

**REPORT**

# Remedial Stage 1 Screening For Appropriate Assessment

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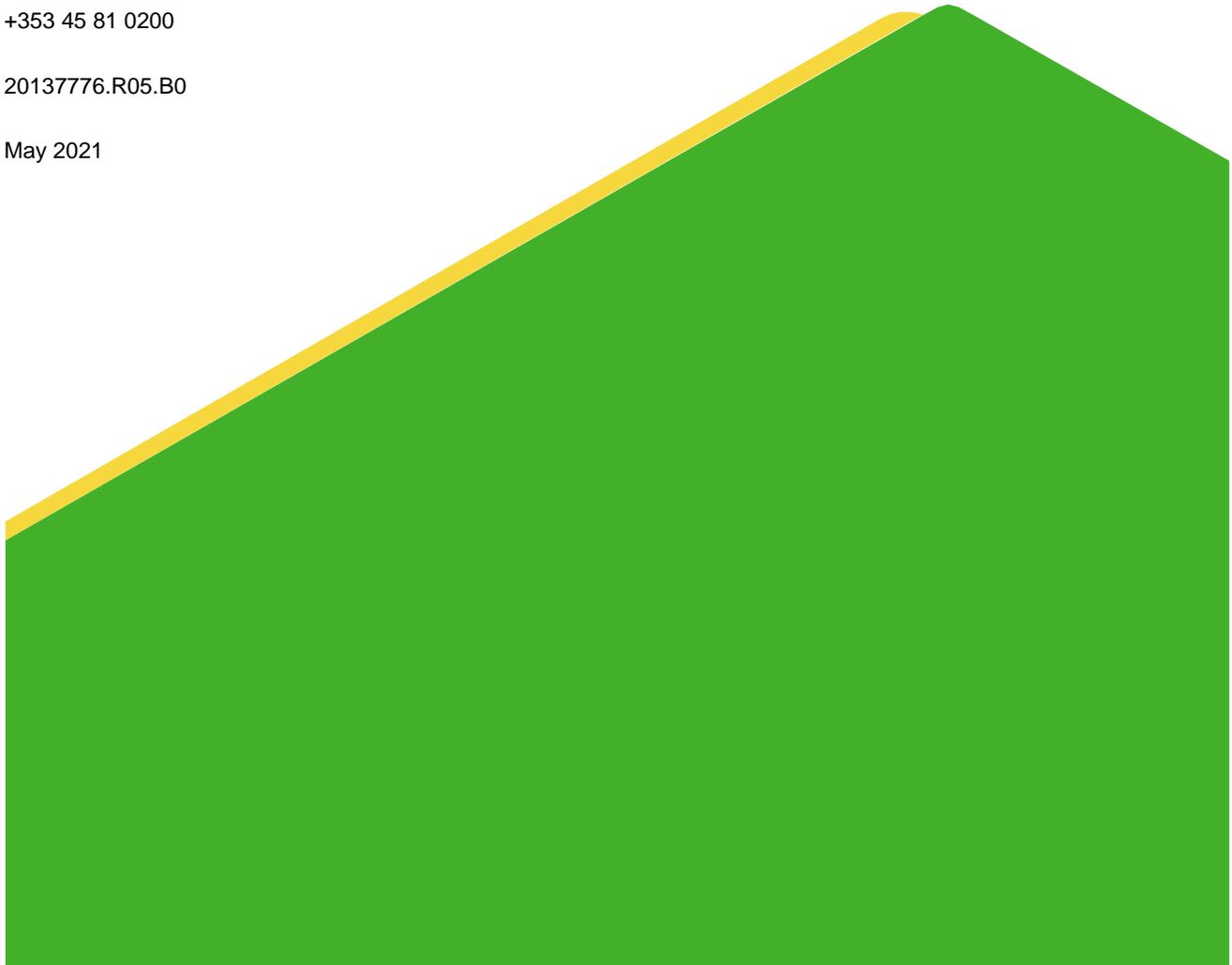
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# Table of Contents

- 1.0 INTRODUCTION ..... 1**
  - 1.1 Terms of Reference ..... 1
  - 1.2 Approach and Planning Precedent ..... 2
  - 1.3 Project Scope, Description and Embedded Design Parameters ..... 2
- 2.0 METHODS ..... 3**
  - 2.1 Desktop Review and Data Collation ..... 3
  - 2.2 Screening for Appropriate Assessment ..... 3
    - 2.2.1 Stage 1: Screening ..... 3
    - 2.2.2 Stage 2: Appropriate Assessment ..... 4
    - 2.2.3 Stage 3: Assessment of Alternative Solutions ..... 4
    - 2.2.4 Stage 4: Assessment where Adverse Impacts Remain ..... 4
- 3.0 BASELINE AND HISTORIC SITE CONDITIONS ..... 4**
  - 3.1 Baseline Conditions ..... 4
    - 3.1.1 Habitats ..... 4
    - 3.1.2 Aquatic Habitats and Receptors ..... 6
  - 3.2 Natura 2000 Sites ..... 11
  - 3.3 Screening Assessment ..... 14
    - 3.3.1 Water ..... 14
- 4.0 STAGE 1 SCREENING ASSESSMENT CRITERIA ..... 15**
  - 4.1 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 sites by virtue of: ..... 15
  - 4.2 Describe any likely changes to the site arising as a result of: ..... 16
  - 4.3 Describe any likely impacts on the Natura 2000 sites as a whole in terms of: ..... 17
  - 4.4 Provide indicators of significance as a result of the identification of effects set out above in terms of: ..... 17
  - 4.5 Cumulative Impact ..... 17
  - 4.6 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 or magnitude of impacts is unknown ..... 17
- 5.0 DATA COLLECTED TO CARRY OUT THE ASSESSMENT ..... 19**

**6.0 REFERENCES .....20**

**TABLES**

Table 1: Natura 2000 Sites within 15 km Plus Dublin Bay. .... 11

**FIGURES**

Figure 1: Habitat Map of the Site - O'Donnell Environmental (2021). .....5

Figure 2: The Site extent during 1991. ....6

Figure 3: Local River Network in the Vicinity of the Site.....7

Figure 4: Local River WFD Designations, EPA River Quality Values, EPA Monitoring Stations (after EPA, 2021 and GSI, 2021). ....9

Figure 5: 2021 Site Layout, Key Infrastructure and Water Management in the Northern Area of the Site. .... 10

Figure 6: 2021 Site Layout, Key Infrastructure and Water Management in the Central and Southern Areas of the Site. ....10

Figure 7: Natura 2000 Sites within 15 km of the Site. .... 13

## 1.0 INTRODUCTION

This evaluation presents a Stage 1 Screening for Appropriate Assessment (AA) to provide a retrospective assessment of the potential effects that may have occurred on Natura 2000 sites and associated qualifying species as a result of activities at the existing quarry site at Windmill Hill, Rathcoole, Co. Dublin ('the Site') between 1990 and 2021. This Screening for Appropriate Assessment comprises an appraisal of potential impacts on European designated conservation sites within a 15 km radius of the Site or where an ecological pathway e.g. terrestrial or aquatic exists between the Site and a Natura 2000 site. In this instance, Natura 2000 sites within Dublin Bay ca. > 34 km from the Site are also included as there is a potential aquatic pathway. This AA Screening has been prepared by **Freddy Brookes MSc., MCIEEM – Senior Ecologist**, Golder Associates (Golder).

The terms of reference of this report are set out below.

### 1.1 Terms of Reference

This screening has been undertaken in accordance with the requirements of the EU Habitats Directive (Directive 92/43/EEC). Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora – the 'Habitats Directive' - provides legal protection for habitats and species of European importance. Article 2 of the Directive requires the maintenance or restoration of habitats and species of European Community interest, at a favourable conservation status. Articles 3 - 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as *Natura 2000*. Natura 2000 sites are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC).

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans or projects affecting Natura 2000 sites. Article 6(3) establishes the requirement for Appropriate Assessment:

*“Any plan or project not directly connected with or necessary to the management of the site but likely to have a 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 site's 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.”*

Article 6(4) deals with the steps that should be taken when it is determined, as a result of Appropriate Assessment, that a plan/project will adversely affect a European site. Issues dealing with alternative solutions, imperative reasons of overriding public interest and compensatory measures need to be addressed in this case.

Article 6(4) states:

*“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 a social or economic nature, the Member States 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 requirements of Articles 6(3) and 6(4) of the Habitats Directive have been transposed into Irish legislation by means of the Habitats Regulations, 1997 (S.I. No. 94 of 1997) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011).

## 1.2 Approach and Planning Precedent

This stage 1 screening is presented with embedded design parameters detailed in section 1.3 below. These measures are not intended to be interpreted as mitigations to address a likely significant effect to a Natura 2000 site. Planning precedent<sup>1</sup> dictates that mitigation should only be presented as part of stage two in the appropriate assessment (AA) process if required to minimise likely significant effect.

## 1.3 Project Scope, Description and Embedded Design Parameters

The focus of this assessment, wherever possible, is centred on the establishment of likely baseline environmental conditions and potential impacts from quarrying activities between 1990 and 2021, which have the potential to affect the integrity of Natura 2000 sites including the qualifying species. In any retrospective assessment uncertainty may be a feature. As such, a conservative approach has been adopted to recognise impacts. The Site is and has been a working quarry over an area of 28.8 ha. with a current average working depth of approximately 173 mAOD and final floor of approximately 150 mAOD. The reserve consists of greywacke (sandstone) and is extracted by blasting and mechanical means. The excavated material is crushed at the working face by mobile plant and transported to a central plant area for washing, grading and processing. The quarry is accessed at a single location from the N7 and holds a centrally located existing administration and processing plant area over approximately 5 ha. that currently holds 2 no. office buildings, 4 no. portacabins, 4 no. containers, 2 no. storage / maintenance sheds, a storage / drying shed, water recycling unit and silt press, an asphalt plant, a concrete plant and washing, crushing, screening and bagging plants. Also, within this plant and administration area are 2 no. weighbridges, 4 no. wheel washes, fuel storage and refuelling area, 1 no. operations water well and sewage holding tank. The central administration and processing plant area also includes a concrete plant and the storage / drying shed

Embedded design parameters considered for this retrospective assessment are applicable owing to the following day to day operations at the Site in a current and historic context:

- The use of plant and machinery on Site poses risks of hydrocarbon spillage;
- The presence of welfare facilities and septic tank;
- Earthwork activities (e.g. excavation of quarry, movement of material silt mobilisation);
- Pumping and dewatering of the quarry pits;
- Dust mobilisation;
- Blasting of rock using explosives; and
- Use and parking of mechanical plant on the Site for excavation activities.

In order to avoid the potential impacts to the environment during the development on the Site since 1990 embedded design and commonly undertaken good practice mitigation measures were in place at the Site, including:

- Sewage holding tanks used on the Site are/have been maintained to prevent leaks to ground and the water environment. Equally welfare facilities on the Site and all plumbing are/have been well maintained;

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<sup>1</sup> Court of Justice of the European Union (CJEU) in the matter of People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

- Wheel washing is/has been undertaken on the Site to reduce the deposition of material on the surrounding road network that could get into the water environment. Wastewater from the wheel washes is/has been contained rather than disposed of directly to ground;
- A concrete plant is present on the Site which by design is constructed such that no direct discharges to ground are/have been allowed;
- Pumped water is/has been only discharged at the discharge culvert when not used by the recycling and concrete facilities. Discharged water does not/has not come into contact with 'dirty' water from the recycling facility;
- Silt ponds are/have been located above the groundwater table;
- Refuelling takes place / has taken place on hardstanding in a designated area of the Site and plant is/has been well maintained to prevent uncontained releases of hydrocarbons to the ground (as confirmed by water quality results). It is noted that a hydrocarbon interceptor was also installed at the Site;
- Runoff from the floor (and faces) of all areas of the extraction area slopes/has sloped towards a low elevation point on the Site to prevent any surface water run-off flowing from the Site; and
- Generally, works outside of the excavation areas are/have been undertaken above the groundwater table limiting the connectivity of the groundwater with any potential impacts.

## 2.0 METHODS

### 2.1 Desktop Review and Data Collation

A desktop review was conducted of available published and unpublished information, including data available on the NPWS <http://www.npws.ie>, Geological Survey Ireland (GSI), and Environment Protection Agency (EPA) web-based databases. In addition, reports pertaining to Site operations including previous EIAR submissions and Natura Stage 1 screening assessments have been used as reference materials.

### 2.2 Screening for Appropriate Assessment

This report has been prepared with reference to the following documents:

- European Communities (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC;
- European Communities (2000) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats Directive' 92/43/EC;
- Department of Environment Heritage and Local Government (2009, Revision Notes 2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities; and
- European Communities (2007) Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC.

Appropriate Assessment is carried out in stages, as recommended by the above-referenced Guidance Documents. There are four stages as follows:

#### 2.2.1 Stage 1: Screening

This initial stage aims to identify the likely impacts of the project on a Natura 2000 site, either alone or in combination with other projects or plans. The impacts are examined to establish whether these impacts are likely to be significant. Assessment of the significance of effects is carried out in consultation with the relevant nature agencies.

## 2.2.2 Stage 2: Appropriate Assessment

The aim of this stage is to identify the conservation objectives of the site and to assess whether or not the project, either alone or in combination with other projects or plans will result in adverse effects on the integrity of the site, as defined by the conservation objectives and status of the site. Stage 2 is carried out in consultation with the relevant nature agencies. Where it cannot be demonstrated that there will be no adverse effects on the site, it is necessary to devise mitigation measures to avoid, where possible, any adverse effects.

## 2.2.3 Stage 3: Assessment of Alternative Solutions

This stage examines alternative ways of implementing the project that, where possible, avoid any adverse impacts on the integrity of the Natura 2000 site. If alternative solutions have been identified that will either avoid any adverse impacts or result in less severe impacts on the site, it will be necessary to assess their potential impact by recommencing the assessment at Stage One or Stage Two as appropriate. However, if it can be reasonably and objectively concluded that there is an absence of alternatives, it will be necessary to proceed to Stage Four of this assessment methodology.

## 2.2.4 Stage 4: Assessment where Adverse Impacts Remain

For sites that host priority habitats and species, it is necessary to consider whether or not there are human health or safety considerations or environmental benefits flowing from the project. If such considerations do exist, then it will be necessary to carry out the Stage Four assessments of compensatory measures. If no such considerations exist, then establish whether there are other imperative reasons of overriding public interest (IROPI) before carrying out the Stage Four assessments. Where IROPI exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the site will be necessary before the project or plan can proceed.

This report is for Screening (stage 1) for Appropriate Assessment only.

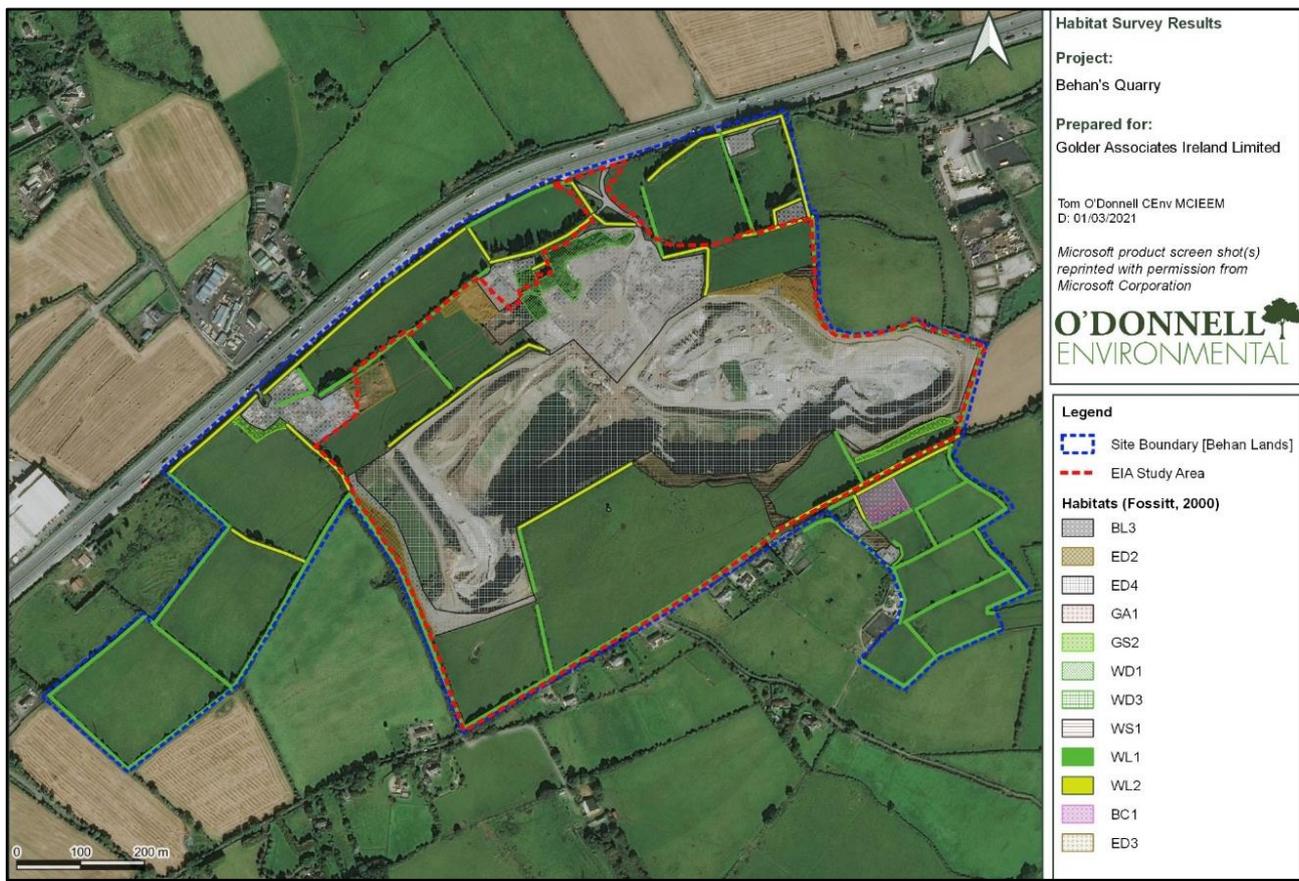
## 3.0 BASELINE AND HISTORIC SITE CONDITIONS

### 3.1 Baseline Conditions

#### 3.1.1 Habitats

##### Habitats

The Site was surveyed by Tom O'Donnell BSc (Hons) MSc CEnv MCIEEM on the 25<sup>th</sup> and 26<sup>th</sup> January 2021 and 23<sup>rd</sup> February 2021 (O'Donnell, 2021) and an ecological walkover survey incorporating a Phase 1 habitat and flora assessment was carried out in accordance with the Heritage Council's guidelines (Smith *et al.* 2011). The dominant habitats present were classified according to Fossitt (2000) and key botanical species were identified (Figure 1 below). Any other records of interest (e.g. invasive plant species) were also marked on field maps and/or locations were recorded.



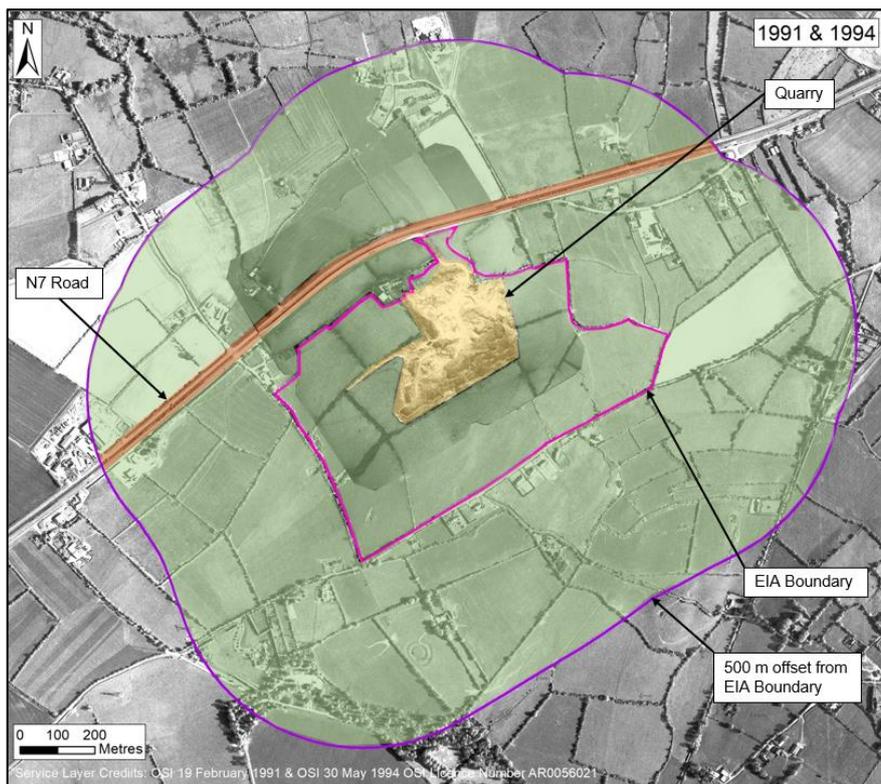
**Figure 1: Habitat Map of the Site - O'Donnell Environmental (2021).**

The Site based habitat appraisal was supplemented in a desk-based context and via information sharing between Golder colleagues who had attended the Site in early 2020. Satellite imagery and historic mapping was also used to retrospectively predict the likely historic baseline (Figure 2). This work was used to appraise the likely habitats and flora in the area within and adjacent to the development Site, and to determine the presence or likely presence of protected species, and the presence of suitable habitat for those species, in a historical context. As previously described, the Site footprint measured ca. 10.1 ha by 1990 with expansion amounting to ca. 18.7 ha of outward (non-vertical) growth between 1990 and 2021.

Ecological Survey methods were in general in accordance with those outlined in the following documents:

- Heritage Council (2011). Best Practice Guidance for Habitat Survey and Mapping;
- Phase 1 Habitat Survey methodology (Joint Nature Conservation Committee (JNCC), 1990, revised 2010); and
- Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (NRA, 2009).

As previously indicated, aerial photographs and Site maps assisted the habitat survey. Habitats have been named and described following Fossitt (2000). There is no suggestion that habitats on Site that would have been residually affected would be protected under the Habitats Directive Annex I.



**Figure 2: The Site extent during 1991.**

## Fauna

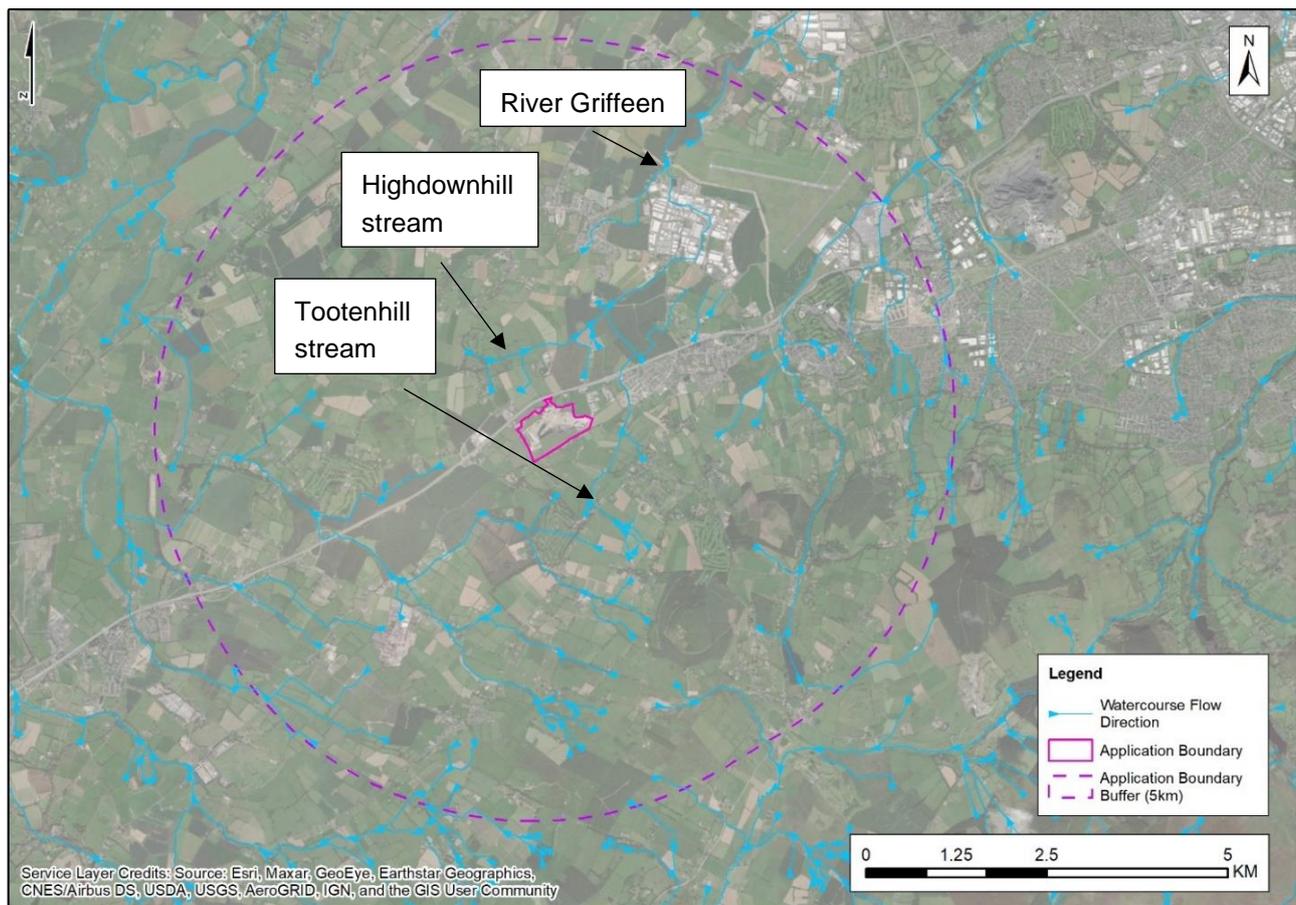
The primary considerations for all protected and notable species at the Site are based upon the availability of suitable habitat to support the species between 1990 and 2021. In all cases the likelihood of presence or indeed absence was addressed in congruence with an assessment of habitat availability to maintain a species at a favourable conservation status at the Site level. Where doubt over presence was perceived owing to the retrospective nature of the assessment a conservative prediction was made in favour of likely presence. It is noteworthy that some species may have colonised the Site as a consequence of the transition from pastoral flat habitat toward the availability of cliff faces as a consequence of quarrying activities, for example peregrine falcon, which is discussed later in the report.

### 3.1.2 Aquatic Habitats and Receptors

The assessment considered the potential for hydrological connectivity between the Site and surface water features, and also considered what effects could be afforded to aquatic fauna and habitat receptors. It is important to note that no ditches or streams cross the Site. The Site is located within the River Giffen catchment which is part of the River Liffey system which enters Dublin Bay parts of which are designated SAC and SPA. The Highdown Hill stream leading to the River Giffen is located approximately 1km to the north of the Site. The Tootenhill Stream flows in a north-easterly direction about 0.75 km to the east of the Site. There are no formal discharges to surface water features from Site operations though some elements of hydrological connectivity occur between the Site, a culvert and the N7 roadway surface water management system. This pathway eventually meets the River Griffen and this is further described in the sections below.

#### Local Surface Water Features

Local surface water features are predominantly fed by rainfall runoff from higher topographical areas which collect in natural gullies and form headwaters for tributaries to larger streams and rivers. The river network in the area surrounding the Site is shown in Figure 3.



**Figure 3: Local River Network in the Vicinity of the Site.**

### 2020-2021 Surface Water Quality Investigations

During the 2020-2021 monitoring period surface water samples were taken by Golder from a number of locations. Importantly, in the context of this assessment, a monitoring location associated with the 'the western pond area' (SW1) was sampled. This source/pathway route is worthy of evaluation as it is assumed for the purpose of this assessment to discharge untreated via a culvert and the N7 roadway to a tributary of the River Griffeen close to Rathcoole. Potential for downstream ecological connectivity with Dublin Bay and associated Natura 2000 sites is relevant to the results of this sampling.

The western pond area (SW1) is considered to be a mixture of rainfall and groundwater and is pumped to the discharge culvert near the Site entrance. Samples from SW1 were collected in June 2020 and January 2021. All other surface water samples were collected during January 2021. Each sample was tested at UKAS accredited Element Materials Technology laboratory for the following parameters:

- Dissolved metals: Arsenic, Boron, Cadmium, Calcium, Chromium, Copper, Lead, Magnesium, Mercury, Nickel, Potassium, Selenium, Sodium (2021 only), and Zinc;
- Total Hardness (Dissolved as  $\text{CaCO}_3$ );
- MTBE. Benzene, Toluene, Ethylbenzene, m/p Xylene, o-Xylene;
- Extractable Petroleum hydrocarbons (C8-C40);
- Sulphate;
- Chloride;

- Nitrate as NO<sub>3</sub>;
- Nitrite as NO<sub>2</sub>;
- Orthophosphate as PO<sub>4</sub>;
- Total Oxidised Nitrogen;
- Ammoniacal Nitrogen as NH<sub>4</sub>;
- Total Alkalinity as CaCO<sub>3</sub>;
- Dissolved Oxygen (2020 only);
- Electrical Conductivity (2020 only);
- pH (2020 only);
- Total Organic Carbon; and
- Total Dissolved Solids.

The results of the groundwater and surface water quality analysis at the Site are summarised below and compared with the Environmental Quality Standards (EQS) for inland surface waters, as outlined in the European Communities Environmental Objectives (Surface Water) Regulations S.I. No.272/2009 including amendment S.I. No.386/2015. Where a screening value does not exist, the UK EQS were applied (Freshwaters specific pollutants and operational EQS and Freshwaters priority hazardous substances, priority substances and other pollutants<sup>2</sup>).

Surface water is generally shown to be of good quality in 2020-2021 at SW1. Concentrations of arsenic within the on-site western pond (SW1) were observed to exceed the Annual Average (AA) EQS value for inland surface water in both the June 2020 and January 2021 samples. The slightly elevated concentrations of arsenic in these samples are attributed to leaching of the metal from the surrounding rock into groundwater (Chapter 6). The threshold value for arsenic was exceeded on four occasions in samples collected from MW2, Office Well, and the Chipping Plant Well in 2007 and Well A in 2013. Concentrations ranged from 10 mg/l to 35 mg/l compared to a threshold value of 7.5 mg/l.

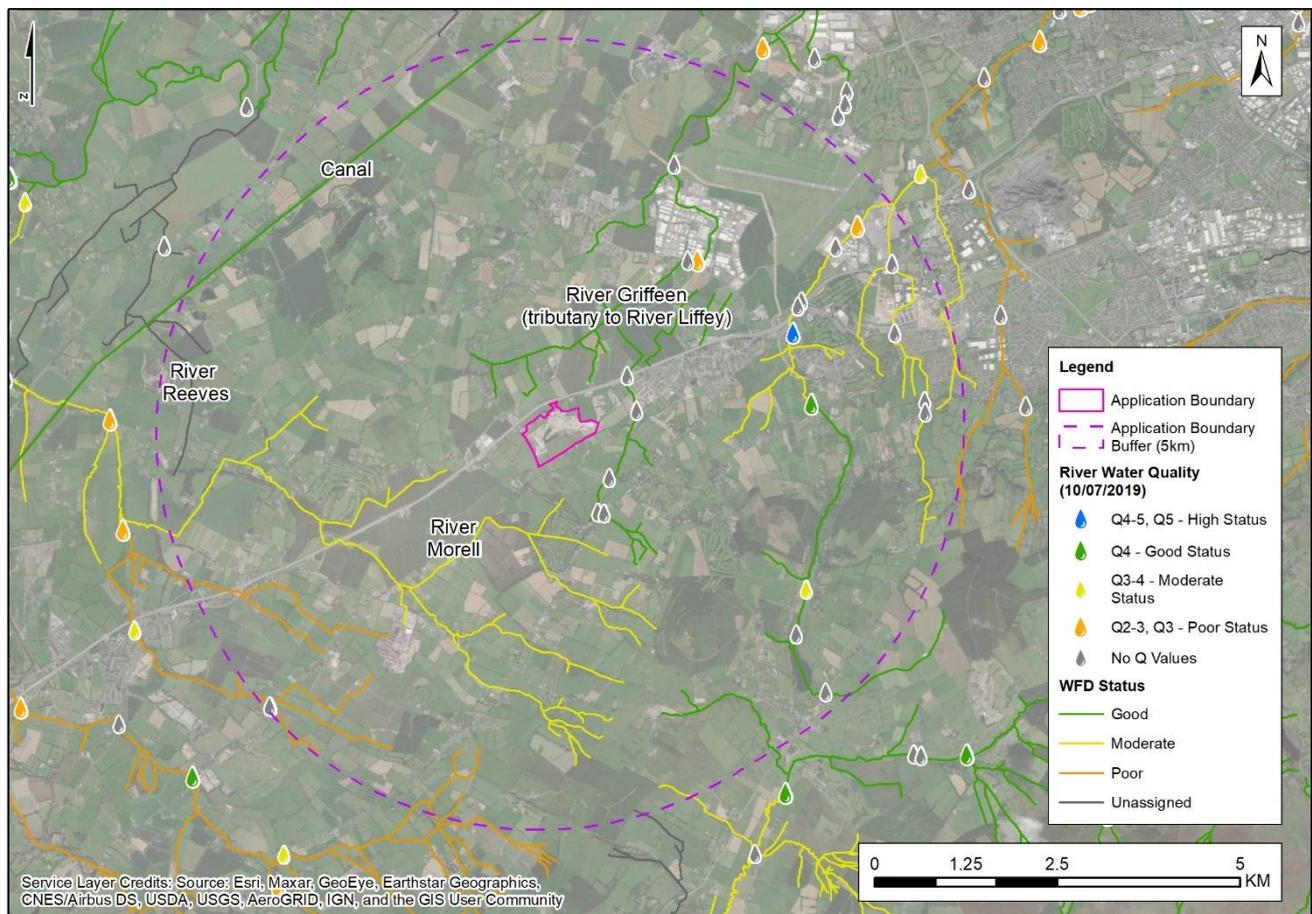
The elevated arsenic concentrations are interpreted by Golder to be naturally occurring rather than related to plant or facilities at the Site. Arsenic is often naturally elevated in groundwater hosted in greywacke or shales, with poorly productive bedrock having increased probability of higher concentrations (McGrory et al., 2017).

No other exceedances were identified to exceed the standards during the 2020 and 2021 monitoring. For completeness, the surface water data presented in Byrne Environmental (2015) was also compared against the same surface water screening values as the most recent set of samples. No exceedances were found. Results from 2015 and 2020/21 indicate that water quality at SW1 was reasonably good. Indications from before this date would rely on Water Framework Directive (WFD) status for waterbodies associated with any Site connectivity. The Site is located in the WFD Kilcullen Groundwater body (which is generally described as poorly productive and of 'good' water quality) and the WFD surface water catchment for Liffey and Dublin Bay via the River Griffeen. The River Griffeen is not designated as a salmonid river (EPA, 2021) but is known to contain large trout (IFI, 2019). To the north and the east of the Site the River Griffeen (which is a tributary of the Liffey

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<sup>2</sup> <https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit#screening-tests-freshwaters>

River system) is classified as 'good' (Figure 4) under the River Waterbody WFD 2013-2018 system. The most recent river quality (Q Value) status was recorded at the College Road Station as 2-3 ('poor') in 1991.



**Figure 4: Local River WFD Designations, EPA River Quality Values, EPA Monitoring Stations (after EPA, 2021 and GSI, 2021).**

### Site Water and Groundwater Interaction

As described in Chapter 6, a summary of the 2021 Site water requirements and management scheme, as derived from walkovers carried out in 2020 and 2021, is shown in Figure 5 and Figure 6. An on-Site well supplies toilet water to the office buildings and is also used to supply the four wheelwash facilities located in the northern area. The 2021 wheelwash facilities are in line with those described in 2013 and 2015.

An operational water supply is also required at the Site for use in the recycling plant and concrete plant. Operational water is pumped from the pond in the flooded western pit area for use in the central plant area. Any pumped water that is not used as part of the recycling and concrete plant activities, or temporarily stored in the water tank, is allowed to discharge to a culvert located adjacent to the Site entrance. Overflow from the water tank is returned to the flooded pit area if necessary. A drainage survey of the culvert used for discharge was carried out in 2021 and identified a piped flow path north towards the N7 roadway, where it joins the road's drainage system. The discharge culvert is not in connectivity with the Irish Water public supply mains which runs through the Site boundary near the entrance.

Wastewater is generated at the Site via the recycling plant and welfare facilities and is handled separately to the operational and potable water supplies. Welfare wastewater is discharged to ground in the northern area via the septic tank arrangement, located ca. 70 m from the on-Site potable supply well. Wastewater generated from the recycling plant is pumped to a silt tank, where flocculant is added. The silt laden water is then transferred to either the silt press or the contained silt ponds, these are identified in Figure 6. In the silt ponds,

the silt settles from the water and the water is either allowed to evaporate or discharge to ground. It is expected that the settlement of silt in these ponds will limit the amount of wastewater infiltration to ground.

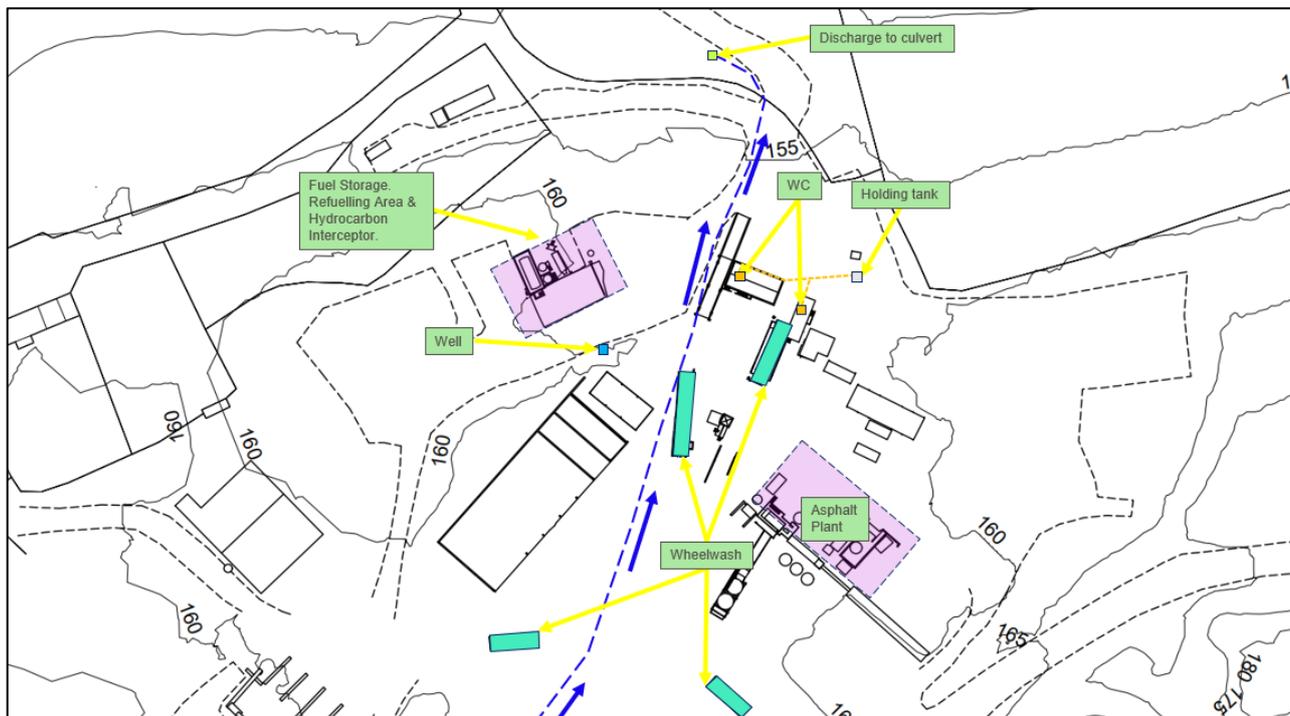


Figure 5: 2021 Site Layout, Key Infrastructure and Water Management in the Northern Area of the Site.

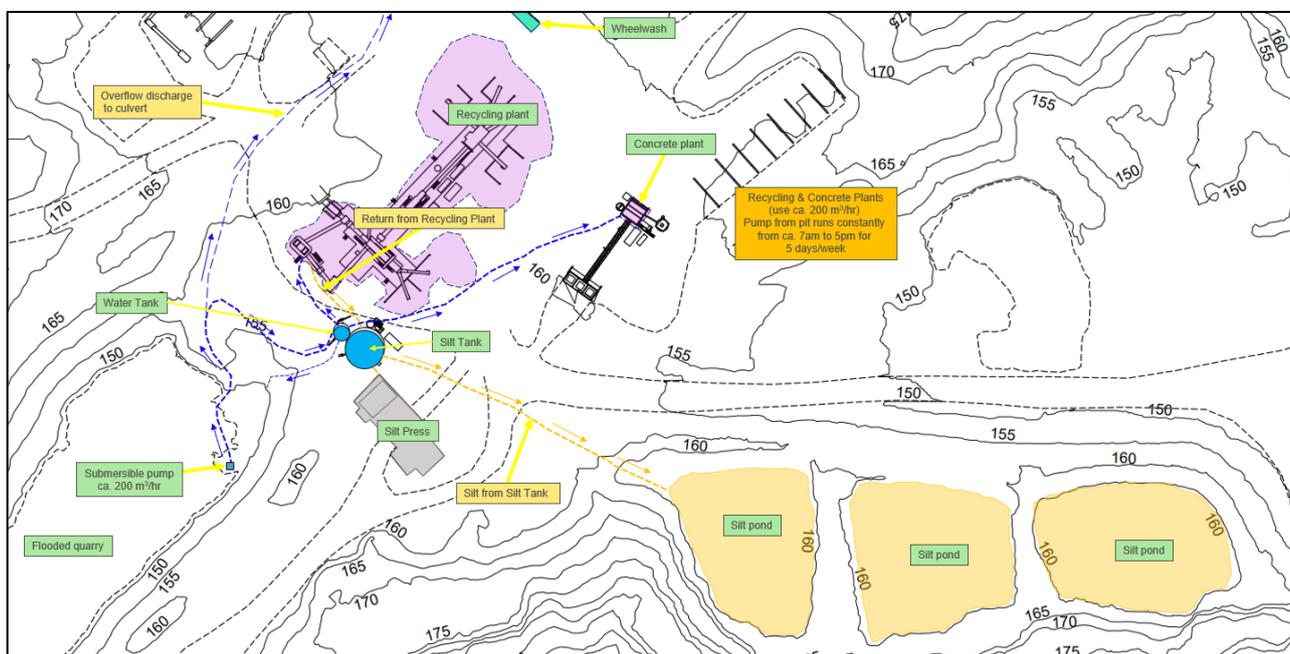


Figure 6: 2021 Site Layout, Key Infrastructure and Water Management in the Central and Southern Areas of the Site.

Some infiltration and recharge from groundwater appears to occur in the standing water bodies within the Site but this relationship between Site and groundwater appears to be locally confined to the surrounding groundwater body and limits the movement of Site water to a maximum distance of 100m from the Site (Chapter 6).

### Retrospective Baseline Operational Summary

In summary, there is no groundwater connectivity beyond ca. 100 m from the Site. There are no discharges to surface water features on or outside of the Site. A culvert used for Site discharge uses a piped flow path north towards the N7, where it joins the road's drainage system. Water quality via this pathway is identified as being of good quality and with the exception of a minor arsenic exceedance no other exceedances were identified during the 2020 and 2021 monitoring. This result was also comparable with monitoring documented by Byrne Environmental (2015). The WFD results for surface water with connectivity to the Site range from 'poor' status in 1991 to 'good' within the River Griffeen (which is a tributary of the Liffey River system) during the WFD (2013-2018 status).

## 3.2 Natura 2000 Sites

Sites of international importance, including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), are collectively known as Natura 2000 sites. These sites contain examples of some of the most important natural and semi-natural ecosystems in Europe. The designated search area was 15 km from the Site for Natura 2000 sites and also included Natura 2000 sites beyond this distance where hydrological connectivity was possible (Table 1 and Figure 7 below).

**Table 1: Natura 2000 Sites within 15 km Plus Dublin Bay.**

Natura 2000 Site	SAC/SPA (Key qualifying features)	Approximate distance to Site (KM)
Red Bog	SAC – Selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (numbers in brackets are Natura 2000 codes): [7140] Transition Mires	8.1
Glenasmole Valley	SAC – The site is selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): Orchid-rich Calcareous Grassland* [6410] Molinia Meadows [7220] Petrifying Springs*.	8.1
Wicklow Mountains	SAC – Selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [3160] Dystrophic Lakes; [4010] Wet Heath; [4030] Dry Heath; [4060] Alpine and Subalpine Heaths; [6130] Calaminarian Grassland; [6230] Species-rich Nardus Grassland*; [7130] Blanket Bogs (Active)*; [8110] Siliceous Scree; [8210] Calcareous Rocky Slopes; [8220] Siliceous Rocky Slopes; [91A0] Old Oak Woodlands; and [1355] Otter ( <i>Lutra lutra</i> ).	8.1
Rye Water Valley/Cartron	SAC – The site is selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):  [7220] Petrifying Springs* [1014] Narrow-mouthed Whorl Snail ( <i>Vertigo angustior</i> ) [1016] Desmoulin's Whorl Snail ( <i>Vertigo moulinsiana</i> )	9.7

Natura 2000 Site	SAC/SPA (Key qualifying features)	Approximate distance to Site (KM)
Poulaphouca Reservoir	SPA – The site is a designated under the E.U. Birds Directive, of special conservation interest for the following species: Greylag Goose and Lesser Black-backed Gull.	9.6
Wicklow Mountains	SPA – The site is designated under the E.U. Birds Directive, of special conservation interest for the following species: Merlin and Peregrine.	11.9
South Dublin Bay SAC and South Dublin Bay and River Tolka SPA.	SAC's and SPA's associated with Dublin Bay. South Dublin Bay SAC Mudflats and sandflats not covered by seawater at low tide [1140]. Annual vegetation of drift lines [1210]. Salicornia and other annuals colonising mud and sand [1310]. Embryonic shifting dunes [2110]. South Dublin Bay and River Tolka SPA. Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046]. Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Knot ( <i>Calidris canutus</i> ) [A143] Sanderling ( <i>Calidris alba</i> ) [A144].	Ca. 34 km (measured in terms of possible hydrological pathway).

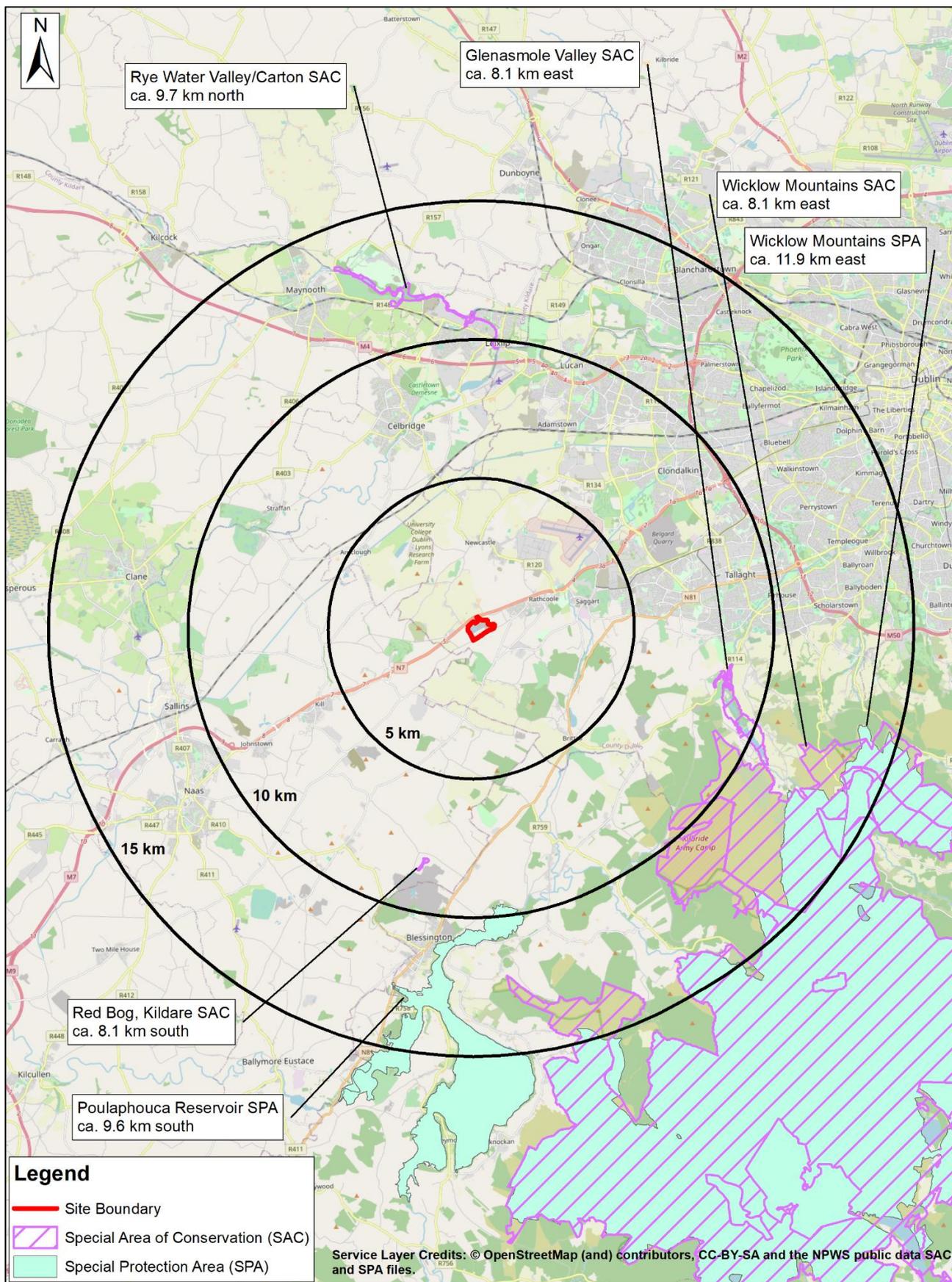


Figure 7: Natura 2000 Sites within 15 km of the Site.

### 3.3 Screening Assessment

Throughout this stage 1 screening assessment it is important to reiterate the key focus points required. In essence, have quarrying activities at the Site between 1990 and the present day created the potential or indeed actual degradation (likely significant effect) of Natura 2000 sites and associated qualifying species. The following sections serve to further evaluate this question.

#### 3.3.1 Water

Quarrying works have minimal potential to adversely affect surface and groundwater quality as indicated in the accompanying Water chapter (Chapter 6). As previously stated, there are no dynamic surface water features on the Site and no discharges to watercourses that would lead to a measurable adverse contribution. The relationship between standing surface water caused by excavations and the surrounding bedrock is confined to the Site scale (ca. 100m) and contained as such to avoid degradation of neighbouring groundwater that may be in continuity with watercourses in the Liffey catchment.

The nearest surface water feature to the Site is the Tootenhill Stream which flows in a north-easterly direction about 0.75 km to the east of the Site. The main potential polluting impact associated with the Site and the historic and current activities is the introduction of hydrocarbons to the underlying groundwater. Given the embedded design parameters (plant and machinery maintenance that has occurred historically) and absence of bedrock/groundwater pathways it is considered very unlikely that hydrocarbon pollution will occur or has occurred at the Site and the risk of pollution to surrounding groundwater environment is deemed to be very low.

Given the above, in a worst case scenario an item of machinery associated with the historic operation of the Site could have leaked hydraulic fluid or hydrocarbon. In this instance the spill would have been contained at the scene and collected if possible. Residual spill would have been contained within the Site subject to dilution and evaporation over an extended period of time and pollutants would have been contained at the Site scale. As such, no risks would have been afforded to Natura 2000 habitat or species as defined by the source pathway model of likelihood.

#### Air Quality – Dust

Dust deposition is the predominant risk which may arise from historic and current activities arising from soil/aggregate movement and dust mobilised from vehicle movements. However, given the embedded design parameters dust deposition and residual effects to Natura 2000 habitat or species are considered highly unlikely. The nearest SACs are over 8 km from the Site. Advice provided within the Design Manual for Roads and Bridges (DMRB)<sup>3</sup> suggests that the most sensitive species appear to be affected by dust deposition at distances > 200m from the source<sup>4</sup>. Accordingly, given the low risk of dust mobilisation on Site, embedded design parameters and distance to the nearest Natura 2000 site it is considered unlikely that dust deposition will have had an impact on any nearby Natura 2000 designations.

#### Noise

Of the Natura 2000 designations in the search area, it is considered that the SPAs would be sensitive to noise disturbance, given that they are designated on the basis of supporting bird species. Activities within Site which may contribute to increased noise levels include traffic movements and quarrying activities including periodic blasting. The closest SPAs to the Site are the Poulaphouca Reservoir and Wicklow Mountains situated 9.6 km and 11.9 km away respectively. Given the distance of the SPAs from the Site, it is considered that over this distance the noise levels within the Site would have had a negligible impact on the SPAs. A noteworthy result

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<sup>3</sup> The Highways Agency, Transport Scotland, Welsh Assembly Government & The Department for Regional Development Northern Ireland Design Manual for Roads and Bridges Air Quality

from previous ecological surveys of the Site is the presence of Peregrine falcon (*Falco peregrinus*) which are known to make use of cliffs that would have not existed prior to quarrying.

The Peregrine falcon is listed on Annex I of the Birds Directive. As described in the ecology chapter within an EIAR for the Site in 2015 (Byrne Environmental, 2015) a single Peregrine was seen flying above the quarry Site to the west. It was subsequently seen to roost on the cliff face above the waterbody. Due to the timing of this observation it cannot be concluded that breeding/nesting has been occurring however it strongly indicates that this may have been the case. During the survey of 2010 (which also took place in November) Peregrine was not recorded although confirmation of its presence was made during both breeding and winter seasons as part of the 2007- 2011 Bird Atlas project (Balmer *et al.*, 2013).

Irrespective of the fact that the Peregrine would not have nesting habitat if it were not for the quarry, the question of whether breeding peregrine are likely to have been disturbed by Site operations is a key question. The relative frequency of records over multiple breeding seasons indicates that breeding habitat has remained viable and even optimal perhaps.

A survey of quarry-nesting Peregrines conducted in the Republic of Ireland between 1991 and 1993 estimated that 65 quarries were occupied by Peregrines. There was a marked east/west gradient in occupancy with most occupied quarries in the east. Occupation of quarries by Peregrines is primarily influenced by cliff height (Moore *et al* 1997). This study went on to conclude that the effect of quarry activity was not significant in either analysis indicating that Peregrines nest in quarries with moderately high cliffs irrespective of whether they are in active use or not. Indeed, some of the Peregrines in this study nested on recently blasted cliff-faces and most birds in active quarries appeared quite unaffected by the intensive activity and noise going on below them. In the absence of interference to eyries or their occupants, breeding birds will ignore most human disturbance (Ratcliffe, 1993).

The continued presence of breeding Peregrine at the Site would indicate a level of tolerance to anthropogenic disturbance caused by quarrying activities. In essence, there is no evidence to suggest that this species, which is protected under the Habitats Directive, has been afforded an adverse significant effect when considering historic and current activities at the Site. This species, and other breeding birds, will be surveyed during Spring 2021 and a Peregrine management plan will be created for the Site.

## 4.0 STAGE 1 SCREENING ASSESSMENT CRITERIA

### 4.1 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 sites by virtue of:

<b>Size and Scale</b>	None – the size and scale of the Natura 2000 sites has not been and will not be affected.
<b>Land-take</b>	None from Natura 2000 sites and no further land take is required from the Site as the quarry is already in place.
<b>Distance from Natura 2000 site or key features of the site</b>	<ul style="list-style-type: none"> <li>■ Red Bog SAC 8.1 km;</li> <li>■ Glenasmole Valley SAC 8.1 km;</li> <li>■ Wicklow Mountains SAC 8.1 km;</li> <li>■ Rye Water Valley/Carton SAC 9.7 km;</li> <li>■ Poulaphouca Reservoir SPA 9.6 km;</li> <li>■ Wicklow Mountains SPA 11.9 km; and</li> <li>■ Dublin Bay (SAC and SPA's) ca. 34 km.</li> </ul>

<b>Resource requirements (water abstraction etc.)</b>	No resources from a Natura site are required or have been required.
<b>Emissions (disposal to land, water or air)</b>	There are no emissions to water that could have affected Natura 2000 sites. Possible hydrological pathways have been identified between the Site and Natura 2000 sites but there is no evidence to suggest that water quality has had, or has the potential to have, a likely significant effect on water quality to downstream receptors. Air emissions from the Site (historic use of plant and machinery at the Site) are unlikely to cause/have caused impacts on the Natura 2000 sites due to the absence of ecological pathways and negligible emissions.
<b>Excavation requirements</b>	There are and have been no excavation requirements within the Natura 2000 sites or those that could affect Natura 2000 sites through source pathway modelling.
<b>Transportation requirements</b>	Transportation of goods to and from Site will not affect / would not have affected Natura 2000 sites in a way that would be measurable.
<b>Duration of construction, operation, decommissioning etc.</b>	This assessment has considered potential effects from 1990 to the present day. As such, this process has not considered the nature of future operations.
<b>Other</b>	None.

## 4.2 Describe any likely changes to the site arising as a result of:

<b>Reduction of habitat area</b>	None to Natura 2000 sites.
<b>Disturbance to key species</b>	Disturbance to key species is not / has not been possible owing to the distance between the Site and Natura 2000 sites including the absence of ecological pathways or synergies. Peregrine may have been afforded a positive impact via habitat creation that would otherwise not have existed.
<b>Habitat or species fragmentation</b>	There has been no habitat or species fragmentation due to the operations at the Site. The Site is not part of the Natura 2000 sites in question and no resources are / have been required from them. Designated habitats and species of the SACs/SPAs will not be / have not been directly or indirectly impacted given their distance from the Site.
<b>Reduction in species density</b>	No historic or current reduction in species density is assessed as having occurred.
<b>Changes in key indicators of conservation value (water quality etc.)</b>	None.
<b>Climate change</b>	No measurable contribution.

### 4.3 Describe any likely impacts on the Natura 2000 sites as a whole in terms of:

<b><i>Interference with the key relationships that define the structure of the site:</i></b>	No impacts are likely to have been afforded.
<b><i>Interference with key relationships that define the function of the site</i></b>	No impacts are likely to have been afforded.

### 4.4 Provide indicators of significance as a result of the identification of effects set out above in terms of:

<b>Loss (Estimated percentage of lost area of habitat)</b>	There has been no habitat loss.
<b>Fragmentation</b>	There has been no habitat fragmentation.
<b>Disruption and disturbance</b>	Previous and current disturbance and disruption to species is considered unlikely. Species for which the Natura 2000 sites have been designated are highly unlikely to utilise the Site or be influenced by the Site due to distance and / or a lack of environmental connectivity between the sites. Peregrine falcon seem tolerant of Site activity and have been recorded at the Site over many years.
<b>Change to key elements of the site (e.g. water quality etc.)</b>	None. The Project has not resulted in any measurable adverse effects on surface and groundwater quality, availability, flow or distribution.

### 4.5 Cumulative Impact

Cumulative impacts are defined as impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project (European Communities, 1999). A review of the relevant County Council planning website was undertaken for details of other developments in the area which may have led to cumulative impacts potentially arising. Proposed developments identified were mainly for dwelling or extension/alterations to dwellings and light industrial infrastructure development. As such, it is considered that no cumulative impacts have arisen from current and historical features and activities associated with the Project.

### 4.6 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 or magnitude of impacts is unknown

As described within this Stage 1 assessment, it is considered certain that the historic and current operation of the Site has not had a likely significant effect on the Natura 2000 sites pertinent to this Stage 1 Screening Assessment. There is a high level of confidence in the likely degree of the magnitude of impacts in accordance with the Site and as such it is concluded objectively that significant effects have not been afforded.

The following key considerations contributed towards this conclusion:

- The Site's operation has occurred as a nearly closed loop system regarding discharges with no aquatic or terrestrial connectivity with Natura 2000 receptors as defined within this report. Discrete water discharges via the N7 roadway have been sampled in recent years and there is no evidence of water quality being adversely affected by this contribution; and
- There is sufficient distance between the Site and all Natura sites that the Site has not caused disturbance / displacement of those species that form the part of the qualifying interests of the Natura 2000 designation. On a precautionary basis the presence of peregrine falcon on the Site will be subject to measures detailed within the accompanying biodiversity chapter which state that a breeding bird (including Peregrine Falcon) survey will be undertaken at the next opportunity, this has commenced in March 2020. The result of this work will form the basis of a Peregrine falcon management and monitoring plan for the Site.

## 5.0 DATA COLLECTED TO CARRY OUT THE ASSESSMENT

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***Reviewed by:***

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***Sources of Data:***

Existing information from NPWS, GSI, and EPA.

***Level of assessment completed:***

Desktop study and Screening report.

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