole train station and the mouth of the Vantry River in Wicklow Town.<br><br>An alteration or degradation of water quality or habitats within the Murrough SPA could result the potential disturbance and/or displacement of species of conservation interest.<br><br>The Murrough SPA, located c. 2.65 km to the south east, is the closest European site with species of conservation interest. The next closest site is Wicklow Mountains SPA (004040), at a distance of 8.98 km, is designated for merlin (*Falco columbarius*) and peregrine (*Falco peregrinus*). Given the distance to these sites it is not envisaged that the increased levels of human activity and noise during the construction phase of the development shall result in negative impact to European sites.<br><br>There will be no habitat or species fragmentation as a result of the proposed development. As discussed under 'size and scale and land-take' above, there will be no direct impacts on habitats within any Natura 2000 site.<br><br><u>Operational phase</u><br><br>Once the deposition of dredge material has been completed the site shall be landscaped to develop an Eco-park. Once the dredge material has revegetated a potential impact on water quality shall be significantly reduced. No impact is envisaged during the operational phase of the proposed Eco-park. |
| *Describe any likely impacts on the Natura 2000 site as a whole in terms of:*<br>▪ *Interference with the key relationships that define the structure of the site;* | The is the potential for impacts on the key relationships that define the structure or function of the other Natura 2000 sites (European sites) considered in this Appropriate Assessment Screening due to an impact to water quality during the construction phase of the proposed development. |

[4] Distance measure along ephemeral streams and Kilcoole Stream to the boundary of the European Sites

| *Assessment criteria* | |
|---|---|
| ▪ *Interference with key relationships that define the function of the site.* | |
| *Provide indicators of significance as a result of the identification of effects set out above in terms of:*<br>▪ *loss,*<br>▪ *fragmentation,*<br>▪ *disruption,*<br>▪ *disturbance,*<br>▪ *change to key elements of the site (e.g. water quality etc.).* | As already discussed based on the precautionary principle there may be a significant impact ensuing from the proposed development due to an impact on water quality, habitat alteration and a potential disturbance to bird species of qualifying interest within the Murrough SPA and the Murrough Wetlands SAC. |
| *Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale of magnitude of impacts is not known.* | A potential impact to water quality during the construction phase of the proposed development both alone or in combination with other plans of projects could ensue where the scale of magnitude of impacts is not known. |

## 3.6 Stage One Screening Conclusion

There is the possibility that there could be effects on the Murrough SPA and the Murrough Wetlands SAC as a result of indirect impacts via hydrological links from the proposed development, in the absence of mitigation measures. There is also the possibility of cumulative impacts on water quality as a result of construction impacts from other residential, agricultural and industrial activities within the Murrough SPA and the Murrough Wetlands SAC.

As a result, there is an obligation on the competent authority to carry out an Appropriate Assessment (i.e., Stage Two of the AA process) and, in this context, a Natura Impact Statement has been completed by the Client in respect two European sites, namely:

- The Murrough Wetlands SAC (002249)
- The Murrough SPA (004186)

There shall be no direct impact to the remaining eight European sites. As these sites are located at a remove from the proposed project and there is no biological corridor linking these eight site (i.e. a hydrological link) to the proposed project. No Significant Impact is envisaged. The following list of eight European sites have been 'screening out' within the Stage 1: Appropriate Assessment Screening Report and do not require further study within the Stage 2: Natura Impact Statement:

- Bray Head SAC (000714)
- Wicklow Mountains SPA (004040)
- Wicklow Mountains SAC (002122)
- Carriggower Bog SAC (000716)

- Glen of the Downs SAC (000719)
- Knocksink Woods SAC (000725)
- Ballyman Glen SAC (000713)

# 4 STAGE TWO – NATURA IMPACT ASSESSMENT

## 4.1 Introduction

Stage Two of the Appropriate Assessment process assesses the impact of the project or plan (either alone or in combination with other projects or plans) on the integrity of the European Sites with respect to the conservation objectives and the structure and function of the sites. The European Commission methodological guidance on European Sites states that: "*The integrity of a site involves its ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the site's conservation objectives*" (EC, 2001).

Where it cannot be demonstrated that no adverse effects will occur, it is necessary to devise mitigation measures to avoid, where possible, any adverse effects. Mitigation measures need to be assessed against the adverse effect the project or plan is likely to cause (alone or in combination with other projects or plans). Mitigation should always aspire to the top of the mitigation hierarchy (i.e. avoiding impacts at source) (EC, 2001).

## 4.2 The Conservation Objectives of the Natura 2000 Sites

*'Set out the conservation objectives of the site'*.

The conservation objectives of the European sites concerned are to maintain the favourable conservation status of the key species and habitats for which the sites have been designated. These are laid out in Table 4-1 below.

### Table 4-1: Key Species and Habitats for European Sites Potentially Impacted by the Development

| Designated Site | Conservation Objectives |
|---|---|
| The Murrough Wetlands SAC (002249) | Objective: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the cSAC has been selected.<br>• Annual vegetation of drift lines [1210]<br>• Perennial vegetation of stony banks [1220]<br>• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]<br>• Mediterranean salt meadows (*Juncetalia maritimi*) [1410]<br>• Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] *<br>• Alkaline fens [7230] |
| The Murrough SPA (004186) | Objective: To maintain or restore the favourable conservation condition of the wetland habitat at The Murrough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.<br>• Red-throated Diver (*Gavia stellata*) [A001]<br>• Greylag Goose (*Anser anser*) [A043]<br>• Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]<br>• Wigeon (*Anas penelope*) [A050]<br>• Teal (*Anas crecca*) [A052]<br>• Black-headed Gull (*Chroicocephalus ridibundus*) [A179]<br>• Herring Gull (*Larus argentatus*) [A184]<br>• Little Tern (*Sterna albifrons*) [A195]<br>• Wetlands & Waterbirds [A999] |

## 4.3 Identification of Potentially Significant Impacts

It has been concluded that the proposed Pretty Bush Waste Soils Recovery Facility and Eco-park is likely to have a significant effect, or significant effects cannot be ruled out at this stage, on the following Natura 2000 sites:

- The Murrough Wetlands SAC (002249)
- The Murrough SPA (004186)

When Natura 2000 sites are selected for stage 2 assessment, then all the qualifying features of conservation interest must be included in that stage of the assessment. However, when assessing impact, qualifying features are only considered relevant where a credible or tangible source-pathway-receptor link exists between the proposed development and a protected species or habitat type. In order for an impact to occur there must be a risk initiated by having a 'source' (e.g. nearby watercourse), a 'receptor' (e.g. a protected species associated with aquatic or riparian habitats), and an impact pathway between the source and the receptor (e.g. a watercourse which connects the proposed development site to the site designated for the protection of the aforementioned species). Identifying a risk that could, in theory, cause an impact does not automatically mean that the risk event will occur, or that it will cause or create an adverse impact. However, identification of the risk does mean that there is a latent possibility of ecological or environmental damage occurring, with the level and significance of the impact dependent upon the nature of the risk, the extent of the exposure to the risk and the characteristics of the receptor. Therefore, bearing in mind the scope, scale, nature and size of the project, its location relative to the distribution of the species and habitats listed and the degree of connectedness that exists between the project and the potential receptors, it is considered that not all receptors are within the zone of potential impact of the proposal. An evaluation has been conducted based on these factors and in order to determine which species and habitats are the plausible ecological receptors for potential impacts of the unmitigated proposal. This evaluation is presented in sections 4.3.1, and 4.3.2 of this report. This evaluation determined that certain habitats and species (listed in Tables 4-2 and 4-3 below) should be selected for further evaluation as plausible ecological receptors.

### 4.3.1 The Murrough Wetlands cSAC (Site Code: 002249)

#### *4.3.1.1 Identification of Potentially Significant Impacts to Qualifying Features*

The following table lists the qualifying features of the *Murrough Wetlands cSAC (Site Code: 002249)* and evaluates through a scientific examination of evidence and data whether a significant impact is likely or the impact is unknown and warrants further evaluation within the NIS. The qualifying features that are selected for further evaluation are discussed further in the section followed by an assessment of potentially significant effects arising from the proposed Pretty Bush Waste Soils Recovery Facility and Eco-park.

**Table 4-2: Identification of potentially significant impacts to qualifying features of Murrough Wetlands cSAC (Site Code: 002249)**

| Qualifying Feature of the Murrough Wetlands cSAC (002249) | Potential for Significant Impacts | Rationale |
|---|---|---|
| Annual vegetation of drift lines [1210] | Yes | Downstream connectivity (3.3km). Potential for indirect effects on a qualifying interest of the site. Included based on the precautionary principal. |
| Perennial vegetation of stony banks [1220] | Yes | Downstream connectivity (3.3km). Potential for indirect effects on a qualifying interest of the site. Included based on the precautionary principal. |
| Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] | Yes | Downstream connectivity (3.3km). Potential for indirect effects on a qualifying interest of the site. Included based on the precautionary principal. |

| Qualifying Feature of the Murrough Wetlands cSAC (002249) | Potential for Significant Impacts | Rationale |
|---|---|---|
| Mediterranean salt meadows (*Juncetalia maritimi*) [1410] | Yes | Downstream connectivity (3.3km). Potential for indirect effects on a qualifying interest of the site. Included based on the precautionary principal. |
| Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] * | Yes | Downstream connectivity (3.3km). Potential for indirect effects on a qualifying interest of the site. Included based on the precautionary principal. |
| Alkaline fens [7230] | Yes | Downstream connectivity (3.3km). Potential for indirect effects on a qualifying interest of the site. Included based on the precautionary principal. |

Annual vegetation of drift lines [1210]

This habitat type is described within the interpretation manual for Annex I habitats types (ECDE, 2013) as '*Formations of annuals or representatives of annuals and perennials, occupying accumulations of drift material and gravel rich in nitrogenous organic matter (Cakiletea maritimae p.)*.' This type of vegetation occurs on sandy, shingle or stony substrate at the upper part of the strand, around the high tide mark. Water-borne material including organic matter is deposited on the shore and provides nutrients and a seed source for vegetation. The vegetation predominantly consists of annual species, such as *Atriplex* species, *Cakile maritima* and *Salsola kali*, which are highly specialised to deal with the harsh conditions of high salinity, wind exposure and drought. This habitat is generally very species-poor, fragmented and tends not to occupy large areas due to its narrow, linear nature. It exists in a state of instability and may be absent in some years due to natural and/or anthropogenic causes. In Ireland, the habitat includes drift line vegetation on sandy substrates as well as drift line vegetation dominated by annuals found on shingle (NPWS, 2013).

The overall assessment of Conservation Status in Ireland is considered to be 'Inadequate' with an overall trend in Conservation Status classified as 'Declining' (NPWS, 2013).

Perennial vegetation of stony banks [1220]

Perennial vegetation of the upper beaches of great shingle banks, formed by *Crambe maritima*, *Honkenya peploides* and other perennial species. A wide range of vegetation types may be found on large shingle structures inland of the upper beach. On more mature, stable, shingle coastal forms of grassland, heath and scrub vegetation may develop. Some areas of unusual vegetation dominated by lichens and bryophytes are found on more mature shingle (ECDE, 2013).

The overall assessment of Conservation Status in Ireland is considered to be 'Inadequate' with an overall trend in Conservation Status classified as 'Stable' (NPWS, 2013).

Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]

Salt meadows of Baltic, North Sea, English Channel and Atlantic shores. *Aster tripolium* can be present or abundant in most subdivisions (ECDE, 2013). The following description has been extracted from the NPWS publication '*The Status of EU Protected Habitats and Species in Ireland. Habitat Assessments Volume 2. NPWS (2013). Version 1.0. Unpublished Report*'.

'*Atlantic salt meadows generally occupy the widest part of the saltmarsh gradient. They also contain a distinctive topography with an intricate network of creeks and salt pans occurring on the medium to large sized saltmarshes. Atlantic salt meadows contain several distinctive zones that are related to elevation and submergence frequency. The lowest part along the tidal zone is generally dominated by common saltmarsh-grass (Puccinellia maritima) with species like glasswort (Salicornia spp.), annual sea-blite (Suaeda maritima) and lax-flowered sea-lavender (Limonium humile) also important.*

*The invasive common cordgrass (Spartina anglica) can be locally abundant in this habitat. The mid marsh zones are generally characterised by thrift (Armeria maritima) and or sea plantain (Plantago maritima).*

*This zone is generally transitional to an upper marsh herbaceous community with red fescue (Festuca rubra), saltmarsh rush (Juncus gerardii) and creeping bent (Agrostis stolonifera). This habitat is also important for other wildlife including wintering waders and wildfowl. Atlantic salt meadows are distributed around most of the coastline of Ireland. The intricate topography of the Irish coastline with many inlets has created an abundance of sites that are sheltered and allow muddy sediments to accumulate, leading to the development of saltmarsh*.'

The overall assessment of Conservation Status in Ireland is considered to be 'Inadequate' with an overall trend in Conservation Status classified as 'Stable' (NPWS, 2013).

Mediterranean salt meadows (*Juncetalia maritimi*) [1410]

Mediterranean salt meadows occupy the upper zone of saltmarshes and usually occur adjacent to the boundary with terrestrial habitats. They are widespread on the Irish coastline, however they are not as extensive as Atlantic salt meadows. The habitat is distinguished from Atlantic salt meadows by the presence of rushes such as sea rush (*Juncus maritimus*) and/or sharp rush (*J. acutus*), along with a range of species typically found in Atlantic salt meadows; including sea aster (*Aster tripolium*), sea purslane (*Atriplex portulacoides*), sea-milkwort (*Glaux maritima*), saltmarsh rush (*J. gerardii*), parsley water-dropwort (*Oenanthe lachenalii*), sea plantain (*Plantago maritima*) and common saltmarsh grass (*Puccinellia maritima*) (NPWS, 2013).

The overall assessment of Conservation Status in Ireland is considered to be 'Inadequate' with an overall trend in Conservation Status classified as 'Stable' (NPWS, 2013).

Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] *

*Cladium mariscus* beds of the emergent-plant zones of lakes, fallow lands or succession stage of extensively farmed wet meadows in contact with the vegetation of the *Caricion davallianae* or other Phragmition species (ECDE, 2013).

This priority habitat type typically occurs where *C. mariscus* stands are in contact with *Caricion davallianae* or other *Phragmition* species. In Ireland, the habitat often occurs where monodominant or species-poor stands of *C. mariscus* merge with *Schoenetum nigricantis*. The habitat may also occur as transition zones between *C. mariscus* stands and other species-rich alkaline fen vegetation alliances such as *Campylio-Caricetum dioicae*, *Juncetum subnodulosi*. The habitat can occur in the absence of a distinct, dense stand of *C. mariscus* as areas of species-rich alkaline fen vegetation in which *C. mariscus* is dominant. This habitat type is thought to typically occur in occur in lowland topogenous basins associated with limestone groundwater bodies with a karstic or poorly productive flow regime. The habitat can also occur in other calcareous wetland types such as upland and lowland base-rich flushes, along the fringes of calcareous lakes and within turloughs (NPWS, 2013).

The overall assessment of Conservation Status in Ireland is considered to be 'Bad' with an overall trend in Conservation Status classified as 'Unknown' (NPWS, 2013).

Alkaline fens [7230]

Alkaline are described in the Interpretation manual for Annex I habitats as wetlands mostly or largely occupied by peat- or tufa-producing small sedge and brown moss communities developed on soils permanently waterlogged, with a soligenous or topogenous base rich, often calcareous water supply, and with the water table at, or slightly above or below, the substratum. Peat formation, when it occurs, is infra-aquatic (ECDE, 2013).

The overall assessment of Conservation Status in Ireland is considered to be 'Bad' with an overall trend in Conservation Status classified as 'Unknown' (NPWS, 2013).

### 4.3.2 The Murrough SPA (Site Code: 004186)

*4.3.2.1 Identification of Potentially Significant Impacts to Qualifying Features*

The following table lists the qualifying features of the *Murrough SPA (Site Code: 004186)* and evaluates through a scientific examination of evidence and data whether significant impact is likely or the impact is unknown and warrants further evaluation within the NIS. The qualifying features that are selected for further evaluation are discussed further in the section followed by an assessment of potentially significant effects arising from the proposed Pretty Bush Waste Soils Recovery Facility and Eco-park.

An account of each species is given following Table 4-3. Table 4-4 provides a site summary table of the most recent 10 seasons of I-WeBs counts at the North Wicklow Coastal Marshes [0T401], an I-WeBs site encompassed by the Murrough SPA. I-WeBs counts for the eight bird species of conservation interest for the Murrough SPA (Site Code: 004186) are presented within this table.

**Table 4-3: Identification of potentially significant impacts to qualifying features of the Murrough SPA (Site Code: 004186)**

| Qualifying Feature of the Murrough SPA (Site Code: 004186) | Potential for Significant Impacts | Rationale |
|---|---|---|
| Red-throated Diver (*Gavia stellata*) [A001] | Yes | This wintering species would mainly utilise the coastline rather than Kilcoole Marshes. However, based on the precautionary principal the species has been included for further assessment. |
| Greylag Goose (*Anser anser*) [A043] | Yes | Species potentially downstream of the development during the wintering period. |
| Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] | Yes | Species potentially downstream of the development during the wintering period. |
| Wigeon (*Anas penelope*) [A050] | Yes | Species potentially downstream of the development during the wintering period. |
| Teal (*Anas crecca*) [A052] | Yes | Species potentially downstream of the development during the wintering period. |
| Black-headed Gull (*Chroicocephalus ridibundus*) [A179] | Yes | This species could potentially use Kilcoole Marshes downstream of the development. |
| Herring Gull (*Larus argentatus*) [A184] | Yes | This species could potentially use Kilcoole Marshes downstream of the development. |
| Little Tern (*Sterna albifrons*) [A195] | Yes | Species breeds on the shingle shoreline along the coastline downstream of the development. |
| Wetlands & Waterbirds [A999] | Yes | Wetland habitats and waterbirds utilising these habitats lie downstream of the site in Kilcoole Marsh. |

Red-throated Diver (*Gavia stellata*) [A001]

Red-throated diver is an Annex I species under the Birds Directive. Breeding red-throated diver is also Amber-listed of Medium Conservation Concern according to the Birds of Conservation Concern in Ireland list (BOCCI, Colhoun and Cummins, 2013). Very few pairs of red-throated diver breed in Ireland and these are restricted to Co. Donegal. The Irish breeding population is small: six pairs breed in 2010 (Balmer *et al*. 2013). Ireland is the most southerly breeding location in the species' range, with most of the northwest European population breeding in northern Russia, Scandinavian, Iceland and Scotland (Birdwatch Ireland, 2016).

The North Wicklow coast marshes which includes the Murrough SPA is one of seven nationally important sites for wintering red-throated divers. The six other sites include Wexford Bay (Co. Wexford), Tramore (Co. Waterford), Ballinskelligs Bay (Co. Kerry), the Mullet Peninsula (Co. Mayo), Lough Swilly (Co. Donegal) and Belfast Lough (Co. Down). Red-throated divers start to arrive in Ireland from their northern breeding grounds in September and winter numbers peak in January and February. During the winter they are well distributed around the Irish coastline and are typically associated with shallow sandy bays. In winter red-throated diver are common within the sea along the coastline from Kilcoole railway station to the 'breaches' and further south.

A review of I-Webs data for the period 2009/10 - 2013/14 indicates a peak number of 115 individuals in 2011/12. This equates to approximately 5.75% of the national population and 0.04% of the international population. The mean number recorded over the same period was 72 individuals (3.6% of the national population and 0.024% of the international population).

Greylag Goose (*Anser anser*) [A043]

In Ireland the population of greylag geese is well scattered, although it is though that most birds are of Icelandic origin occur in eight flocks in north, east and south coast counties between Lough Swilly, Co. Donegal, and the River Suir, Co. Waterford. The other Irish flocks are typically much smaller, and their origin remains unknown (Balmer *et al*. 2013). Of the known wintering sites used by Icelandic birds, feral birds are known to occur at Lough Swilly Lough Neagh in Northern Ireland and a few in the North Wicklow Coastal Marshes (Birdwatch Ireland, 2016). Wintering greylag geese are Amber-listed in Ireland (BOCCI, Colhoun and Cummins, 2013).

Greylag geese used to concentrate more on estuaries, where they fed on the roots of rushes and sedges. Arable farming in Scotland increased during the post- war years, and appeared to coincide with increasing numbers of greylag geese switching to feed on arable farmland. Greylag geese currently feed mostly on cereal stubble and grassland in their wintering areas (Birdwatch Ireland, 2016).

A review of I-Webs data for the period 2009/10 - 2013/14 indicates a peak number of 361 individuals in 2009/10. This equates to approximately 7.22% of the national population and 0.37% of the international population. The mean number recorded over the same period was 316 individuals (6.3% of the national population and 0.32% of the international population). The largest count was recorded in the 2004/05 with 397 individuals recorded (7.94% of the national population and 0.4% of the international population).

Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]

The Canadian light-bellied brent goose winters predominantly in Ireland with the highest densities recorded around estuarine sites (Balmer *et al*. 2013). The species is mostly found on coastal estuaries during the autumn and early winter, and also on grasslands from mid-winter, until departure for the breeding grounds begins in late April. Wintering light-bellied brent geese are Amber-listed in Ireland (BOCCI, Colhoun and Cummins, 2013).

Like all brent goose populations this species is amongst the most resource-specific of all geese; the main food plant is inter-tidal eel-grass *Zostera* spp. Other inter-tidal and coastal vegetation is consumed during the year including green algaes (*Enteromorpha* and *Ulva* spp.) and saltmarshes grasses (e.g. *Puccinellia*). In the non-breeding season there is an increasing tendency for terrestrial grassland feeding (mainly *Agostris* and *Poa*) on farmland and amenity grasslands.

A review of I-WeBs data for the site (presented in Table 4-4) gives unusually low number of the species recorded within the site. One individual was recorded each of the four season from 2006/07 to 2009/10 with no individual recorded in the six remaining season. However, light-bellied brent geese occur at the site in internationally important numbers.

During the 5 years between 1995/96 – 1999/2000 a mean of peak count of 859 was recorded. Flocks greater the 1,000 individual have been recorded within the area (Dempsey and O' Cleary, 2014).

Wigeon (*Anas penelope*) [A050]

Wigeon a Red-listed species of high conservation concern in Ireland (BOCCI, Colhoun and Cummins, 2013), is a common winter visitor to wetlands throughout Ireland from September and April. Wigeon graze on coastal seagrass and algae, particularly on *Zostera* spp. and *Enteromorpha* spp., and also feed regularly on grasslands and cereal crops.

Wintering birds have a widespread distribution in Ireland. The species occurs on coastal marshes, freshwater and brackish lagoons, estuaries, bays. Many on inland wetlands, lakes, rivers and turloughs. The Icelandic breeding component of this population winters mostly in Ireland and western Britain, though some continue on to parts of continental Europe (Birdwatch Ireland, 2016).

A review of I-Webs data for the period 2009/10 - 2013/14 indicates a peak number of 1,602 individuals in 2010/11. This equates to approximately 2.54% of the national population and 0.11% of the international population. The mean number recorded over the same period was 1,119 individuals (1.78% of the national population and 0.07% of the international population). The largest count was recorded in the 2004/05 with 1,746 individuals recorded (2.77% of the national population and 0.12% of the international population).

Teal (*Anas crecca*) [A052]

Teal an amber-listed species of medium conservation concern (BOCCI, Colhoun and Cummins, 2013) is a resident and winter migrant. Most of the Icelandic population of teal winter in Ireland, and also some from Fennoscandia and northern Russia. In winter teal are widespread throughout Britain and Ireland, being found on a variety of coastal and freshwater site from small pools to large estuaries (Balmer *et al*. 2013). Teal feed on small seeds predominately, but *Enteromorpha* sp. and molluscs are also frequently taken. Occasionally feed on chironomid larvae where available, though usually during the summer months. They feed by day where they are safe from shooting.

A review of I-Webs data for the period 2009/10 - 2013/14 indicates a peak number of 582 individuals in 2013/14. This was the largest total over the 10 seasons. This equates to approximately 1.71% of the national population and 0.12% of the international population. The mean number recorded over the same period was 496 individuals (1.46% of the national population and 0.1% of the international population). The largest count was recorded in the 2004/05 with 1,746 individuals recorded (2.77% of the national population and 0.12% of the international population).

Black-headed Gull (*Chroicocephalus ridibundus*) [A179]

Black-headed gull are Red-listed due to its rapidly declining and localised breeding population (BOCCI, Colhoun and Cummins, 2013). Blacked-head gull is a widespread resident breeding species found in all counties. The species nests in colonies on dunes, coastal islands, moorland pools and freshwater lake islands. In winter the species is found on inland pastures, reservoirs, and coastal estuaries and mudflats (Dempsey and O' Cleary, 2010). Black-headed gull feed on insects especially in arable fields but will also exploit domestic and fisheries waste.

A review of I-Webs data for the period 2009/10 - 2013/14 indicates a peak number of 728 individuals in 2009/10. This equates to approximately 0.04% of the international population. The mean number recorded over the same period was 629 individuals (0.03% of the international population). The largest count was recorded in the 2004/05 season with 973 individuals recorded (0.05% of the international population).

There are no figures presented for the national population of the species as part of the I-WeBs data. A population of 13,983 in all of Ireland (Republic and Northern Ireland) was estimated from the Seabird 2000 survey (1998-2002). The mean of the five season (629) would represent approximately 4.5% of the all-Ireland population based on these figures. The highest recorded number over the ten seasons (973 in the 2004/05 season) would represent approximately 6.96% of the all-Ireland population.

Herring Gull (*Larus argentatus*) [A184]

Herring gull are a widespread breeding species. They are a Red-listed species for breeding (BOCCI, Colhoun and Cummins, 2013) in Ireland. Herring gull breed in colonies on coastal cliffs and islands, and on lake islands at inland sites. The species also nest on rooftops in towns and cities. In winter they are found on coastal estuaries, around harbours and on inland pastures and lakes (Dempsey and O' Cleary, 2010). The species is omnivorous, taking fish, crustaceans, earthworms, offal and roadkill, eggs and the young of other birds, etc. (Svensson *et al*. 2009).

A review of I-Webs data for the period 2009/10 - 2013/14 indicates a peak number of 113 individuals in 2010/11. This equates to approximately 1.81% of the all-Ireland population[5] and 1.11% of the international population. The mean number recorded over the same period was 71 individuals (1.14% of the all-Ireland population[2] and 0.7% of the international population). The largest count was recorded in the 2006/07 with 344 individuals recorded (5.52% of the all-Ireland population[2] and 3.37% of the international population).

Little Tern (*Sterna albifrons*) [A195]

Little tern are a widespread but scare summer visitor to coastal regions, rarely found inland. The species breeds in small colonies on single and sandy beaches nesting on the ground (Dempsey and O' Cleary, 2010). The breeding population is Amber-listed within Ireland (BOCCI, Colhoun and Cummins, 2013). A summer visitor (mid-April to September), winters in Africa. Its diet consist mainly of small fish (Svensson *et al*. 2009).

The shingle ridge at Kilcoole is a traditional nesting area for little tern, and the site now supports one of the largest colonies in the country. Numbers vary between years, with an average of 30 pairs recorded for the four years 1999-2002. In 2005, 100 pairs were recorded here. A tern protection scheme and research programme, co-ordinated by BirdWatch Ireland and the National Parks and Wildlife Service, has been in operation since 1985. Breeding success varies from year to year, largely due to predation by foxes, crows and other species (NPWS, site synopsis[6]).

The Murrough SPA is probably the most important site in the country for nesting little tern. In 2015 an estimated 155 breeding pairs produced 301 chicks, 289 of which are presumed to have fledged and dispersed from the colony. This was considered to be the most successful season for numbers of pairs and fledglings at Kilcoole since the conservation project began in 1985. Last year's breeding season (2014) was a record year, with at least double the number of successfully fledged chicks than in previous years. The 2015 breeding season surpassed this (Kilcoole Little Tern Conservation Project, 2015[7]).

Wetlands & Waterbirds [A999]

The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The regular occurrence of little egret *Egretta garzetta*, whooper swan *Cygnus cygnus*, Greenland white-fronted goose *Anser albifrons flavirostris*, golden plover *Pluvialis apricaria*, sandwich tern *Sterna sandvicensis*, short-eared owl *Asio flammeus* and kingfisher *Alcedo atthis* is of note as these species are listed on Annex I of the E.U. Birds Directive. The site also supports a typical diversity of birds associated with reed swamp, including reed warbler, a very localised species in Ireland. Other species that are known to occur here are little grebe *Tachybaptus ruficollis*, grey heron *Ardea cinerea*, cormorant *Phalacrocorax carbo*, mute swan *Cygnus olor*, shelduck *Tadorna tadorna*, gadwall *Anas strepera*, shoveler *Anas clypeata*, mallard *Anas platyrhynchos*, ringed plover *Charadrius hiaticula*, lapwing *Vanellus vanellus*, dunlin *Calidris alpina*, curlew *Numenius arquata*, redshank *Tringa totanus* and greenshank *Tringa nebularia*.

The site is also of considerable importance for the wide range of coastal and freshwater habitats that it supports, including several that are listed on Annex I of the E.U. Habitats Directive. These habitats are protected under the SAC designation for Murrough Wetlands cSAC (Site Code: 002249).

[5] All-Ireland population of herring gull (6,235 individuals) estimated from the Seabird 2000 survey (1998-2002).
[6] Site synopsis: The Murrough SPA (site code: 004186) published on the 20.8.2007
[7] Kilcoole Little Tern Conservation Project website accessed July 2016 http://littleternconservation.blogspot.ie/

**Table 4-4: Site summary table of the most recent 10 seasons of I-WeBs counts for North Wicklow Coastal Marshes [0T401] encompassed by the Murrough SPA**

| Species | 1% National | 1% International | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 | Peak | Mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Red-throated Diver (*Gavia stellata*) [A001] | 20 | 3,000 | 16 | 16* | 42* | 16 | 27 | 27 | 58 | 115 | 86* | 86 | 115 | 72 |
| Greylag Goose (*Anser anser*) [A043] | 50 | 980 | 397 | 256* | 316* | 150 | 370 | 361 | 293 | 285 | 59* | 325 | 361 | 316 |
| Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] | - | - | - | - | 1* | 1 | 1 | 1 | - | - | - | - | 1 | 1 |
| Wigeon (*Anas penelope*) [A050] | 630 | 15,000 | 1,746 | 864* | 801* | 926 | 768 | 771 | 1,602 | 1,253 | 510* | 849 | 1602 | 1119 |
| Teal (*Anas crecca*) [A052] | 340 | 5,000 | 273 | 383* | 519* | 561 | 561 | 552 | 502 | 346 | 213* | 582 | 582 | 496 |
| Black-headed Gull (*Chroicocephalus ridibundus*) [A179] | - | 20,000 | 973 | 284* | 268* | 936 | 970 | 728 | 610 | 649 | 676* | 530 | 728 | 629 |
| Herring Gull (*Larus argentatus*) [A184] | - | 10,200 | 32 | 20* | 344* | 29 | 98 | 82 | 113 | 33 | 49* | 57 | 113 | 71 |
| Little Tern (*Sterna albifrons*) [A195] | - | - | - | 150* | 85* | 110 | 100 | - | - | - | - | - | - | - |

*Data extracted from Birdwatch Ireland I-WeBs counts accessed online at [http://f1.caspio.com/dp.asp?AppKey=f4db3000060acbd80db9403f857c]*
Peak counts for each species in each of the most recent 10 seasons are presented. Please note:

- The peaks and means are based only on the most recent 5-season period, i.e. for the period 2009/10 - 2013/14.
- Blank columns indicate seasons when no counts were carried out, while blank cells show that a species was absent.
- Counts that are poor quality are represented by an asterisk '*'.

## 4.4 Description of the elements of the Project likely to give rise to impact on European Sites

This section considers the ecological features identified as potentially being impacted by the unmitigated development in Section 3.5 above. The significance of the impacts affecting these sites identified in the previous section is assessed in terms of magnitude/extent, probability and duration in the following sections.

The potential for significant impacts arising from the proposal was determined based on a number of indicators including:

- Habitat loss or alteration
- Disturbance or displacement of species
- Potential impairment of water quality and the consequent impacts on aquatic habitats and species
- Potential impacts during the construction phase

### 4.4.1 Loss or Alteration of Habitat

The Murrough Wetlands cSAC (002249) has been designated for 6 Habitats Directive Annex I habitats, one of which is a priority habitat, namely, calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210].

- *Annual vegetation of drift lines [1210]*
- *Perennial vegetation of stony banks [1220]*
- *Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]*
- *Mediterranean salt meadows (Juncetalia maritimi) [1410]*
- *Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210]* *
- *Alkaline fens [7230]*

The area of the proposed site is approximately 47,650 $m^2$. As the project is not located within any European site, there will be no direct impact as a result of the size and scale of the project. There will be no direct habitat removal (land take) from any European site as a result of the project. There is a downstream hydrological links between the proposed project the Murrough Wetlands cSAC. The two streams within the site, join and flow in a southerly direction into the Kilcoole Stream. The Kilcoole stream flows into a wetland area within the Murrough SPA draining into the sea at the 'Breaches'. The coastline either side of the breaches is located within the Murrough Wetlands cSAC. The Murrough Wetlands cSAC 3.4km river kilometres downstream of the development site. The displacement of sediment (dredge material), hydrocarbons or other pollutants could potentially result in habitat alteration.

### 4.4.2 Disturbance of Displacement of Species

*Bird species*

The Murrough SPA is located 3.3km river kilometres downstream of the development site. The SPA is designated for eight bird species namely Red-throated Diver (*Gavia stellata*), Greylag Goose (*Anser anser*), Light-bellied Brent Goose (*Branta bernicla hrota*), Wigeon (*Anas penelope*), Teal (Anas crecca), Black-headed Gull (*Chroicocephalus ridibundus*), Herring Gull (*Larus argentatus*) and Little Tern (*Sterna albifrons*).

There is the potential for the disturbance of bird species and there foraging habitat within the Murrough SPA due to the ingress of sediment or pollutants. The habitats within the site would not be deemed of high value for the mainly aquatic and coastal qualifying bird species for which the Murrough SPA is designated. The resultant loss of this habitat type within the site is not considered to be significant to bird species of qualifying interest within the SPA.

The levels of disturbance due to increased noise and human activity is considered to be very localised and given the distance between the development site and the Murrough SPA (approximately 2.65km) it is not considered to be significant.

### 4.4.3 Water Quality

As was noted previously, the proposed development is connected to two European sites via the two streams within the site and the Kilcoole Stream. There is a possible risk of entry of sediment and pollutants to enter these streams during construction activities which could be transported to the Murrough Wetlands cSAC and the Murrough SPA.

Pollution of the local watercourse could result in a significant negative impact on these European sites and could result from:

1. *Pollution of watercourses with suspended solids due to run-off from excavations and infilling during construction.*
2. *Pollution of watercourses with nutrients adsorbed or chemically bound to eroded suspended solids released during excavation or demolition.*
3. *Pollution of watercourses with oils or fuels due to run-off from operating machinery or refuelling operations.*

A number of species of qualifying interest could be affected, particularly should availability of prey be reduced.

### 4.4.4 Potential impacts during the operational phase

Following the completion of the infill works the area shall be landscaped and developed into an Eco-park. This shall form the operational phase of the development. The park shall remain in situ for the foreseeable future with occasional maintenance works in the form of landscaping works and mowing of the wildflower meadow. The Eco-park shall form a recreational amenity for visitors within walking trails and a viewing area. A small cark park shall be constructed at the entrance to the Eco-park. There will be no further excavation (and in turn habitat loss) required during the operational phase of the proposed Eco-park. A significant impact to the Murrough Wetlands cSAC and the Murrough SPA is not envisaged during the operational phase of the Eco-park.

## 4.5 Cumulative Impact

The EC (2001) guidelines on the provision of Article 6 of the Habitats' Directive state that the phrase 'in combination with other plans or projects' in Article 3(3) of the Habitats Directive refers to the cumulative impacts due to plans or projects 'that are currently under consideration together with the effects of any existing or proposed projects or plans.

It can be difficult to predict cumulative impacts of developments on feature of ecological interest, prior to their construction. Cumulative impacts will also depend on species present, number and frequency of occurrence of birds observed at the proposed site and at adjacent proposed and existing development. The timing of the construction phase can also have a bearing on the magnitude of the impact. It is also dependent on distance of the proposed development in relation to other existing and proposed development and habitats present between same or their linkage to European sites downstream of the proposed development site.

A cumulative impact arises from incremental changes caused by other past, present or reasonably foreseeable actions together with the proposed development. The surrounding environment is dominated by agricultural land, residential and farming properties.

The main damaging operations and threats to the greater regions ecological resources are agriculture, overgrazing, fertilisation and water pollution. Overgrazing by cattle is also another problem. The above operations are the most extensive but other threats and potentially damaging operations to valuable habitats include land drainage and reclamation, fertilisation and dumping. The proposed development will not add to these damaging operations and threats.

### 4.5.1 Agriculture

Agriculture is the most extensive landuse within the greater area. Bush poultry farm is located immediately north of the proposed site in Priestsnewtown. Grazing cattle were noted within pasture fields immediately to the south east and the north east of the site. Sheep were noted grazing within two fields immediately west of the site. While cattle and sheep farming dominant the land use in the surrounding area arable farming has also been noted. An examination of land use within the greater study area was carried via aerial photography from 1995[8] to present day[9]. An extensive area of arable crops was present to the north east of the site in the townland of Charlesland and in Priestsnewtown in the west. However, the construction of the R774 and house estates at Farrankelly and particularly Charlesland has resulted a significant loss of arable land locally.

The main potential impacts would be in terms of a potential increase in nutrient levels of local watercourses. There is the potential for the proposed development to contribute to a cumulative impact on water quality in the ephemeral streams within the site and local watercourses further downstream of the site through the potential of sedimentation and other pollutants entering the watercourses as a result of vegetation clearance, infilling activities, excavation together with farming operations. It is considered that without proper mitigation a negative cumulative impact to water quality may ensue.

### 4.5.2 Other developments

Table 4-6 below, lists granted planning applications for construction of new houses/developments for the last 5 years within the townlands encompassing the proposed development site and the surrounding area including those encompassing the Murrough Wetland cSAC and the Murrough SPA, namely Priestsnewtown, Ballydonarea and Kilcoole. These townlands all located in County Wicklow were searched using the online Planning Enquiry System on the Wicklow County Council Website[10].

**Table 4-5: Relevant planning applications granted in the last five years within the townlands of Ballydonarea, Kilcoole and Priestsnewtown in County Wicklow**

| Townland | General description of the permitted planning applications | Number of planning applications permitted | Details of developments |
|---|---|---|---|
| Priestsnewt-own | Alteration to existing residential property | 1 | - |
| Kilcoole | Alteration to existing residential property including extensions and minor modifications. | 42 | - |
| | New residential dwellings | 32 | - |
| | construction and demolition waste recovery facility to include the recovery of construction and demolition waste | 1 | - |
| | New Commercial developments | 5 | A crèche facility and 4 applications for industrial warehouse, retail and offices units. |
| | Alterations to existing commercial properties | 5 | - |
| | Educational - works to St. Brigid's National School | 3 | - |
| | Amenity | 3 | The building of a concrete hurling wall, alterations and extension to |

[8] http://map.geohive.ie/mapviewer.html accessed July, 2016

[9] https://www.bing.com/maps/ accessed July, 2016

[10] http://www.wicklow.ie/online-enquiries accessed July, 2016

| Townland | General description of the permitted planning applications | Number of planning applications permitted | Details of developments |
|---|---|---|---|
| | | | existing Parish Centre and the insertion of floodlighting on the main pitch at St. Patricks GAA Club |
| | Nursing home | 1 | Two storey nursing home, consisting of 77 single bedrooms, 3 double bedrooms and 1 high care ward |
| | Commercial Signage | 2 | - |
| | Telecommunications | 1 | ESB 38kV Sub-station – Application for the continued use of the existing 24m high, free standing monopole type communications structure. |
| Ballydonarea | Alteration to existing residential property including extensions and minor modifications. | 1 | - |
| | New residential dwellings | 3 | - |

The townlands of Priestsnewtown (the location of the proposed project) and Ballydonarea are predominantly rural in nature and form the hinterlands of the village of Kilcoole. This is reflected by the low number of planning applications that have received planning in the last five years. Only one planning application has received planning in the last 5 years (File Number: 126347) in the townland of Priestsnewtown within which the proposed development is located. This application consisted on an alteration to an existing residential property which received planning in 2012.

The Murrough Wetlands cSAC and the Murrough SPA are located within the townland of Ballydonarea. This townland is located to the east of Kilcoole Village. Planning was granted for three new residential dwellings in the last 5 years within this townland. The closest dwelling is located 250m from the boundary of either European site. The planning application was to demolish an existing single storey property and for the construction of another single storey property. Planning was granted in 2015 (File Number: 142053). Two of these applications (File Numbers: 142053 and 141601) involve the demolition of an existing property and the construction of a similar property in its place. The third application was for two no. two storey properties granted planning in 2012 (File Number: 126592) located in a housing estate C.940m west of either European site. None of this properties are located within either European site boundary. They are however within the catchment area of Kilcoole Stream.

The townland of Kilcoole had significantly more planning applications granted over the last five years. This would be expected as it includes the village of Kilcoole. Planning was granted for thirty-two new residential properties and forty-two for alternations to residential properties (extensions and minor amendments to existing properties). Five new commercial properties were granted planning with five alterations to existing commercial properties. The new properties included a crèche facility and four applications for industrial warehouse, retail and offices units. There was also permission granted for a nursing home in 2015.

As well as the main street within the village there are three main industrial/business estates namely Bullford Business Campus, Kilcoole Industrial Estate and Network Business Park all within 1.5km of the Murrough SPA. Three golf courses are located to the south of the village namely Kilcoole Golf Course, Druids Glen Golf Course and Druids Heath Golf Course. While none of these developments are located within the boundary of the cSAC or the SPA they are located within the greater catchment of these sites. These developments can add pressure to these European site due to the reduction in water quality.

The main potential impacts would be in terms of a potential increase in nutrient levels of local watercourses. There is the potential for the proposed development to contribute to a cumulative impact on water quality in the ephemeral streams within the site and local watercourses further downstream of the site through the potential of sedimentation and other pollutants entering the watercourses as a result of vegetation clearance, infilling activities, excavation together along with other developments. It is considered that without proper mitigation a negative cumulative impact to water quality may ensue.

## 4.6 Do Nothing Scenario

If the proposed development does not proceed, the 'do nothing' scenario is that the quality of water flowing downstream to the Murrough Wetland cSAC and the Murrough SPA will be maintained. No additional risk of contamination or degradation would be experienced.

## 4.7 Mitigation Measures to be Implemented

*'Describe what mitigation measures are to be introduced to avoid or reduce the adverse effects on the integrity of the site. Acknowledge uncertainties and any gaps in information'*

- *List measures to be introduced*
- *Explain how the measures will avoid the adverse effects on the integrity of the site*
- *Explain how the measures will reduce the adverse effects on the integrity of the site*
- *Provide evidence of how they will be implemented and by whom.*

The following mitigation measures will be implemented in order to reduce or avoid potential adverse effects on the integrity of the above sites, having regard to the sites' respective conservation objectives. The mitigation measures are listed on Table 4-7, along with information on when they will be implemented, how the measures will avoid or reduce adverse impacts on the European sites, who will implement the measures and the degree of confidence in their successful implementation. The proposed monitoring measures associated with the mitigation measures are also included in Section 4.7.1.

### Table 4-6: Details of Mitigation Measures for Proposed Development

| Mitigation Measure | How Measure will Avoid/Reduce Adverse Effects | Implementation of Mitigation Measure and Likely Success | Monitoring scheme to prevent mitigation failure |
|---|---|---|---|
| ***Mitigation Measures in Relation to Hydrology to be Implemented Prior to Construction*** | | | |
| Imported materials will, as much as possible, be placed on site in their proposed location and will not require double-handling. Where this is not possible, material will be placed in designated temporary material storage areas; | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor.<br><br>All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works. | The Client will ensure that the buffer zone is regularly maintained during the construction phase.<br><br>A suitably qualified person will be appointed by the Client to ensure the effective operation and maintenance of drainage and other mitigation measures during the construction process. |
| Buffer zones, silt traps and stilling ponds which are proposed will be put in place in advance as construction progresses across the site. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor.<br><br>All required mitigation measures will be included as a contractual | The Client will ensure that buffer zones, silt traps and stilling ponds are regularly maintained during the construction phase.<br><br>A suitably qualified person will be appointed by the Client to ensure |

| Mitigation Measure | How Measure will Avoid/Reduce Adverse Effects | Implementation of Mitigation Measure and Likely Success | Monitoring scheme to prevent mitigation failure |
|---|---|---|---|
| | Murrough SPA downstream. | obligation on the contractor, in combination with competent supervisory staff overseeing the works. | the effective operation and maintenance of drainage and other mitigation measures during the construction process. |
| Construction staff vehicle and works shall remain within the site boundary only. There shall be no encroachment, storage of vehicles or machinery outside of the site boundary for the duration of works. | This measure will reduce the potential habitat loss within the site and minimise the level of disturbance (e.g. excavation, vegetation clearance, trampling, etc.). This shall in turn reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site reducing/avoiding adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Cross-drains of 225mm diameter will be provided where deemed necessary convey surface water via drainage routes under proposed site tracks. Interceptor cut-off drains will be provided on the upslope side of the earthworks during the construction phase to prevent the mixing of overland flows with the construction stage 'dirty' runoff. These interceptor drains will discharge diffusely over land. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor.<br><br>All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works. | The Client will ensure that buffer zones, silt traps and stilling ponds are regularly maintained during the construction phase.<br><br>A suitably qualified person will be appointed by the Client to ensure the effective operation and maintenance of drainage and other mitigation measures during the construction process. |
| Re-profiling of the stream in the west of the site, using suitable material, shall take place in dry weather only as far as possible, in order to minimise the disturbances to any waters which may flow through this ditch. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor.<br><br>All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory | The Client will ensure that buffer zones, silt traps and stilling ponds are regularly maintained during the construction phase.<br><br>A suitably qualified person will be appointed by the Client to ensure the effective operation and maintenance of drainage and other mitigation measures |

| Mitigation Measure | How Measure will Avoid/Reduce Adverse Effects | Implementation of Mitigation Measure and Likely Success | Monitoring scheme to prevent mitigation failure |
|---|---|---|---|
| | | staff overseeing the works. | during the construction process. |
| The re-profiling of the stream through the site shall be carried out in small stages and shall start at the upstream end, working towards the downstream end. No material will be placed at the rise of the stream, and re-profiling works will take place outside of the designated buffer zones only. The diverted stream channel bed shall be constructed using suitable stone material to protect imported material from erosion. Measures such as erosion control matting will be utilised where necessary to protect the stream banks while vegetation establishes. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor.<br><br>All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works. | The Client will ensure that buffer zones, silt traps and stilling ponds are regularly maintained during the construction phase.<br><br>A suitably qualified person will be appointed by the Client to ensure the effective operation and maintenance of drainage and other mitigation measures during the construction process. |
| Any flows present in the existing stream during re-profiling works shall be diverted via overland temporary pipes around areas where active works are taking place. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor.<br><br>All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works. | The Client will ensure that buffer zones, silt traps and stilling ponds are regularly maintained during the construction phase.<br><br>A suitably qualified person will be appointed by the Client to ensure the effective operation and maintenance of drainage and other mitigation measures during the construction process. |
| Temporary material storage areas will be covered with impermeable sheeting and surrounded with silt fencing, which will be monitored to manage any potential loss of suspended solids to surface waters. Temporary material storage areas will be away from the two streams within the site. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |

| Mitigation Measure | How Measure will Avoid/Reduce Adverse Effects | Implementation of Mitigation Measure and Likely Success | Monitoring scheme to prevent mitigation failure |
|---|---|---|---|
| Vegetation once cleared shall not be stockpiled near the two streams. | This measure will reduce the risk of nutrients leaching into stream within the site and reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| A dry wheel clean facility will be located at the site entrance from the public road to the north of the site. The dry wheel clean will reduce construction traffic fouling public roads. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Construction activities will be located away from watercourses and flood plains. The contractor will ensure that trafficking on site will be kept to a minimum. Where works are to be carried out adjacent to stream buffer zones, silt fencing will be used to protect the watercourse. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Surfaces will be planted/landscaped as soon as practicably possible to cover exposed subsoils and as such reduce the concentration of suspended solids being conveyed in the run-off. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Any diesel or fuel oils stored on site will be bunded to 110 % of the capacity of the storage tank. Design and installation of fuel tanks will be in accordance with best practice guidelines BPGCS005 (Oil Storage Guidelines). | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |

| Mitigation Measure | How Measure will Avoid/Reduce Adverse Effects | Implementation of Mitigation Measure and Likely Success | Monitoring scheme to prevent mitigation failure |
|---|---|---|---|
| Mobile bowsers, tanks and drums will be stored in secure, impermeable storage area, away from drains and open water. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Fuel containers will be stored within a secondary containment system e.g. bund for static tanks or a drip tray for mobile stores. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Ancillary equipment such as hoses, pipes will be contained within the bund. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Taps, nozzles or valves will be fitted with a lock system. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Only designated trained operators will be authorised to refuel plant on site and | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh | Mitigation measures will be implemented by the Client through the mechanism of its | A suitably qualified person will be appointed by the Client to ensure the effective |

| Mitigation Measure | How Measure will Avoid/Reduce Adverse Effects | Implementation of Mitigation Measure and Likely Success | Monitoring scheme to prevent mitigation failure |
|---|---|---|---|
| emergency spill kits will be present at equipment for all refuelling events. | downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | contract with the Contractor. | management and maintenance of mitigation measures during the construction process. |
| Procedures and contingency plans will be set up on-site to deal with emergency accidents or spills. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| An emergency spill kit with, absorbers etc. is to be kept on site in the event of an accidental spill. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| To avoid any risk of groundwater contamination resulting from the foul drainage for the site, portaloos and/ or containerised toilets and welfare units will be used to provide toilet facilities for site personnel. Sanitary waste will be removed from site via a licenced waste disposal contractor. | This measure will reduce the risk of sediment runoff or pollutants reaching Kilcoole Marsh downstream of the site. This in turn will reduce/avoid adverse impacts on the Murrough Wetlands cSAC and the Murrough SPA downstream. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| ***General Mitigation Measures in Relation to Ecology to be Implemented Prior to Construction*** | | | |
| Vegetation clearance will not be carried out during the nesting season (i.e. March 1st to August 31st). | This measure shall reduce the potential risk to breeding birds within the site. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| The conditions of the badger derogation licence shall be carried prior to construction commencing on-site. | This measure shall reduce the potential risk to badgers within the site. | Mitigation measures will be implemented by the Client through the mechanism of its | A suitably qualified person (mammal specialist) will be appointed by the Client to ensure the effective |

| Mitigation Measure | How Measure will Avoid/Reduce Adverse Effects | Implementation of Mitigation Measure and Likely Success | Monitoring scheme to prevent mitigation failure |
|---|---|---|---|
| | | contract with the project ecologist. | management and maintenance of mitigation measures during the construction process. |
| ***General Mitigation Measures in Relation to Ecology to be Implemented for the development of the Eco-park*** | | | |
| Only native plant species shall be planted within the site. The landscaping within the Eco-park shall where possible match the current plant species mix currently within the site. | This shall increase the biodiversity value of the site. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Barn owl boxes shall be mounted at suitable locations within the site. | This shall offer potential nesting habitat for barn owl. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Bat boxes shall be mounted at suitable locations within the site. | This shall offer potential roosting features for bats. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Mature trees present to the south of the site area shall be left in situ. | This shall increase the biodiversity value of the site. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |
| Pathways shall be provided for visitors using the park. Large stands of gorse scrub shall be planted within the Eco-park. | The inclusion of pathways shall encourage people to use these features predominantly rather than traversing areas of semi-natural habitat. The planting of gorse scrub shall discourage people for utilising sections of the Eco-park which shall remain undisturbed for wildlife. | Mitigation measures will be implemented by the Client through the mechanism of its contract with the Contractor. | A suitably qualified person will be appointed by the Client to ensure the effective management and maintenance of mitigation measures during the construction process. |

### 4.7.1 Additional Mitigation - Water Quality Monitoring Programme

A monitoring programme will be established to ensure that the water quality is maintained as outlined hereunder. This programme will ensure that designed measures are working to ensure water quality is not affected during the construction phase for the proposed development.

- Daily visual inspections of drains and outfalls from interceptor drains will be performed during the construction period to ensure suspended solids are not entering the Streams within the site, to identify any obstructions to channels, and to allow for appropriate maintenance of the drainage regime. If excessive suspended solids are noted, construction work will be stopped and remediation measures will be put in place immediately.
- Field measurements will be recorded at the site and will include measurement of the following parameters, electrical conductivity, pH, temperature hydrocarbons and dissolved oxygen. The field measurements will be taken on a weekly basis during the site clearance and earthworks stage of the construction period

**Table 4-7: Surface Water Quality Monitoring Parameters**

| Parameter | Maximum Guideline Value |
|---|---|
| Conductivity (µs/cm) | 1,000 |
| Turbidity (NTU) | 20 |
| pH | 6.0 < pH < 9.0 |
| Dissolved Oxygen (% saturation) | 80 – 120 (%ile) |
| Total Suspended Solids (mg/l) | 25 |
| Total Ammonia (mg/l N) | 0.14 (95%ile) |
| Nitrite ($NO_2$) (mg/l) | 0.05 |
| Molybdate Reactive Phosphorus (mg/l P) | 0.075 (95%ile) |
| Total Phosphorus (mg/l P) | 0.5 |
| Chloride (mg/l) | 250 |
| Hydrocarbons (µS/L) | Petroleum products must not be present in such quantities that they:<br>— form visible film face on the surface of the water or form coatings on the beds of water-courses and lakes |

### 4.7.2 Mitigation for Cumulative Impacts

Potential cumulative impacts on water quality from the proposed development, were identified in table 3-4 of the AA Screening Report. Taking into consideration the extensive mitigation measures detailed on Table 4-2, there is no predicted cumulative impact on the Murrough Wetlands SAC and the Murrough SPA.

## 4.8 Efficacy of the Proposed Mitigation Measures

*Provide evidence of the degree of confidence in the likely success of the mitigation measures*

Mitigation measures were devised in consideration of the following guidelines:

- Guidelines on the information to be contained in Environmental Impact Statements, EPA (2002);
- Advice Notes on Current Practice, EPA (2003);
- "Wind Energy Development Planning Guidelines" published by the Department of the Environment, Heritage and Local Government (2006);
- Best Practice Guidelines for the Irish Wind Energy Industry, Irish Wind Energy Association, 2012;
- Sustainable Development: A Strategy for Ireland, Department of the Environment, 1997;
- Cork City Development Plan 2015 – 2021;
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a Framework for Community Action in the Field of Water Policy;
- Greater Dublin Strategic Drainage Study (GDSDS): Technical Documents of Regional Drainage Policies, March 2005;
- Eastern Regional Fisheries Board - Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Current guidance document adopted by IFI for all fisheries areas);
- Shannon Regional Fisheries Board document "Planning for watercourses in the urban environment"
- The Planning System and Flood Risk Management - Guidelines for Planning Authorities - Department of Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW);
- Flood Mapping Website (http://www.floodmaps.ie);
- OPW preliminary flood risk assessment (PFRA) indicative mapping website (www.cfram.ie);
- Lee Catchment Flood Risk Assessment and Management Study (LEECFRAMS), Draft Flood Risk Management Plan, February 2010 and Flood Extent Mapping;
- CIRIA Environmental Good Practice on Site;
- Best Practice Guide BPGCS005, Oil Storage Guidelines;
- CIRIA Control of Water Pollution from Linear Construction Sites. Technical Guidance (C648);
- CIRIA Control of Water Pollution from Construction Sites. Guidance for Consultants and contractors (C532);
- CIRIA Sustainable Construction Procurement. A Guide to Delivering Environmentally Responsible Projects (C571);
- UK Pollution Prevention Guidelines (PPG):
    - PPG1: Understanding your environmental responsibilities – good environmental practice;
    - PPG2: Above Ground Oil Storage Tanks;
    - PPG3: Pollution Prevention Guidelines;
    - PPG4: The Disposal of Sewage where no Mains Drainage is Available;
    - PPG5: Works in, near or liable to affect Watercourses;
    - PPG6: Working at Construction and Demolition Sites;
    - PPG7: The Safe Operation of Refuelling Facilities;
    - PPG8: Safe Storage and Disposal of Used Oil;
    - PPG21: Pollution Incident Response Planning;
    - PPG22: Dealing with Spills; and
    - PPG26: Drums and intermediate bulk containers.

- Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes (National Roads Authority, 2005);
- Design Manual for Roads and Bridges (2013);
- South Western River Basin District, River Basin Management Plan 2009-2015;
- Biological River Water Quality Data, (Environmental Protection Agency (EPA);
- Code of Best Forest Practice – Ireland, (Forest Service and Department of Marine and Natural Resources – 2000);
- Forestry and Water Quality Guidelines (Forest Service and Department of Marine and Natural Resources 2000); and
- Forest Road Manual, Guidelines for the Design, Construction and Management of Forest Roads, (COFORD 2004).

Accordingly, given the provenance of the mitigation measures as set out above, those mitigation measures (when properly implemented) will be successful in ensuring that the European sites are preserved at a favourable conservation status by ensuring the lasting preservation of the constitutive characteristics of those sites.

In circumstances where the mitigation measures have been developed in light of the best scientific knowledge, no reasonable scientific doubt remains to the *absence* of any adverse effects caused by the proposed development on the integrity of the sites under consideration in circumstances where those mitigation measures are implemented.

## 4.9 Addressing Mitigation Failure

*Explain how any mitigation failure will be addressed*

All personnel working on site will be trained in pollution incident control response. An emergency response plan will ensure that appropriate information will be available on site outlining the spillage response procedure and a contingency plan to contain silt, concrete and other pollutants (oil, fuels and other chemicals).

## 4.10 Conclusion

In summary, whilst it has been acknowledged that there is the potential for the project to have significant indirect impacts on two European sites, with the implementation of the detailed mitigation measures identified in this NIS, the integrity of those sites as natural habitats will not be adversely affected. In particular, with the implementation of the detailed mitigation measures identified in this NIS, there is no scientific doubt remaining as to the absence of potential adverse effects.

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# APPENDIX 1

## NPWS Site Synopses for the Natura 2000 Sites within 15km of the Proposed Development

# REFER TO APENIDIX 11 OF EIS APPENDICES FOR NATURA SITE SYNOPSES