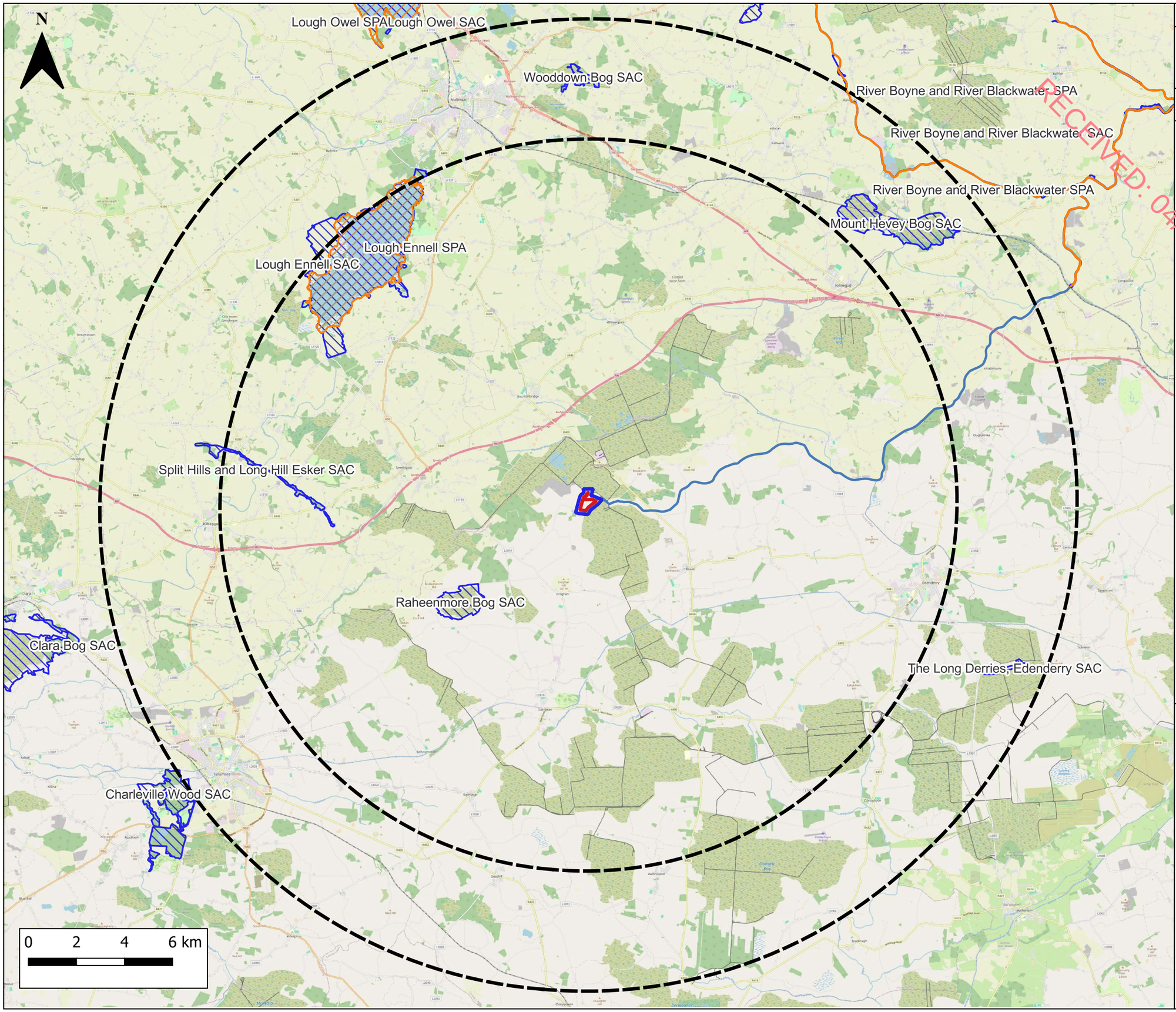
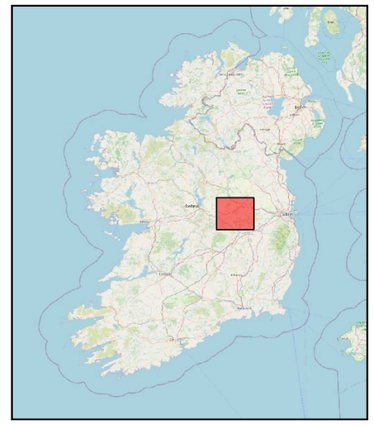


NOTES

1. Base Mapping: OpenStreetMap © (www.openstreetmap.org/copyright)

LEGEND

- Proposed Planning Application Area
- Applicant Land Interest Boundary
- 20 km and 15 km Buffers
- Special Protection Areas (SPA)
- Special Areas of Conservation (SAC)
- Surface Water Connectivity from the Site



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BD FLOOD

EIAR BIODIVERSITY CHAPTER

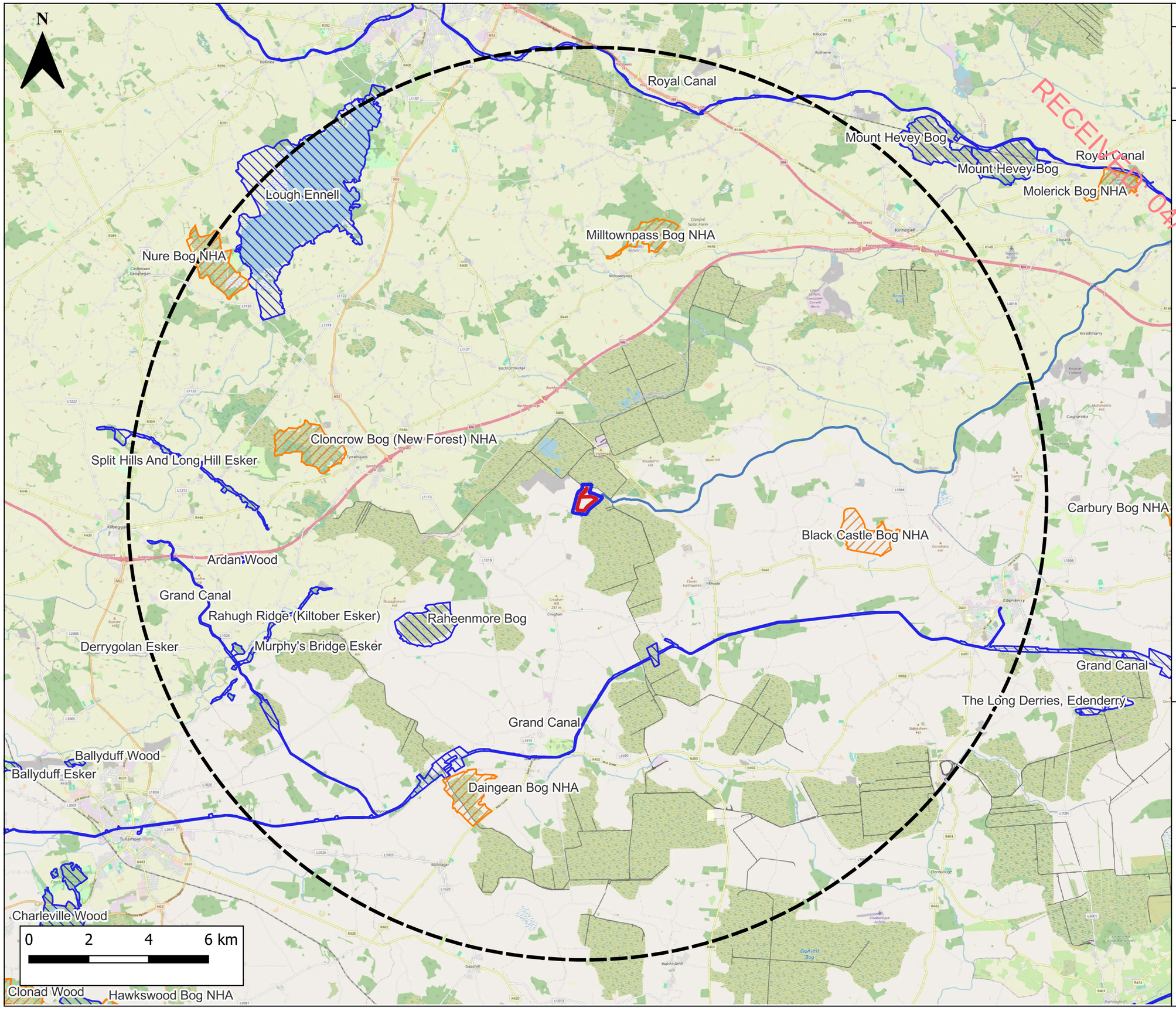
Proposed S&G Pit

Derryarkin, Rhode, Co. Offaly

European Sites Map

FIGURE 5-2

Scale	Date
1:150000 @ A3	SEP 2025



NOTES

1. Base Mapping: OpenStreetMap © (www.openstreetmap.org/copyright)

LEGEND

- Proposed Planning Application Area
- Applicant Land Interest Boundary
- 15 km Buffer
- Natural Heritage Areas (NHA)
- Proposed Natural Heritage Areas (pNHAs)
- Surface Water Connectivity from the Site

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EIAR BIODIVERSITY CHAPTER

Proposed S&G Pit

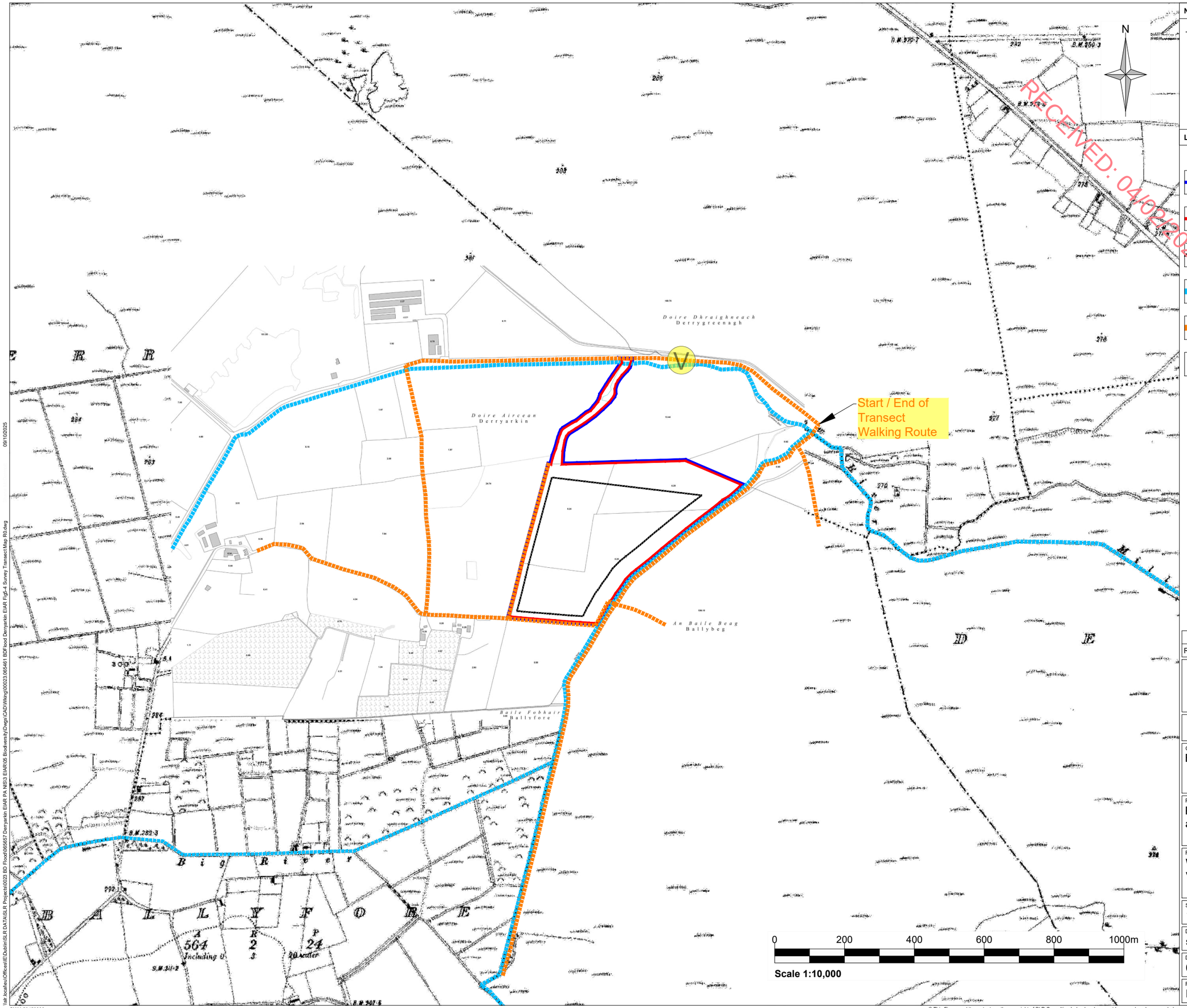
Derryarkin, Rhode, Co. Offaly

Natural Heritage Areas Map

FIGURE 5-3

Scale: 1:120000 @ A3

Date: SEP 2025



Notes:

Tailte Éireann OSi Mapping 5,000 scale - sheet no.'s 3180 & 3181

Legend:

- Applicant Land Interest Boundary c. 19.5 hectares
- Proposed Planning Application Area 19.5 hectares
- Proposed Sand and Gravel Extraction Area 11 hectares
- Stream / River Features
- Walked Transect Route
- Survey Viewpoint Location

Rev	Amendments	Date	By	Chk	Auth

SLR

www.slrconsulting.com

Client
BD Flood Unlimited Company

Project
Proposed Sand and Gravel Development at Derryarkin, Co. Offaly

Figure Title
Wintering Bird Surveys: Transect Route and Viewpoint Survey Location

Scale	SLR Project No.
1:10,000 @ A3	501.00023.065461

Designed	Drawn	Checked	Authorised
smcd	smcd	jm	jm
Date	Date	Date	Date
01/25	01/25	09/25	09/25

Figure Number **Figure 5-4** Rev. **0**

09/10/2025

\\slr.local\eu\Offices\IE\Dublin\SLR DATA\SLR Projects\00023 BD Flood\065657 Derryarkin EIAR PA NI\3 EIAR\05 Biodiversity\Dwgs\CAD\Wking\00023.065461 BDFlood Derryarkin EIAR Fig5-4 Survey Transect Map R0.dwg

CYAL50450233

Appendix 5-A Relevant Legislation

Relevant Legislation[15]

EIA Directive

The EIA Directive, Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment as amended by Council Directive 97/11/EC of 3 March 1997, Directive 2003/35/EC of 26 May 2003 and Directive 2009/31/EC of 23 April 2009, now codified in Directive 2011/92/EU of 13 December 2011 and amended in Directive 2014/52/EU of 16 April 2014, is designed to ensure that projects likely to have significant effects on the environment are subject to a comprehensive assessment of environmental effects prior to project consent being given.

The EIA Directive was first transposed into Irish law by the European Communities (Environmental Impact Assessment) Regulations, 1989 (S.I. No. 349 of 1989) which amended the Local Government (Planning and Project) Act, 1963 (and other legislation) to provide for environmental impact assessment. The European Union (Planning and Project) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) transpose the requirements of Directive 2014/52/EU, Amending previous Directive 2011/52/EU, on the assessment of the effects of certain public and private projects on the environment (the EIA Directive) into Irish planning law.

Habitats and Birds Directive

The Habitats Directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species. Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora was adopted in 1992 and aims to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. It forms the cornerstone of Europe's nature conservation policy with the Birds Directive and establishes the EU wide Natura 2000 ecological network of protected areas, safeguarded against potentially damaging developments.

The Natura 2000 network of protected areas is known as Special Areas of Conservation (SAC) and Special Protection Areas (SPA). In general terms, they are considered to be of exceptional importance in terms of rare, endangered or vulnerable habitats and species within the European Community. The requirements of the Habitats Directive have been transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011 [S.I. No. 477/2011]. This legislation affords protection to both Special Protection Areas and Special Areas of Conservation.

Special Areas of Conservation (SAC) are designated under the Conservation of Natural Habitats and of Wild Fauna and Flora Directive 92/43/EEC (Habitats Directive) which is transposed into Irish law by the EC (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). Special Protection Areas (SPA) are classified under the Birds Directive (2009/147/EC on the Conservation of Wild Birds). Article 6(3) of the Habitats Directive requires an 'appropriate assessment' to be undertaken for any plan or project that is likely to have a significant effect on the conservation objectives of a Natura 2000 site. An 'appropriate assessment' is an evaluation of the potential impacts of a plan or project on the integrity of a Natura 2000 site, and the incorporation, where necessary, of measures to mitigate or avoid negative effects.

National Legislation

Flora and fauna in Ireland are protected at a national level by the Wildlife Acts 1976 to 2018 and the Floral (Protection) Order 2015. Natural Heritage Areas (NHA) are areas that are considered to be

[15] Please note that the summary of relevant legislation provided here is intended for general guidance only. The original legislation should be consulted for definitive information.

important for the habitats present or for the species of plants and animals supported by those habitats. Under the Wildlife Amendment Act 2000, NHAs are legally protected from damage from the date they were formally proposed for designation. Section 19(1) of the Act states that 'Where there is a subsisting natural heritage area order in respect of any land, no person shall carry out, or cause or permit to be carried out, on that land any works specified in the order or any works which are liable to destroy or to significantly alter, damage or interfere with the features by reason of which the designation order was made'.

In addition, a list of proposed NHAs (pNHAs) was published in 1995 but to date these have not had their status confirmed. Prior to statutory designation, pNHAs are subject to limited protection under various agri-environment and forestry schemes and under local authority planning strategies such as County Development Plans.

Regional Spatial and Economic Strategy – Eastern and Midland Regional Assembly

The relevant regional biodiversity policy objectives are set out in the following section:

RPO 7.16: Support the implementation of the Habitats Directives in achieving an improvement in the conservation status of protected species and habitats in the Region and to ensure alignment between the core objectives of the EU Birds and Habitats Directives and local authority development plans.

RPO 7.17: Facilitate cross boundary co-ordination between local authorities and the relevant agencies in the Region to provide clear governance arrangements and coordination mechanisms to support the development of ecological networks and enhanced connectivity between protected sites whilst also addressing the need for management of alien invasive species and the conservation of native species.

RPO 7.18: Work with local authorities and state agencies to promote the development of all aspects of park management in the Wicklow National Park and the Slieve Bloom Mountains.

RPO 7.19: Support the consideration of designating a National Park for the peatlands area in the Midlands.

RPO 7.20: Promote the development of improved visitor experiences, nature conservation and sustainable development activities within the Dublin Bay Biosphere in cooperation with the Dublin Bay UNESCO Biosphere Partnership.

Relevant Planning Policy

The planning policy and legislation that is relevant to the development.

Offaly County Development Plan 2021-2027

The relevant local planning policies have been extracted from Volume 1 of the Offaly County Development Plan 2021-2027. These policies are specific to "*Chapter 4: Biodiversity and Landscape*" and are concerned with the policies and objectives relating to biodiversity:

BLP-01 It is Council policy to protect, conserve, and seek to enhance the county's biodiversity and ecological connectivity.

BLP-02 It is Council policy to conserve and protect habitats and species listed in the Annexes of the EU Habitats Directive (92/43/EEC) (as amended) and the Birds Directive (2009/147/EC), the Wildlife Acts 1976 (as amended) and the Flora Protection Orders.

BLP-03 It is Council policy to support and co-operate with statutory authorities and others in support of measures taken to manage proposed or designated sites in order to achieve their conservation objectives.

BLP-04 It is Council policy to protect and maintain the conservation value of all existing and future Natural Heritage Areas, proposed Natural Heritage Areas, Nature Reserves, Ramsar Sites, Wildfowl Sanctuaries and Biogenetic Reserves in the county.

BLP-05 It is Council policy to ensure that development does not have a significant adverse impact, incapable of satisfactory avoidance or mitigation, on plant, animal or bird species protected by law.

BLP-06 It is Council policy to consult with the National Parks and Wildlife Service, and take account of any licensing requirements, when undertaking, approving or authorising development which is likely to affect plant, animal or bird species protected by law.

BLP-07 It is Council policy to support the implementation of the National Biodiversity Action Plan 2017- 2021 and the Offaly Heritage Plan Key Actions 2017-2021 and future editions in partnership with relevant stakeholders subject to available resources.

BLP-11 It is Council policy to protect and conserve the landscape, natural heritage and biodiversity value of esker systems in the county as identified in the Offaly Esker Study, 2006.

BLP-12 It is Council policy to assess the impact of proposals for quarry development on nearby eskers, with reference to their status or relative importance, for example, amenity, landscape and scientific value in the context of the overall esker system.

BLP-13 It is Council policy to recognise the natural heritage value of disused quarries as rich habitats and to encourage landowners to preserve quarries post extraction as habitats rather than levelling or infilling the quarry area where possible subject to health and safety considerations and the protection of the relevant conservation objectives, qualifying interests and integrity of Natura 2000 sites.

BLP-14 It is Council policy to protect the county's designated peatland areas and landscapes, including any historical walkways through bogs and to conserve their ecological, archaeological and cultural heritage and to develop educational heritage.

BLP-15 It is Council policy to work with adjacent local authorities and relevant stakeholders in promoting a National Park designation for the peatlands in the midlands and a 'Regional Peatway' connecting natural and cultural attractions.

BLP-17 It is Council policy to support the National Parks and Wildlife Service in carrying out an EU LIFE fund supported raised bog restoration project in restoring the following Special Areas of Conservation sites in the county to favourable conservation status:

- Clara Bog;
- Ferbane Bog;
- Mongan Bog;
- Moyclare Bog;
- Raheenmore Bog; and
- Sharavogue Bog.

BLP-18 It is Council policy to support collaboration between Offaly County Council, Regional Transition Team and relevant stakeholders of a partnership approach to integrated peatland management for a just transition that incorporates the management, rehabilitation and restoration / re-wetting of significant tracts of peatlands in conjunction with appropriate developed after uses.

BLP-20 It is Council policy to preserve riparian buffer strips free from development by reserving a minimum of 10 metres either side of all watercourses (measured from top of bank) with the full extent of the protection determined on a case by case basis by the Council, based on site specific characteristics and sensitivities.

BLP-21 It is Council policy to promote clear span bridging structures as the preferred option for culverts. Any development proposal requiring culverting should also document stream habitat lost and provide compensatory habitat where possible. Realignment of water courses should incorporate stream enhancement measures, as outlined in Office of Public Works Environmental Guidance. The Council will consult with Inland Fisheries Ireland in relation to riparian and instream works as appropriate.

BLP-24 It is Council policy to support the protection and management of existing networks of woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character, and to strengthen local networks.

BLP-25 It is Council policy to encourage the planting of native species in all new residential developments (individual and multiple units) and as part of landscaping for commercial and industrial developments.

BLP-26 It is Council policy to require, where practical, the management of mature trees, such as tree surgery instead of felling particularly where the trees contribute to amenity.

BLP-34 It is Council policy to continue to deliver and support measures for the prevention, control and/or eradication of invasive species within the county, and to seek details of how these species will be managed and controlled where their presence is identified.

BLP-35 It is Council policy to protect and preserve the county's Areas of High Amenity namely the Slieve Bloom Mountains, Clonmacnoise Heritage Zone, Durrow High Cross, Abbey and surrounding area, the River Shannon, Lough Boora Discovery Park, Grand Canal, Croghan Hill, Raheenmore Bog, Pallas Lake, Clara Bog, Clara eskers, Eiscir Riada and other eskers. Notwithstanding the location of certain settlements, or parts of, for which there are settlement plans (Towns, Villages, Sráids), within the Areas of High Amenity, it is not the intention of this policy to hinder appropriate sustainable levels of development (as set out in the plans and subject to proper planning). Further, it is policy to facilitate the sustainable extension and expansion of existing visitor, tourist related or other rural enterprises within the Areas of High Amenity, where such development is appropriate and where it can be demonstrated that it gives 'added value' to the extending activity and to the immediate area which is the subject of the 'Area of High Amenity' designation.

BLP-36 It is Council policy, to ensure that issues of scale, siting, design and overall compatibility (including particular regard to environmental sensitivities) with a site's location within an Area of High Amenity are of paramount importance when assessing any application for planning permission. The merits of each proposal will be examined on a case-by case basis.

BLP-38 It is Council policy to protect and enhance the county's landscape, by ensuring that development retains, protects and where necessary, enhances the appearance and character of the county's existing landscape.

BLP-39 It is Council policy to seek to ensure that local landscape features, including historic features and buildings, hedgerow, shelter belts and stone walls, are retained, protected and enhanced where appropriate, so as to preserve the local landscape and character of an area, whilst providing for future development.

Appendix 5-B Planning Applications Considered for Cumulative Effects

Application No.	Development Description	Cumulative Effects	Approx. Distance
178	Sand and gravel extraction from two areas of land consisting of 30.9 hectares (Area A1 consisting of 19.3 hectares and Area A2 consisting of 11.6 hectares), construction of landscaping berms, restoration of areas on completion of extraction, and all associated ancillary facilities/works. Sand and gravel will be extracted by mechanical means and transported to the existing sand and gravel pit for processing. The applicant is seeking a 5-year planning permission. The application is accompanied by an Environmental Impact Statement (E.I.S.).	The Biodiversity chapter of the EIAR supplied with this application determined that there would be no residual effects on biodiversity.	0.3 km
1849	Development consisting of a total area of 30.2 hectares comprising the following: (a) extraction of sand and gravel from a greenfield area (Area 1 = 26.0 hectares) by mechanical means and transportation to the manufacturing area (Area 2) for processing and all associated facilities/works; (b) continuation of use of the existing authorised manufacturing area (Area 2 = 4.2 hectares) and existing infrastructure consisting of crushing and screening plant, offices, weighbridge, stockpiling areas, entrance, haul roads and all associated ancillary facilities/works; (c) landscaping and restoration of the site including screening berms and all associated ancillary works; (d) the applicant is seeking a 25-year permission as part of the planning application; and (e) the application is accompanied by an Environmental Impact Assessment Report (EIAR).	The Biodiversity chapter of the EIAR supplied with this application determined that there would be no residual effects on biodiversity.	0.67 km
18324	The filling of lands with inert waste consisting of concrete, bricks, tiles and ceramics, soil and stones for the purpose of land reclamation and all associated ancillary facilities. The application is accompanied by an Environmental Impact Assessment Report (EIAR).	The Biodiversity chapter of the EIAR supplied with this application determined that there would be no residual effects on biodiversity.	0.75 km
17251	(a) One no. new two-storey type dwelling house; (b) one no. new domestic garage; (c) installation of a new on-site effluent treatment system; (d) new vehicular entrance;	The Planner's Report concluded that this planning application is exempt from requiring an EIAR.	0.85 km

	(e) new landscaping and all associated site development works.		
21247	A 23-year permission for a 44.0-hectare extension to an existing authorised sand and gravel pit comprising the following: an extraction area of 43.8 hectares; removal of 10.2 hectares of commercial forestry and removal of overburden material from the remaining 33.6 hectares of the proposed extraction area; extraction of sand and gravel by mechanical means; upgrading of the existing internal haul road measuring 0.2 hectares; transportation of extracted material to the existing authorised manufacturing area for processing via the internal haul road; landscaping and restoration of the site including screening berms; and all associated ancillary facilities/works. The application is accompanied by an Environmental Impact Assessment Report (EIAR).	The Biodiversity chapter of the EIAR supplied with this application determined that there would be residual effects of moderate significance on whooper swan and of slight significance on badgers due to a loss of foraging habitat. However, the Planner's Report concluded that there would be no significant effects on biodiversity as a result of the development proposed in this application.	0.84 km
2171	And continuation of use of an internal haul road which measures 1,116 metres in length and connects two areas of an existing authorised sand and gravel pit. Permission for development of an area of 1.4 hectares.	The Planner's Report concluded that this planning application is exempt from requiring an EIAR.	0.84 km

Appendices

Appendix 2-A: Environmental Management System (EMS)

Appendix 2-A

Environmental Management System (EMS) Example

BD Flood Ltd.
The Murrens, Hilltown, Oldcastle, Co. Meath

Environmental Management System - Contents

Index	Rev	Description
Section 1	0	Environmental Policy
Section 2	0	Management Organisation & Responsibilities (including site location map)
Section 3	0	Environmental Legislation & Technical Reference Documents
Section 4	0	Environmental Guidelines
Section 5	0	Environmental Emergency Response (i) Emergency Response Procedure (ii) Emergency Telephone Numbers
Section 6	0	Harmful Substances (i) Guidelines (ii) Material Safety Data Sheets
Section 7	0	Environmental Inspection (i) External Audits by ICF (ii) Monitoring Reports- Dust/Noise/Water (iii) Environmental Management Plans
Section 8	0	Training Record Sheet
Section 9	0	Permits, Plant Layout, site maps
Section 10	0	Community Relations
Section 11	0	Waste Management Records
Section 12	0	Archaeological Assessment Report Murrens
Section 13	0	pNHA Restoration Work, NPWS Report and Dr. Turbidy's report, Photo's of work done.
Section 14	0	Environmental Information & Standards

MANAGEMENT ORGANISATION & RESPONSIBILITIES.

John Flood Managing Director

Vincent Flanagan Operations Manager

Sean Monaghan Environmental Manager

LIST OF RELEVANT IRISH PLANNING AND ENVIRONMENTAL LEGISLATION.

Table of Statutes

The Forestry Act 1946

Local Government (Planning and Development) Act 1963
Local Government (Planning and Development) Act 1976
Local Government (Water Pollution) (Amendment) Act 1976
Local Government (Water Pollution) Act 1977
Local Government (Planning and Development) Act 1982
Local Government (Planning and Development) Act 1983
Air Pollution Act 1987
Safety, Health and Welfare at Work Act 1989
Derelict Sites Act 1990
Local Government (Water Pollution) Act 1990
Local Government (Planning and Development) Act 1990
Local Government (Planning and Development) Act 1991
Local Government (Planning and Development) Act 1992
Environmental Protection Agency Act 1992
Local Government (Planning and Development) Act 1993
Waste Management Act 1996 & Amendments
Planning & Development Act 2000

Table of Statutory Instruments

Local Government (Planning and Development) Regulations 1964.
Local Government (Planning and Development) Regulations 1977 (SI. No.65)
The EC (Waste) Regulations 1979
The EC (Toxic and Dangerous Waste) Regulations 1982
Air Pollution 1987 (Air Quality Standards) Regulations 1987 (SI No.244)
Local Government (Water Pollution) Regulations 1987 (SI No.108)
Air Pollution 1987 (Licensing of Industrial Plant) Regulations 1988 (SI No.266)
European Communities (Environmental Impact Assessment) Regulations 1989 (SI No.349)
The EC (Environmental Impact Assessment) Regulations 1990
The EC (Asbestos Waste) Regulations 1990
Local Government (Planning and Development) Regulations 1990 (SI. No.25)
The EC (Waste oil) Regulations 1992
Local Government (Water Pollution) Regulations 1992 (SI No.271)
Access to information on the Environment Regulations 1996
The EC (Waste) Regulations 1994
Environmental Protection Agency Act 1992 (Commencement) Order 1994 (SI No.82)
Environmental Protection Agency (Licensing) Regulations 1994
European Communities (Environmental Impact Assessment) (Amendment) Regulations 1994 (SI No.84)
Local Government (Planning and Development) Regulations 1994 (SI No.86)
Local Government (Planning and Development) Regulations 2001 (SI No.600)

List of Technical Reference Documents

1. Sand and Gravel Association (SAGA) Code of Practice, August 1991.
2. BACMI The British Aggregate Construction Materials Industries, Environmental Code, March 1992.
3. The Extractive Industry and the Environment in Ireland, Britain and the rest of the EC. Irish Mining and Quarrying Society Conference 1993.
4. Environmental Practices and Audit Checklist for the Ready Mixed Concrete Industry. ERMCO 1996.
5. Environmental Protection Agency (EPA). Guidance Notes on Noise in Relation to Scheduled Activities 1996.
6. Secretary of State's Guidance - Blending, packing, loading and use of bulk cement. Department of the Environment, London, February 1991.
7. (a) Secretary of State's Guidance - Quarry Processes PG3/9 (96) Department of the Environment, London.
   (b) Secretary of State's Guidance - Mineral Drying and Roadstone Coating Processes, PG3/15 (96) Department of the Environment, London.
   (c) Secretary of State's Guidance - Mobile Crushing and Screening Processes, PG3/16 (96) Department of the Environment, London.
8. Minerals Planning Guidance: The control of noise at surface mineral workings (MPG 11), Department of Environment, London, April 1993.
9. Quarries and Ancillary Activities, Guidelines for Planning Authorities, Dept. of the Environment, Heritage & Local Government, April 2004
10. Environmental Management in the Extractive Industry, EPA, 2005

SECTION 4 - ENVIRONMENTAL GUIDELINES

Introduction

These Guidelines provide advice on possible Environmental Standards and Emission Limit Values to be adopted in accordance with the BATNEEC principle (Best Available Technology Not Entailing Excessive Cost).

Note: The Irish Concrete Federation Environmental Code shall apply where no particular environmental standards have been set for the Location in applicable Planning Permissions, Air Pollution Licenses, Water Discharge Licences, etc.

Areas of Environmental Concern

- **Noise Control**
- **Control of Air Emissions**
- **Water Management**
- **Waste Management**
- **Visual Amenity & Housekeeping**
- **Archaeology, Ecology & Reinstatement**
- **Energy and Transport**
- **Security & Public Safety**

Section 4.1 - Environmental Guidelines on Noise Control

Introduction
The guideline provides advice on possible actions to improve environmental performance and to minimise impacts in accordance with the BATNEEC the principle (Best Available Technology Not Entailing Excessive Costs).

This guidance refers to general quarry operations including overburden removal, drilling & blasting, crushing & screening, materials handling & loading and to the production of concrete and blocks.

Emissions Limit Values:		
Parameter	**Emissions Standard**	**Basis of Standard**
Noise-day (08.00-20.00 hours)	<55 dB (A)	ICF Environmental Code
Noise-night (20.00-08.00 hours)	<45 dB (A)	ICF Environmental Code

Monitoring of Emissions:
Night work noise emissions
- Measure noise at property boundary at least twice a year
- Noise measurement to be monitored for a period of 60 minutes

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Guideline Basis/Useful References:
- ***"Guidance note for noise in Relation to Scheduled Activities"*** EPA, Wexford 1995
- ***"Environmental Code",*** ICF, Dublin, 2005 Revised Edition

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Some possible Actions to Control Noise (-refer BATNEEC principle):
- Where practical, operate within day hours
- Close door of buildings
- Repair damaged cladding of buildings
- Regular maintenance of noisy plant & equipment
- Use rubber or polyurethane cloths in screens
- Enclose noisy equipment such as, crushers, screens, burners, compressors, etc
- Fit silencers or attenuators
- Fit anti-vibration mountings
- Place screening berms
- In relation to control of noise, maintain plant & equipment, deal promptly with malfunctions and train staff.

Section 4.2 - Environmental Guidelines on Control of Air Emissions

Introduction

The guideline provides general advice on possible actions to improve environmental performance and to minimise impacts in accordance with the BATNEEC the principle (Best available Technology Not Entailing Excessive Cost)

This guidance refers to operations including loading materials & blocks. Not that processing of wet Sand & Gravel is not normally likely to result in release of dust to air.

	Emissions Limit Value:		
	Parameter	**Emission Standard**	**Basis of Standard**
	Measured total solids deposition rate	<350 mg/m²/day (Total=Soluble+ Insoluble)	T.A. Luft
	Visibility of dust emission	Aim for no visible dust emissions	ICF

Monitoring of Emissions to Air:

- Visually check emissions at least once per day–aim to minimise visible dust/smoke/fume emissions
- Measure fugitive dust deposition levels monthly (using T.A. Luft Bergerhoff Gauges as the property perimeter)

Guideline Basis/Useful References:

- ***"Environmental Code",*** ICF, Dublin, 2005 Revised Edition
- ***Environmental Management in the Extractive Industry***, EPA, 2005

Some Possible Actions to Control Emissions to Air(-refer BATNEEC principle):

- Hard surface internal roadways with compacted stone generally and with macadam or concrete to exit
- Keep roadways clean or wet with adequate drains to avoid ponding
- Install a wheel-wash – ensure use, keep clean & filled with water
- Ensure all vehicle exhausts are vertical & modify dumptruck radiator fans to minimise dust rising
- Use deep trough conveyors at ground level to minimise wind whipping
- Enclose conveyors to minimise wind whipping (check strength of structure for increased wind loading) & fit belt scrapers
- Fit last meter of stockpile conveyors & first 0.5 metre of the fall with a full hood, and use water suppression
- Fit a properly sized filters on top of bulk powder silos and control filling/blowing rate
- Condition material containing 0-5mm fines with water before handling
- Place stockpiles in sheltered areas; construct & profile stockpiles to minimise wind-entrainment
- Load to & from stockpiles and load trucks so as to minimise the generation of airborne dust
- Sheet or dampen trucks loaded with material containing 0-3mm fines – as soon as possible after loading
- Avoid the generation of smoke – do not burn rubbish
- In relation to control of emissions, maintain plant & equipment, deal promptly with malfunctions and train staff

Section 4.3 - Environmental Guidelines on Water Management

Introduction

The guideline provides general advice on possible actions to improve environmental performance and to minimise impacts in accordance with the BATNEEC the principle (Best available Technology Not Entailing Excessive Cost)

	Emissions Limit Value:		
	Parameter	**Emission Standard**	**Basis of Standard**
	Total suspended solids	<=35 mg/litre	ICF
	Biological Oxygen Demand	<= 25 mg/ litre	ICF
	pH	<= 9	ICF

Monitoring of Water Discharges (where appropriate):

- Check quality of discharge quarterly or as conditioned in planning permission/discharge licence
- Visually check discharges at least once per month
- Visually check settlement lagoons at least once per month for efficiency

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Guideline Basis/Useful References:

- ***"Environmental Code",*** ICF, Dublin, 2005 Revised Edition
- ***Environmental Management in the Extractive Industry***, EPA, 2005

Some Possible Actions to Manage and Protect Water Quality (-refer BATNEEC principle):

- **Eliminate discharges if possible**
- Minimise use of water generally
- Maximise catchment and recycling of process water and storm water (as appropriate)
- Recycle water from washouts and wheel wash by use of suitable settlement tanks
- Ensure sewage treatment facilities are fully functional and comply with good practice
- Ensure fuel oils are properly bunded, attachments and pumps inside the bund
- Install an oil class interceptor to receive surface water in the area of bunded fuel tanks or as appropriate
- Minimise use of drummed products, see also Section 4.4 Waste Management
- **Refer also to Section 5 on Emergency Response Procedures**

Section 4.4 - Environmental Guidelines on Waste Management

Introduction

The guideline provides general advice on possible actions to improve environmental performance and to minimise impacts in accordance with the BATNEEC the principle (Best available Technology Not Entailing Excessive Cost)

Monitoring:

- Check property regularly for waste generation

Guideline Basis/Useful References:

- ***"Environmental Code",*** ICF, Dublin, 2005 Revised Edition
- ***Environmental Management in the Extractive Industry***, EPA, 2005

Some Possible Actions to Manage Waste(-refer BATNEEC principle):

- Minimise production of waste generally
- Maximise recycling through careful separation of waste streams
- Maintain designated areas for different streams such as metal, timber, tyres, batteries, oils/filters etc.
- Install suitable arrangements for storing old batteries, oil filters etc
- Appoint specialist contractors for the collection and disposal of wastes as appropriate
- If appropriate, specify that suppliers remove the old component when supplying new ones
- Discontinue use of drums or IBCs by installing tanks for bulk deliveries
- Use Just In Time purchasing techniques, if possible, where drum supplies must continue
- **Ensure staff are aware of need for diligence where waste is concerned by ongoing training**
- **Where applicable, ensure returned concrete is reused immediately or recycled regularly to avoid being contaminated and becoming a waste product**
- **Refer also to Section 4.5 on Visual Amenity & Housekeeping**

Section 4.5 - Environmental Guidelines on Visual Amenity & Housekeeping

Introduction

The guideline provides advice on possible actions to improve visual amenity & housekeeping.

Monitoring:

- Check property regularly

Guideline Basis/Useful References:

- ***"Environmental Code",*** ICF, Dublin, 2005 Revision
- Down, C.G. "Amenity Banks and Quarry Landscaping", ***Quarry Management and Products,*** September 1997

Some Possible Actions to Improve Visual Amenity (-refer BATNEEC principle):

- Keep entrance tidy
- Tidy up litter and remove unsightly features
- Clean up spillages
- Keep scrap in designated areas
- Maintain buildings in good condition and renew paintwork regularly
- Repair damaged cladding on buildings
- Maintain signs in good condition
- Maintain lighting and roadways and entrances
- Place screening berms to minimise visual impact
- Profile overburden mounds with regard to visual amenity avoiding long, uniform banks
- Seed newly constructed overburden mounds
- Where necessary, plant hawthorn hedging along the property boundary to provide a tough, hardy, fast growing and inexpensive dense barrier
- Where applicable, minimise and monitor dust & smoke emissions
- Where applicable, ensure discharged water is clear of silt & free of oil traces
- Where applicable, phase the final restoration of the site

Section 4.6 - Environmental Guidelines on Archaeology, Ecology & Reinstatement

Introduction
The guideline provides advice on possible actions to improve protection of Archaeology & Ecology

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Monitoring:

- Check property regularly
- Check water discharges regularly

Guideline Basis/Useful References

- "***Environmental Code",*** ICF, Dublin, 2005 Revised Edition
- "***Irish Field Monuments***", Edition, 1991, Stationery Office, Dublin
- "***Code of Practice between the ICF & the Minister for Arts, Heritage, Gaeltacht and the Islands,*** Dublin, 2002

Some Possible Actions to Improve Archaeology & Ecology Management (-refer BATNEEC principle):

- Refer to the Record of Monuments and Places for your county before carrying out soil stripping operations (copies may be obtained from the ICF Archaeology Manager). Give two months notice to the Monuments Section, Department of the Environment, Heritage and Local Government of your intention to carry out works within an archaeological zone defined within the record.
- Report discoveries of archaeological features or artifacts to the Chief Archaeologist, Monuments Section, Department of the Environment, Heritage and Local Government, or the ICF Archaeology Manager can report them on your behalf.
- If you require any advice regarding archaeology contact the ICF Archaeology manager.

- Protect habitats, including hedgerows, which have had to be removed
- Plant new hawthorn hedging along the property boundary to provide a trough, hardy fast growing and inexpensive barrier which will protect colonising vegetation & will provide visual amenity.
- Give at least 21 days notice to Gardai of intention to fell trees using a Felling Notice to be obtained at any Gardai station
- Plant new native trees to replace trees, which have had to be removed
- Contain dust emissions
- Ensure discharged water is clear of silt & free of oil traces
- Progress after use plans

Section 4.7 - Environmental Guidelines on Energy and Transport Management

Introduction

The guideline provides general advice on possible actions to improve environmental performance and to minimise impacts in accordance with the BATNEEC the principle (Best available Technology Not Entailing Excessive Cost)

Monitoring:

- Check property regularly for waste generation

Guideline Basis/Useful References:

- ***"Environmental Code",*** ICF, Dublin, 2005 Revised Edition
- ***Environmental Management in the Extractive Industry***, EPA, 2005

Some Possible Actions to Manage Waste(-refer BATNEEC principle):

- Minimise production of waste generally
- Maximise recycling through careful separation of waste streams
- Maintain designated areas for different streams such as metal, timber, tyres, batteries, oils/filters etc.
- Install suitable arrangements for storing old batteries, oil filters etc
- Appoint specialist contractors for the collection and disposal of wastes as appropriate
- If appropriate, specify that suppliers remove the old component when supplying new ones
- Discontinue use of drums or IBCs by installing tanks for bulk deliveries
- Use Just In Time purchasing techniques, if possible, where drum supplies must continue
- **Ensure staff are aware of need for diligence where waste is concerned by ongoing training**
- **Where applicable, ensure returned concrete is reused immediately or recycled regularly to avoid being contaminated and becoming a waste product**
- **Refer also to Section 4.5 on Visual Amenity & Housekeeping**

Section 4.8 - Environmental Guidelines on Security & Public Safety

Introduction

The guideline provides advice on possible actions to improve locations security and public safety.

Monitoring of Security & Public Safety:-

- Check that lifebelts are in place at ponds – at least each month
- Check that fencing is in place at ponds – at least each month
- Check perimeter fencing & signs – at least each quarter
- At a minimum, fences should be designed to keep out farm animals & toddlers and to prevent easy access by adults.
- Signs should read **DANGER/HAZARD IDENTIFICATION/DO NOT ENTER**

Guideline Basis/Useful References:

- Occupier's Liability Act,1995
- Specification for Chain Link Fences up to 1.8 high BS 1722:part 1:1986
- Down, C.G. "Amenity Banks and quarry Landscaping", ***Quarry Management and Products,*** November 1997
- Local Government (Planning & Development) Regulations, 1994, S.1. No.86 of 1994
- ***"Environmental Code",*** ICF, Dublin 2005 Revised Edition

Some Possible Actions to Improve Security (-refer BATNEEC principle):

- Post **DANGER//HAZARD IDENTIFICATION/DO NOT ENTER** signs along property boundary
- Post **DANGER/HAZARD IDENTIFICATION/DO NOT ENTER** signs at ponds & water bodies
- Safety warning notices should be clearly visible from all along the length of the fence, give clear warning of the danger, prohibit entry, be of black text on yellow background and should include an appropriate pictorial symbol of the danger to warn children or those who cannot read
- Erect fence along property boundary and around ponds
- Place large boulders along side of roads over high fences
- Fences should be designed to keep out farm animals & toddlers and to prevent casual access by adults.
- 1.4m general purpose chain link with 1 row of barbed wire to keep out farm animals & toddlers and to prevent casual access by adults – refer BS 1722; Part 1:1986
- Barbed wire should be fixed so as to be clearly apparent and not be a hidden hazard. Any dangers from the fence must be obvious to the trespasser and it is necessary to ensure that the trespasser can only be harmed by his own decision to risk the danger.
- Fences under 2m in height are classed as "exempt development" not requiring planning permission
- Advise Gardai of trespassers
- Promptly clear material spills on public roads
- Fences, gates, signs & hedgerows need to be regularly inspected and needs to be maintained (Assign Person for this task)

Environmental Guidelines on Security (Contd.)

The following are examples of possible **Warning Signs:-**

DANGER
High Quarry Faces
DO NOT ENTER

DANGER
Deep Water
NO SWIMMING – NO FISHING
DO NOT ENTER

DANGER
Quarry Traffic
HAULIERS MUST STOP AT WEIGHBRIDGE

DANGER
Quarry Machinery
ALL VISITORS MUST REPORT TO OFFICE

SECTION 5 - ENVIRONMENTAL EMERGENCY RESPONSE PROCEDURE

To ensure that environmental accidents and potential emergency situations relating to oil and chemical spills are dealt with in an appropriate manner, it is necessary to identify the potential occurrence and appropriate response to such incidents and to prevent and mitigate any associated harm to human health and the environment.

Oil and chemical spills present a great environmental risk to this business, and as such, spill response is a key competency requirement for the Environment Manager. However, in the event of spillage, it is imperative that all staff are aware of the need for immediate implementation of containment measures and communication with Environment Manager.

The Environment Manager, or his nominee, is responsible for carrying out this procedure in the event of a spillage. It is the responsibility of the individual who discovers the spill to:

1. Immediately contain the spill ONLY IF IT IS POSSIBLE AND SAFE TO DO SO.
2. Report it immediately to the Environment Manager.

If a spill occurs out of hours, the Manager or his nominee shall be contacted for advice. The Environment Manager shall identify the substances involved, direct the response accordingly and contact the appropriate personnel and external emergency services as necessary. Where the spill is of a high risk nature, the Environment Manager shall inform the Managing Director and, if appropriate, the Regulatory Authorities.

It is the responsibility of the Environment Manager concerned to ensure that all personnel are trained and are aware of this procedure and that it is periodically tested.

The Environment Manager concerned will ensure all sources of ignition are extinguished. In the event of a fire the Fire Safety Procedure shall be followed. Keep the area well ventilated if the spill is in a confined space. Ensure that all unnecessary untrained personnel are kept well away from the scene. The main risk associated with oil or chemical spills is the potential for the spill to enter drains watercourses, soils and the ground water system, causing contamination and/or fire or explosion risk. Site drainage is detailed on individual site plans, copy held by the Environment Manager.

Identify the material spilled and obtain the MSDS to ensure that handling and PPE requirements are clearly understood and that those tackling the spill are wearing the appropriate PPE. Stop the spill and contain it as best as possible, use the materials provided in the Environmental Spill Kits and ensure that the drains in the surrounding areas are sealed. Spill kits shall be maintained in the garage and chemical storage areas.

Remediation depends on the impact the contaminant has on the receptor. Remediation may involve aeration, addition of biological surfactants and restocking of fish reserves. Contact the appropriate government or concerned body to discuss, as and when required. Any waste or contaminated materials generated during the clean up of a spill shall be disposed of as per the Waste Management Guidelines.

``

A report form shall be completed by the Environmental Manager and reviewed after each incident by the whole management team.

This emergency Response Procedure shall be tested at least once annually under the direction of the Environmental Manager. These drills cover both key personnel and operatives whose work involves a significant degree of environmental risk. These drills will either comprise of items 1 and/or 2 below:

1. A "desktop" exercise conducted where the Manager or personnel concerned is questioned closely on how he/they would respond to various environmental incidents. Responses are compared to the procedure. Immediately on completing the desktop exercise, a follow-up check is carried out to verify the actual availability of any spill kit etc. that would have been used.

2. A drill involving the practical demonstration of spill kit materials –(booms, pads, granules etc.) and how they would be used/deployed in various environmental accidents.

Such drills shall be followed by a review of the response conducted by the Environment Manager and changes made to training and/or the procedure as appropriate. Names of drill attendees and a brief description of the drill content will be recorded by the Environment Manager after each drill has been completed.

EMERGENCY TELEPHONE NUMBERS

CONTACT NUMBERS **049 8541477 or 049 8542420**

FIRST AIDERS **First Aid Box in main office**

EMERGENCY NUMBERS		
EMERGENCY	All Services	999 or 112
AMBULANCE	North East Regional	999 or 112
DOCTOR	Coole Surgery	044 9661104
GARDAI	Kells Oldcastle	046 9280820 046
CATHOLIC PRIEST **CHURCH OF IRELAND**	Parish Priest, Oldcastle	
E.S.B.		1850 372 999
TELECOM	Repairs Service	1902
MAYO COUNTY COUNCIL	Navan	046 9021581
POISONS INFORMATION		01 8379964 01 8379966
OIL SPILLAGE RECOVERY	Atlas Oil	050 222411
Boyne Waste Oil Seperators	Co.Meath	046 9024860

SECTION 6 – HARMFUL SUBSTANCES

OPERATIONAL GUIDELINES

- Guidelines for Fuel & Fuel Tanks
- Receiving Oil, Fuel & Chemical Deliveries
- Operation & Maintenance of Oil Interceptors
- Septic Tanks
- MSDS for Diesel / Gas Oil
- MSDS for Oils, Lubricants etc.

Guidelines for Fuels and Fuel Tanks

Introduction

Fuels, (hydrocarbons, liquid chemicals, lubricating oils, greases and waste oils) should be kept at a waterproof bunded area, and treated with extreme caution. In the case lf hydrocarbons and waste oils the capacity of the bund should be 110% of the largest tank volume or 25% of the total volume of tanks bunded, whichever is the greater. All valves and pumps on the tank should be contained within the bunded area. The bunded area should be fitted with a locking valve that should only be opened to discharge storm water to the interceptor. Alternatively, a sump should be provided in the floor of the bunded area to allow for a suction pipe to be inserted when discharging storm water.

Environmental Instructions

Environmental Instructions should be posted or distributed to anybody working with or in the general area of fuels. These instructions should include steps on how to deal with an oil/fuel spill. All staff should be aware of the need for immediate implementation of containment measures in the likelihood of a spillage.

Guidelines when working with fuels / lubricants:

The following guidelines should be followed when working with fuels and handling lubricant

- There should be no smoking in and around the substances
- Ignition sources should be kept at a distance
- The Material Safety Data Sheets (MSDS) should be checked on or should be easily accessed
- PPE should be worn at all times
- When handling drums, the proper loading equipment should be used
- Stands and bunded trays should be provided
- Drums should be stored under cover and the surrounding area kept clean
- A spill kit should be present

In the event of spillage the Environment Manager is notified and he must record the details on a nonconformity notice, and the Emergency Response Procedure implemented.

RECEIVING OIL, FUEL AND CHEMICAL DELIVERIES

1.0 Scope

1.1 Receiving bulk and containerised oil, fuel and chemical deliveries should be carried out in a controlled and environmentally responsible manner to minimise the risk of spills and their environmentally harmful effects.

2.0 Bulk oil and fuel deliveries to site

2.1 Delivery requests – deliveries of oils and fuels are ordered by the Purchasing Manager, who will advise the supplier of the grade and quantity to be delivered.

2.2 All delivery drivers shall report to the weighbridge office on arrival. The weighbridge operator shall contact the Quarry Manager or his nominee who shall direct the driver to the appropriate fill or delivery point and supervise the delivery. He shall check that there is sufficient ullage to receive the complete load, monitor the delivery and ensure that after delivery all valves are properly closed and locked. The delivery driver should remain at the vehicle shut-off valve while the discharge is taking place. The Quarry Manager or his nominee shall sign the delivery note to confirm the product quantity received and that the delivery has been made correctly and safely.

2.3 Fuelling company vehicles, bowsers, generators and mobile plant – The driver shall check the ullage in the tank to receive the load, and remain at the delivery point at all times to monitor the delivery. After delivery he shall check that all valves are properly closed and locked. Drivers of lorries, vans and cars, not using the electronic key system, record the date, the vehicle registration and volume received in the office fuel log.

3.0 Spills

3.1 Any spillages occurring during delivery should be immediately dealt with as from the Emergency Response Procedure. Any waste materials generated as a result of this should be disposed of as waste.

OPERATION AND MAINTENANCE OF OIL INTERCEPTORS

(Where appropriate)

Oil interceptors must be inspected and maintained to ensure their effective operation, All interceptors shall be checked visually by the designated person for the presence of oil on an annual basis or after a recorded environmental spillage.

3.0 If oil is present

3.1 Three chambered interceptors – if any depth of oil is present in any of the interceptor chambers, it should be cleaned out ASAP by an approved special waste contractor using a vacuum tanker.

3.2 In the event of an interceptor failing and oil being released to the drain system, the Emergency Response Procedure should be followed.

4.0 Maintenance of oil interceptors

4.1 On a yearly basis, or as and when required, interceptors shall be cleaned by an approved and licensed waste contractor using a vacuum tanker as follows;

1. Remove manhole cover(s)
2. Remove surface oil or scum, being careful not to draw up uncontaminated water.
3. Lower the vacuum tanker hose carefully to the base of the chamber and move around to draw off settled sediment or grit.
4. At no time shall any personnel attempt to gain entry to the interceptor.
5. At no time shall the level of water in the interceptor be lower than 50%.
6. The unit shall be filled with clean water up to the invert level of the outlet pipe before recommencing interceptor operation after cleaning.
7. Replace access shaft manhole cover(s) on completion of cleaning.

5.0 Disposal of wastes from interceptors

5.1 Any waste liquids or materials shall be disposed of as per the Waste Disposal Procedure.

Guidelines on Harmful Substances

a) Diesel, Gas Oil, Other Oils & Lubricants

Ref – Supplier Material Safety Data Sheet

b) Septic Tank

Introduction:
The septic tank should be located in an area where minimal activity occurs on the ground. The distribution box must be designed and constructed to ensure equal distribution among the various distribution pipes. Access manholes should be located at ground surface and covers should be visible and not allow the entry of surface water. Trees and plants are limited to a 3m distance from the tank and heavy machinery should not circulate over the percolation area

Useful References:

"***Wastewater Treatment Manuals, Treatment Systems for single houses",*** EPA, Wexford.

Advantages of a Septic Tank:

- Septic tanks are a cost effective treatment system
- There is no need for external power requirements
- No noise emissions
- It is a natural treatment process
- It produces a high quality effluent

Maintenance

In order to gain maximum performance from the septic tank regular maintenance is essential. The tank should be de-sludged at least once a year.

Maintenance is required when:

1. Scum is noticeable in the second chamber of the tank
2. Also when the depth of the sludge in the second chamber is greater than 400mm.

SECTION 7 – ENVIRONMENTAL INSPECTION

(i) Audits

(ii) Monitoring Reports

(iii) Environmental Action Plan

SECTION 8 – TRAINING RECORD SHEET

Training Record – BD Flood.

	Employee	Safety Training (Initial and date)	Environmental Awareness (Initial and date)	Operational Work Procedures (Initial and date)	Other (Reference, initial and date)

Other skills referenced:

SECTION 9 – PERMITS, PLANT LAYOUT etc.

This section contains records of Planning Permissions, Permits, Plant Layouts, Site Layout Maps etc as applicable to this site.

SECTION 10 – COMMUNITY RELATIONS

The Aggregate Industry provides essential building materials for the social and economic development of the Country. Without aggregates, the built environment could not be enhanced with safe, structurally sound buildings for homes, schools, offices, shops and hospitals. In terms of protection of the environment, no water or wastewater treatment systems could be constructed. The Industry recognises that each activity and product it provides has a potential impact on the environment and the overall objective of ICF members is to minimise the environmental impacts and maximise the environmental enhancements at their sites. The ICF Environmental Award Competition is held on an annual basis for the membership to promote and showcase positive and proactive on-site environmental measures that have been taken.

This company will aim at all times to be a good neighbour and play its part in the community, for example giving presentations on their work to local groups, allowing schools and other local parties interested in their activity to visit the quarry pit or plant on conducted tours or local open days or by supporting local events.

Concerns in relation to new developments at this site will be examined and designed for, where practicable and reasonable, by consulting with the public at an early stage in the development process.

To ensure good environmental practice is achieved on-site, This company is committed to maintaining an on-site Environmental Management System (EMS). As part of this EMS, this company will maintain written records of all complaints and incidents, including the company's actions to investigate the problem, the causes and necessary mitigation measures required, as applicable. The following complaints record sheet shall be used for this purpose.

Complaint Record

1.0 Date of Complaint:_____ **2.0 Time:** _____

3.0 Complaint Method:_____

4.0 Taken by:_____

5.0 Name & Address of Complainant:

_____

_____

6.0 Nature of Complaint:_____

_____

_____

7.0 Detail Investigative Action Taken & Identify the Investigating Person

_____

_____

_____

8.0 Detail Weather Conditions_____

9.0 Detail Results of Investigation

_____

_____

10.0 Detail any corrective & preventative action taken

_____

_____

11.0 Detail whether complainant was contacted

_____

_____

Signed: _____ **Date:**_____

Contents

Tables

Figures

Introduction

Background

7.1 This chapter of the EIAR provides a description of the surface water (hydrology) and groundwater (hydrogeology) conditions in the application area within the context of the regional setting, and assesses the potential impacts the proposed development will have on surface water and groundwater. Mitigation measures, if required, are proposed.

7.2 Available information on the surface water and groundwater of the site and area around Derryarkin Townland, Rhode, Co. Offaly was collated and evaluated.

7.3 This site at Derryarkin was a former Bord na Móna working bog with peat being cut at the site up to the 1980's. Bord na Móna had previously excavated and deepened the Yellow River in the vicinity of the site in order to lower the water table and drain the adjacent bogs to facilitate the harvesting of peat. Following peat extraction the land at the site was converted to a grassland and used for farming. It is understood that agriculture has been an established landuse at the site for c. 40 years.

Proposed Development

7.4 The proposed development is described in detail in Chapter 2: Project Description of this EIAR and only those elements which relate to water and water management are presented here for the purpose of this chapter. The proposed site layout is shown on **Figure 2-3** of this EIAR.

7.5 The proposed development will consist of:

- An overall application area of c. 19.5 hectares;
- Phased extraction of sand and gravel (wet working) over an area of c. 11.7 hectares with processing that includes crushing and screening and all ancillary works and structures;
- Provision of new site facilities to include wheel wash (c. 35 m²), weighbridge (c. 69 m²); mobile welfare pod facility (c. 16 m²) consisting of office, canteen, toilet and drying room; dedicated parking area, perimeter vegetation planting and fencing.
- Access to the site will be via an existing entrance onto the local access road to the north of the site;
- Progressive restoration of the site to naturally regenerated wildlife habitat and a permanent water body; and
- The proposed development life is for 15 years to complete extraction and restoration operations.

7.6 The proposed extraction of the sand and gravel will be **wet working**, (i.e., extraction below the natural groundwater level of the site). Processing of the extracted materials will be carried out on-site to produce a range of aggregates for use by the applicant in the manufacture of concrete at their existing concrete batching facility located c. 600 m to the northwest.

Water Management

7.7 The sand and gravel material will be worked wet, i.e. extracted below the groundwater table using a long-reach excavator. Therefore, no surface water drainage infrastructure is

required within the site; rain falling across the site will either go directly to the open wet working excavation or will percolate naturally to the ground as it does at the present day.

7.8 It is proposed that extraction will also be carried out below the groundwater table, with the proposed pit floor of c. 6-10 m below current ground level at the site. It is proposed to extract the sand and gravel across four phases.

7.9 The sand and gravel material will be processed onsite at a mobile processing plant before being taken to the nearby BD Flood site for use as aggregates in the production of concrete for the construction industry.

7.10 The existing agricultural lands are currently drained by a combination of percolation down through the soil and sub-strata to the groundwater table. There is a shallow cut drainage channel along the northern application boundary running in a west to east direction towards the Yellow River.

7.11 The surface water management system at the proposed site will be relatively simple. Rain falling across the application site will infiltrate naturally into the ground across in-situ residual soil / sand & gravel areas, internal haul roads or stripped processing areas. In worked out areas it will fall into the permanent waterbody (restoration lake).

7.12 Due to the high permeability of the underlying materials, little rainwater run-off is expected to arise within the application site. There will be no discharge of water from the extraction area to any surface watercourse. Therefore, no specific surface water management plan is required in respect of the proposed development.

7.13 The Yellow River flows in a north easterly direction along the eastern edge of the site. To the north of the site an Unnamed Stream flows in an easterly direction and discharges into the Yellow River. The Unnamed Stream is a small watercourse and has been straightened and deepened for local drainage measures.

7.14 There will be no discharge of surface water off-site to either the Yellow River, or the Unnamed Stream or any other watercourse.

Wheel Wash

7.15 A wheel wash facility will be constructed within the facilities compound area on the outbound side of the access track (see Chapter 2 **Figure 2-2** of the EIAR) and will be set back c. 350 m from the edge of the public road at the site entrance and will help to eliminate the risk of mud and dust being carried from the development onto the local access road. All aggregate haulage vehicles will be required to pass through the wheel wash prior to leaving the site.

7.16 The new unit will be utilised throughout the life of the development, with due maintenance as required. It will consist of a wheel bath system whereby the trucks drive through the water bath to dislodge any debris before exiting the site. The water level is maintained by top-up from an adjacent reservoir tank with the reservoir tank being topped up from a water bowser that will source water from the adjacent working pit as required. Details of the proposed wheel wash are provided in Planning **Drawing 10**.

7.17 In the event of material being spilled on the public road the operator will ensure that spilled material is removed from the public road surface in a safe and timely manner as soon as they notice or are notified that a spillage has arisen. BD Flood has its own road sweeper to maintain entrances and any emergency spillages on public roads.

Scope of Work

7.18 The scope of this chapter includes:

- an assessment of the existing surface water and groundwater within approximately 5 km of the application area;
- an assessment of the potential impact of the proposed sand and gravel extraction on surface water and groundwater; and
- where necessary, recommendation(s) for mitigation measures to reduce or eliminate any potential impacts.

Project Team

7.19 This chapter of the EIAR was prepared by SLR Consulting Ireland. The project team consists of:

- Clio Greenbank, Graduate Hydrogeologist, BSc. MSc. (Hydrogeology);
- Jack Crawley, Associate Hydrogeologist, BSc. MSc. (Hydrogeology); and
- Peter Glanville, Technical Director (Hydrology & Hydrogeology) BA (Geography), PhD (Geomorphology), PGeo, EurGeol and MCIWEM.

Limitations / Difficulties Encountered

7.20 The evaluation of the hydrological and hydrogeological environment provided here relies on the detailed assessment, visual inspections conducted during site visits, a comprehensive dataset of monitoring records, publicly available information, and anecdotal evidence from local personnel.

7.21 No constraints or challenges were encountered during the compilation of this chapter in the Environmental Impact Assessment Report (EIAR).

Regulatory Background

Legislation

7.22 The key European Directives / European Union Legislation which apply to this Chapter of the EIAR and the hydrology and hydrogeology assessment presented herein are:

- Environmental Impact Assessment Directive (2011/92/EU); and
- Directive of the European Parliament and of the Council amending Directive 2011/92/EU on assessment of effects of certain public and private projects on the environment (2014/52/EU).

7.23 Other European Directives to which this EIAR makes reference, or has had regard, are listed in **Appendix 7-A**.

7.24 Irish Government Acts, National Legislation and Regulations which apply to this Chapter of the EIAR and the surface water and groundwater assessment presented herein are also listed in **Appendix 7-A**.

7.25 Most notably, under Regulation 4 of the Groundwater Regulations 2010, a duty is placed on public authorities to promote compliance with the requirements of the regulations and to take all reasonable steps including, where necessary, the implementation of programmes of measures, to:

*"(**a**) prevent or limit, as appropriate, the input of pollutants into groundwater and prevent the deterioration of the status of all bodies of groundwater;*

*`(**b**) protect, enhance and restore all bodies of groundwater and ensure a balance between abstraction and recharge of groundwater with the aim of achieving good groundwater quantitative status and good groundwater chemical status by 2015 or, at the latest, by 2027;*

*(**c**) reverse any significant and sustained upward trend in the concentration of any pollutant resulting from the impact of human activity in order to progressively reduce pollution of groundwater;*

*(**d**) achieve compliance with any standards and objectives established for a groundwater dependent protected area included in the register of protected areas established under Regulation 8 of the 2003 Regulations [S.I. No. 722 of 2003] by not later than 2015, unless otherwise specified in the Community legislation under which the individual protected areas have been established."*

Planning Policy and Development Control

7.26 The Planning Policy and Development Control relating to water at the site in this EIAR is set out in the Offaly County Development Plan 2021-2027.

Guidelines and Technical Standards

7.27 The following key guidelines apply to this hydrology and hydrogeology assessment:

- Institute of Geologists of Ireland. Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements, April 2013;
- National Roads Authority, 2008. Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes;
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports: Environmental Protection Agency; and
- Geological Survey of Ireland - Irish Concrete Federation, 2008. Geological Heritage Guidelines for the Extractive Industry.

7.28 Additional guidelines and technical standards which apply to this Chapter of the EIAR and the hydrology and hydrogeology assessment presented herein are listed in **Appendix 7-A**.

Receiving Environment

Study Area

7.29 For the purposes of this assessment, the study area comprises the application site and the surrounding area (up to 5 km radius) to reflect the sensitivity of the surface water and groundwater.

7.30 This is in line with the Institute of Geologists of Ireland's (IGI) guidelines (2013) which states that a minimum distance of 5 km should be reviewed in the context of the geological environment, and the scale of development. The IGI states that the study area should be increased as appropriate to reflect the sensitivity of the subsurface and recommends 5 km where karst environments occur.

Baseline Study Methodology

7.31 A detailed geological, hydrological and hydrogeological dataset has been collected as part of this EIAR study.

7.32 The investigation methodology adheres to the Environmental Protection Agency's (EPA) guidelines on environmental impact assessments and the IGI's recommendations on Geology in Environmental Impact Statements.

Desk Study

7.33 Existing information on the geology, hydrogeology and hydrological features of the site area and its surrounds was collated and evaluated. The desk study involved the examination of several datasets to determine the geological and hydrogeological setting of the area, as detailed in **Table 7-1**.

Table 7-1: Regional data consultation

Data	Dataset Source
• Soils	• Irish Soils Information System – Teagasc
• Subsoil Geology	• Teagasc/GSI/EPA Subsoil Mapping
• Bedrock Geology	• GSI Groundwater Data Viewer - Bedrock Geology
• Surface Water	• Tailte Éireann Discovery Series mapping; • Environmental Protection Agency online mapping; • Water Framework Directive; • OPW CFRAM; and • Current Offaly County Council Development Plan.
• Groundwater	• GSI Groundwater Data Viewer - bedrock and gravel aquifers, vulnerability, water supplies, groundwater recharge; • GSI Groundwater body description documents; • Environmental Protection Agency water maps; and • National Federation of Group Water Schemes (NFGWS) Data Viewer.
• Climate	• Met Éireann
• Protected Areas, Environmental Pressures	• Environmental Protection Agency; and • National Parks and Wildlife Service

Detailed Site Investigation

7.34 In addition to the above desk study of publicly available data, extensive data gathering has been undertaken at the site. The works carried out for assessing hydrology and hydrogeology in the area is outlined as follows:

- Installation of three new (2025) groundwater monitoring boreholes across the proposed development area, as well as the installation of multiple ground investigation boreholes and trial pits (see also Chapter 6 of this EIAR for details), to monitor both the sand and gravel superficial deposits and underlying aquifer; and
- Manual dipping of groundwater wells from three groundwater monitoring boreholes installed in the 2025 ground investigation.

Site Setting

7.35 The proposed application area is located within the existing land interest area and is c. 19.5 hectares, existing of poorly drained and open agricultural lands.

7.36 The application area is located within the townland of Derryarkin, Croghan, Rhode, Co. Offaly, approximately 2 km from the Offaly / Westmeath County border. Ground levels across the area remains relatively flat between 78 - 80 m AOD.

7.37 The application site comprises of agricultural land. Beyond the boundaries of the site to the north and west, the landscape is dominated by agricultural land, with most of the mixed sized fields under pasture. To the south and east of the site, the landscape is dominated by cutover bogs, formerly worked at an industrial level.

7.38 There is a watercourse flowing along the eastern boundary, the Yellow River, which flows in a north easterly direction.

Rainfall and Climate

7.39 There is no Met Éireann rainfall gauging station near to the application site.

7.40 The nearest Met Éireann meteorological station for which long-term average annual rainfall is available, is the Casement station located c. 40 km to the east of the site. The long-term annual average for this station is presented on **Table 7-2**.

Table 7-2: Long term average annual rainfall (1991-2020), Casement station

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Ann. Avg.
65	55.2	51.8	55.3	59.1	65.7	59.4	71.2	61.6	81.6	81.9	75.7	783.5

Soils and Geology

7.41 The local and regional soils and geology are discussed in detail within Chapter 6 of this EIAR, with a summary provided below. The soils are shown in **Figure 6-2**, subsoils are presented in **Figure 6-3,** and Bedrock Geology is presented in **Figure 6-4**.

7.42 A summary if the regional geology stratigraphy is shown in **Table 7-3** below.

Table 7-3: Regional geological stratigraphy of the site

Strata	Description	Thickness (m)
Soil	• Organic rich clayey soil	c. 0.4
Limestone Sands and Gravels	• Lower Carboniferous limestone sands and gravels	c. 5 - 6
Silt Gravelly Clay	• Silt and gravelly clay material underlying the Sands and Gravels	Unknown
Bedrock: Agglomerate and Basalt underlain by Lucan Formation	• Agglomerate: Vitric lithic lapilli tuffs and tuff breccias with intercalated thin basalts; • Lucan Formation: Dark grey-black, fine-grained limestone with interbedded calcareous shale	Unknown

Soils and Subsoils

7.43 The Irish Soil Information System project has developed a national association soil map for Ireland; the project is co-funded by Teagasc and the Environmental Protection Agency (EPA). The soils are discussed in detail in Chapter 6 of this EIAR.

7.44 Organic rich peaty soil and the Elton Series are the principal soil types across the study zone, see **Figure 6-2**. These soils are considered to be moderately to poor and imperfectly draining.

7.45 The EPA website publishes subsoil maps created by the Spatial Analysis Unit and Teagasc in collaboration with the Geological Survey Ireland (GSI). The subsoils are discussed in detail in Chapter 6 of this EIAR.

7.46 As presented on **Figure 6-3**, the subsoils in the study area are represented by two main subsoil types; Cut over peat and Gravels derived from Limestones. The only remaining peat at the site comprises an organic rich clayey soil.

Local Bedrock Geology

7.47 The GSI online map viewer (1:100,000 geology map) has been reproduced on **Figure 6-4**. The published mapping indicates the application site is underlain by the Basalt and Agglomerate formations, which comprises of:

'*generally massive, black, olivine basalts, weathered to various degrees*' and '*Vitric lithic lapilli tuffs and tuff breccias, with intercalated thin basalts*'.

7.48 Underlying this is the Lucan formation which is lithologially described as:

'*dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey*'.

7.49 There are no bedrock exposures within the application area, however there are bedrock exposures within the study area, closest to the site at c. 1.2 km south.

Groundwater - Hydrogeology

Aquifer Characteristics

7.50 Published mapping provided by the GSI, reproduced as **Figure 7-2**, confirms that the application area is underlain by a:

"*Locally Important Aquifer - Bedrock which is generally moderately productive (Lm)*".

7.51 The rest of the study area is underlain by a:

"*Locally Important Aquifer – Bedrock which is moderately productive only in local zones (Ll)*".

7.52 The groundwater flow gradient in this area will be low as the area is flat with numerous watercourses and drainage channels. Local groundwater flow at the site will be in a southeasterly direction to the Yellow River.

7.53 This site at Derryarkin was a former Bord na Móna working bog with peat being cut at the site up to the 1980's. Bord na Móna had previously excavated and deepened the Yellow River in the vicinity of the site in order to lower the water table and drain the adjacent bogs to facilitate the harvesting of peat. The Yellow River was deepened in order to artificially lower the groundwater table in the local area, including at the application site.

Groundwater Vulnerability

7.54 The GSI has developed a groundwater vulnerability classification for Ireland, a summary of which is presented in **Table 7-4** below.

7.55 The groundwater vulnerability at a particular point is controlled by the natural geological and hydrogeological characteristics. This includes the nature of the subsoils (i.e. their permeability characteristics), the type of recharge (point or diffuse), and/or the thickness of the unsaturated zone (depth to groundwater).

7.56 Regional groundwater vulnerability mapping is presented as **Figure 7-4**; this indicates that the groundwater beneath the application area has a *'Moderate*' vulnerability rating.

Table 7-4: GSI Groundwater vulnerability rating

Vulnerability Rating	Hydrogeological Conditions				
	Subsoil Permeability (Type) and Thickness (m)			**Unsaturated Zone thickness (m)**	**Karst Features**
	High permeability (sand / gravel)	Moderate permeability (e.g. Sandy subsoil)	Low permeability (e.g. Clayey subsoil, clay, peat)	(Sand/Gravel aquifers only)	(< 30m radius)
Extreme (E)	0 - 3.0	0 - 3.0	0 - 3.0	0 - 3.0m	-
High (H)	>3.0	3.0 - 10.0	3.0 - 5.0	>3.0m	N/A
Moderate (M)	N/A	>10.0	5.0 - 10.0	N/A	N/A
Low (L)	N/A	N/A	>10.0	N/A	N/A
Notes:	(i) N/A= not applicable (ii) Precise permeability value cannot be given at present. (iii) Release point of contaminants is assumed to be 1-2m below ground surface.				

7.57 The GSI's online database identifies the hydrogeological setting of the application site as moderate permeability subsoil. The effective rainfall (rainfall after evaporation) is 493 mm/yr. The average groundwater recharge at the site is <50 mm/yr. However; the GSI hydrogeological setting appears to assume that there is Peat present at the site and local area; site investigations indicate only a thin layer of organic rich clay soil remains as the peat has been extracted in the past from across the site.

Groundwater Bodies

7.58 The application area is underlain by the Athboy groundwater body (GWB). The Athboy GWB is bounded to the south-east by the Trim GWB and Rhodes GWB, as presented on **Figure 7-3**.

7.59 The Athboy GWB covers an area of 964 km^2 and mainly consists of the Dinantian Limestones. The thickness varies but has been recorded at c. 60 m.

7.60 The Athboy GWB has a "*Good"* WFD Status (2016 – 2021) but is classed as "*Not at Risk"* under the WFD Third-Cycle. In addition, the Athboy GWB is classified as having a:

"*Low-to-High"* groundwater vulnerability to potential pollution with "*3 to 4 metres depth of moderate permeability till (boulder clay) above bedrock*".

7.61 The main recharge mechanism is diffuse recharge. The groundwater body mainly consists of low permeability aquifers therefore recharge will mainly be occurring in the weathered upper layers, particularly in the volcanic strata.

7.62 Groundwater will discharge locally to streams and rivers. The rivers and streams have moderate to low dry weather flows, and therefore baseflow cannot support the river levels during summer months. There may also be instances of discharge to the adjacent Trim GWB to the east.

Groundwater Monitoring Network

7.63 A ground investigation (GI) was undertaken in 2025, in which three groundwater monitoring boreholes were installed across the application area. This involved the installation of three boreholes, GW1, GW2, and GW3 which are located on the perimeter of the site, see **Appendix 7-B** and **Figure 7-4**.

7.64 The boreholes encountered sands and gravels at all locations at the site, underlain by lower permeability clays and silts, with high cobble contents.

7.65 Summary details of groundwater monitoring boreholes installed on-site are presented in **Table 7-5**.

Table 7-5: Details of groundwater monitoring boreholes on-site

BH ID	Location	Borehole Depth (m BGL)	Water strikes (m AOD)	Screened Strata
GW1	E648804 N736188	11.00	75.52	Sand and Gravel
GW2	E649326 N736317	10.00	74.43	Sand and Gravel
GW3	E648986 N735980	11.00	76.36	Sand and Gravel

Groundwater Levels

7.66 Groundwater levels have been manually measured in the above boreholes, GW1, GW2 and GW3, see **Table 7-6** below.

7.67 Groundwater level data indicates that levels are highest in the southwest (GW3) and are lowest in the northeast (GW2). Groundwater is therefore inferred to be flowing a broad north-easterly direction towards the Yellow River which forms the local hydraulic boundary for groundwater flows.

Table 7-6: Groundwater levels

Borehole ID	GWL (m AOD) 24/04/2025	GWL (m AOD) 03/09/2025
GW1	76.59	76.35
GW2	76.41	76.30
GW3	77.59	77.12

Surface Water - Hydrology

Surface Water Bodies

7.68 Local surface water bodies are shown in **Figure 7-1**. The Yellow River, WFD Waterbody ID '*Yellow (CASTLEJORDAN)_010*', runs along the eastern boundary of the application area flowing in a north easterly direction. The Yellow River flows into the River Boyne which flows into the Irish Sea at Drogheda Town.

7.69 The Yellow River at the site is classified as being 'At Risk' of not meeting its environmental objectives under the Water Framework Directive (WFD) and agricultural pressures in the catchment have been identified as the significant pressure on the waterbody not meeting its environmental objectives.

Catchment

7.70 The site is located within the Boyne Catchment (WFD ID07), which has an area of 2,696 km^2.

7.71 The site is situated within the yellow River sub-catchment of the River Boyne, WFD subcatchment ID '*Yellow (CASTLEJORDAN)_SC_010*', see **Figure 7-1**.

Flooding

7.72 The Office of Public Works (OPW) is the government agency with statutory responsibility for flooding in Ireland.

7.73 The available OPW National Indicative Flood Maps (NIFM) flood maps show that the site is not at risk of fluvial flooding from the Yellow River.

7.74 The available GSI data indicates that the site is not vulnerable to groundwater flooding. There are also no records of historic flooding in the OPW database within 2 km of the site.

Surface Water Biological Quality

7.75 The surface water quality data of surface water bodies within the study area, was obtained from EPA web map. The EPA controls a significant number of registered surface water monitoring stations throughout Ireland, which are continuously recording near real-time river ecology monitoring results. The results are presented through "Q" values, that are reflecting average water quality at any location. These values are based primarily on the relative proportions of macroinvertebrates (the young stages of insects primarily but also snails, worms, shrimps etc.) resident at a river site which are either pollution-sensitive or pollution-tolerant. Results score from 1 to 5, with the lowest water quality rating being 1, and the highest being 5.

7.76 The closest active EPA monitoring station is WFD ID *Br d/s Big R confluence* which is approximately 380 m to the northeast of the application area. There was an EPA monitoring station on the eastern boundary of the application area (WFD ID *Yellow (CASTLEJORDAN) - Nr Derryarkin*), however monitoring at this location ceased in 2003.

7.77 The latest water quality (Q-Value) dataset for the Yellow River at the site reported a water quality Q value of 3 in 2003.

7.78 The latest water quality (Q-Value) dataset for the Yellow River downstream of the site reported a water quality Q value of 3 in 2024.

7.79 Since 2000, the Q-Values for the Yellow River near the site have remained relatively level, with Q-Values fluctuating between 3, 3 - 4 and 4, see **Table 7-7** below.

Table 7-7: EPA biological water Q-Value quality ratings

	Station ID RS07Y020060	Station ID RS07Y020070
Station Name:	YELLOW (CASTLEJORDAN) - Nr Derryarkin	Br d/s Big R confluence
EPA Watercourse ID:	YELLOW (CASTLEJORDAN)_010	YELLOW (CASTLEJORDAN)_010
Approx. Dist. (m):	On eastern boundary	c. 380 north east
2000	4	-
2003	3	3
2006	-	4
2009	-	4
2012	-	4
2014	-	-
2015	-	3-4
2018	-	3-4
2020	-	3
2024	-	3

Protected Areas

7.80 Published EPA mapping indicates that there are no protected areas within 5 km of the site.

Water Environment Receptors

7.81 A review of the baseline conditions for the site and surrounding area has identified the following sensitive receptors relating to the water environment down-gradient of the site:

- Locally Important Volcanic Bedrock Aquifer; and
- Yellow River located on the eastern boundary of the application area.

7.82 As presented in **Table 7-8**, the significance and sensitivity of the receptor has been assessed and a rating (High / Medium / Low / Negligible) applied. This is based on the methodology outlined in existing guidance and reproduced in **Appendix 7-G**.

Table 7-8: Existing Environment - significance and sensitivity / importance

No.	1	2
Existing Environment:	Yellow River	Locally Important Aquifer
Significance:	Surface watercourse on the eastern boundary. Site is within Boyne catchment.	Bedrock aquifer is within the Athboy GWB which has a good status (2016 - 2021).
Sensitivity:	A stream located east of the site that flows into the Boyne River. River is assumed to be in hydraulic continuity with the site through groundwater.	Bedrock aquifer underlying sand and gravel superficial deposits. Sand and gravel deposits are not classified as an aquifer.

	Stream is classified as 'Good' status and has retained status from 3 to 4 since 1994.	
Existing Environment Significance / Sensitivity Rating (H/M/L/N):	**Medium** - Attribute has a medium quality or value on a local scale	**Medium -** Attribute has a medium quality or value on a local scale (Locally Important Aquifer)

Receiving Environment - Baseline Summary

7.83 The following provides a summary of the baseline water environment conditions at the site:

- The site is underlain by volcanic bedrock of the Basalt and Agglomerate formations and by sand and gravel subsoils;
- The site is in the Yellow River catchment, which is a sub-catchment of the River Boyne;
- The closest waterbody to the application area is the Yellow River which flows along the eastern boundary;
- Under the WFD classification, the Yellow River is classified as "Good Status" and is designated under the Third-Cycle as being 'At Risk' from agricultural pressures in the catchment;
- There are no recorded flood events near the site, nor is there any risk of potential flooding;
- The site is located within the Athboy GWB. The bedrock aquifer in the area is classified as a locally important aquifer. The aquifer at the site is classified as a locally important (Lm) aquifer. The GWB is classified as being of Good status under WFD classification.
- The groundwater vulnerability is classed as being of 'Moderate' vulnerability from potential pollution sources; and
- Groundwater level monitoring at the site indicates a groundwater flow to the Yellow River which forms the local hydraulic boundary for the site.

Impact Assessment

Evaluation Methodology

7.84 The potential direct and indirect impacts to surface water and groundwater associated with the proposed sand and gravel pit are initially assessed in this chapter without any mitigation measures in place.

7.85 The methodology applied here is a qualitative risk assessment methodology in which the nature of the potential impacts are described in terms of the character, magnitude, duration, probability and consequence of the impact are considered. The terms used to describe the potential hydrological and hydrogeological impact or effects are explained in tables reproduced in **Appendix 7-D**. The cumulative impact of any potential impacts is also assessed.

7.86 The description of the potential impact is then screened against the significance and sensitivity of the receiving environment to establish the overall significance of the potential impact (without mitigation). The classification of the impact significance is determined using the matrix from the EPA Guidelines (2022) which is reproduced in **Appendix 7-E**.

7.87 This approach provides a mechanism for identifying the key areas where mitigation measures are required, and for identifying mitigation measures appropriate to the risk presented by the proposed development. Following consideration of mitigation measures proposed; an assessment of the residual impacts arising from the proposed development is provided.

7.88 The following sections identify the potential impacts of the proposed development on the hydrogeological and hydrological environments. It also assesses the likelihood of occurrence of each identified impact. As previously noted, the impacts are initially assessed with no mitigation or design measures incorporated to reduce the risk.

7.89 The potential direct and indirect impacts to surface waters and groundwater during the Construction Stage (site preparation), the Operation Stage (extraction and processing) and Post-operational Stage (site restoration) are discussed below.

Construction Stage (No Mitigation)

7.90 The potential direct and indirect construction stage impacts to surface waters and groundwater are discussed below. In the context of the proposed sand and gravel pit the construction stage is taken to comprise the stripping stage where in-situ soils are removed and stockpiled before extraction activities can commence, as well as some limited activity setting up required site infrastructure including the wheel wash, weighbridge, mobile welfare pod facility consisting of office, canteen, toilet and drying room, dedicated parking area and perimeter vegetation planting and fencing.

Direct Impacts

Surface Water

7.91 There will be no discharge from the proposed sand and gravel pit site to any surface watercourse. Therefore, there are no direct adverse impacts on surface water quality or quantity during this stage.

Groundwater

7.92 The accidental leaking or spillage of fuel and/or other petroleum-based products has the potential to impact on groundwater in the underlying sand and gravel material and potentially also the underlying bedrock aquifer.

7.93 Extraction will comprise wet working below the groundwater level in the sand and gravel deposits. There will be no dewatering associated with the proposed development and therefore there will be no impact on groundwater flows or quantities during this stage.

Indirect Impacts

Surface Water

7.94 Accidental leaking or spillage of fuel and/or other petroleum-based products at the site has the potential to impact on the Yellow River.

7.95 Any impact on the Yellow River has the potential to also impact the downstream surface water bodies, i.e. the River Boyne, at a distance from the site.

Groundwater

7.96 There are no anticipated indirect impacts on groundwater at this stage.

Operational Stage Impacts

7.97 There is the potential for direct impacts on groundwater, and indirect impacts on surface water and groundwater, arising from the proposed extraction of sand and gravel during the operational stage. Potential impacts on surface water and groundwater have been identified and are outlined below.

Direct Impacts

Surface Water

7.98 There will be no discharge from the proposed sand and gravel pit to the nearby watercourses. Therefore, there will therefore be no direct impacts on surface water quality or quantity during the operational stage.

Groundwater

7.99 An accidental leaking or spillage of fuel and/or other petroleum-based products could impact on groundwater quality in the underlying sand and gravel and bedrock aquifer.

7.100 The proposed sand and gravel pit will be worked below the groundwater in the sand and gravel deposits; however, no dewatering of shallow groundwater will take place. As there is no dewatering associated with the proposed development, there will be no change to the shallow groundwater flow or quantity.

7.101 The proposed development will remove the direct impact of agriculture pressures from the site on groundwater as the land will not be used for agriculture any longer.

Indirect Impacts

Surface Water

7.102 An accidental leaking or spillage of fuel and/or other petroleum-based products at the site has the potential to impact on the surface water quality Yellow River.

7.103 The proposed development will remove the indirect impact of agriculture pressures from the site on surface water as the land will not be used for agriculture any longer.

Groundwater

7.104 There are no anticipated indirect impacts on groundwater at this stage.

Post - Operational Stage Impacts

Direct Impacts

7.105 A restoration scheme has been prepared for the proposed site and will be implemented following permanent cessation of extraction activities. Restoration will be on a phased basis with surplus excavated organic rich clayey soil to the extracted areas, the establishment of a permanent water body and allowing the lake edges and external perimeter berms to naturally regenerate / revegetate over time. There is no requirement to import any materials to site for restoration purposes.

7.106 There are no anticipated direct impacts during the post operational stage as all plant, machinery and ancillary equipment will be removed from the site following extraction.

Indirect Impacts

7.107 There are no anticipated indirect impacts from the post operational stage as all plant, machinery and ancillary equipment will be removed from the site following extraction.

'Do-nothing Scenario'

7.108 If the proposed development is not permitted, the site will remain under agricultural landuse. The aggregate resource will remain in the ground and alternative pit development will be required at other locations to provide aggregate material for the BD Flood manufacturing and construction activities.

7.109 The ecological status of the Yellow River is in decline, and in is classified as being at 'At Risk' due to agricultural pressures. The proposed development will remove the direct and indirect impact of agriculture pressures from the site on groundwater and surface water over the duration of the project.

Rating of Identified Potential Impacts

7.110 The potential impacts outlined above during the construction and operational stages have been described in terms of the character, magnitude, duration, probability and consequence, and each impact is rated in terms of High (H), Medium (M), Low (L) and Negligible (N) based on the magnitude, extent, duration and consequence of the identified effects.

7.111 The description of the effects and rating for each identified impact is shown in **Table 7-9** below.

Significance of Impacts

7.112 The significance of impacts is based on the significance and sensitivity of the existing environment (**Table 7-8** above), and the description of identified potential impacts with likely significant effects outlined in Table 7-9 below. The significance of Impact is determined from the Classification of the Significance of Impacts in **Appendix 7-I**.

Table 7-9: Classification of significance of impacts (no mitigation)

No.	Potential Impacts	Impact Rating (No Mitigation)	Sig. of Impact (No Mitigation)
Construction Stage - Indirect - Surface Water			
1	Improvement in surface water quality due to removal of land from agriculture.	**Medium.** Potential to improve surface quality in stream by change of land use from agriculture. Contribute to maintenance of status of surface water as Good.	**Moderate**
Construction Stage - Direct - Groundwater			
2	Reduction in groundwater quality in bedrock aquifer from accidental fuel leakage/ spillage, which could migrate into the underlying bedrock aquifer	**Low.** Potential to affect groundwater quality in bedrock due to exposed groundwater from wet working on the site. Any impact to groundwater will be limited due to short term nature of works. Any leakage / spillage would be accidental only and of limited volume.	**Slight - Not Significant**
Construction Stage - Indirect - Surface Water			
3	Impact on surface water quality in the Yellow River via groundwater baseflow to the watercourse	**Medium.** Potential to affect surface water quality (fuel) in the Yellow River, through groundwater baseflow to the watercourse, or runoff due to the proximity of the watercourse to the site. Any leakage / spillage would be accidental only and of limited volume. An impact on the stream is considered unlikely.	**Moderate**
Operational Stage - Direct - Surface Water			
4	Improvement in surface water quality due to removal of land from agriculture.	**Medium.** Potential to improve surface quality in stream by change of land use from agriculture. Contribute to maintenance of status of surface water as Good.	**Moderate**
Operational Stage - Direct - Groundwater			
5	Reduction in groundwater quality in bedrock aquifer from accidental fuel leakage/ spillage, which could migrate into the underlying bedrock aquifer	**Low.** Potential to affect groundwater quality in bedrock due to exposed groundwater from wet working on the site. Any impact to groundwater will be limited due to short term nature of works. Any leakage / spillage would be accidental only and of limited volume; no fuel will be stored at the site.	**Slight - Not Significant**
Operational Stage - Indirect - Surface Water			
6	Impact on surface water quality in the Yellow River via groundwater baseflow to the watercourse	**Medium.** Potential to affect surface water quality (fuel) in the Yellow River, through groundwater baseflow to the watercourse. Any impact on the stream is considered unlikely as the impact to groundwater will be limited as any spillage would be accidental only and of limited volume; no fuel will be stored at the site.	**Moderate**

Mitigation Measures

Construction & Operational Stages

7.113 BD Flood is part of the Flood Group who has implemented an environmental management system (EMS) at their existing sites (refer to Chapter 2 of this EIAR). A copy of the Flood Group ISO14001 accreditation is also provided in Chapter 1. If planning permission is granted for the proposed development, the group EMS will be extended to include the application site.

7.114 Environmental water monitoring will be carried out on a regular basis to demonstrate that the development is not having any significant adverse effects on the surrounding environment.

7.115 In order to mitigate against the risk of pollution to groundwater and surface water occurring at the site the following standard management mitigation measures will be implemented:

- There will be no surface water run-off or overground flow across the site;
- There will be no off-site discharge from the proposed development to any surface watercourse;
- During any fuelling or servicing of plant and equipment at the site a spill kit and drip trays will be available in the event of any accidental spills or leakages;
- No fuel and oils will be stored at the site. HGV's will be refuelled off-site at other BD Flood sites. The long reach excavator, loading shove and crusher / screener will be re-fuelled on-site using a mobile 'bunded' double-skinned fuel dispenser that will be brought to site by a third-party fuel supplier (with road certified trucks, competent drivers, and spill kits). Refuelling will typically be carried out every 2 days;
- A number of spill kits will be available on-site in the event of any accidental leakages or spillages, should they arise;
- In order to control dust emissions, water will be sprayed from a tractor drawn bowser on dry exposed surfaces and stockpiles as required;
- Areas of bare or exposed soils will, insofar as practicable, be kept to a minimum during the extraction operations;
- All HGVs exiting the site will be routed through a bath type wheel wash;
- a road sweeper will be used to maintain entrances and any emergency spillages on public roads;
- The BD Flood environmental team undertake quarterly environmental audits at the site to ensure that compliance with all planning consents, licences and site environmental management system, which is accredited to ISO14001 standard, is both maintained and enhanced.

7.116 With the implementation of these standard mitigation measures at the site any potential adverse impacts on the water environment identified above will be further reduced and the will be neutral and not significant.

Post - Operational Stage

7.117 The principal activity which will be undertaken at the application site is the extraction and processing of the in-situ sand and gravel with ultimate restoration of lands returned to a beneficial ecological habitat use.

7.118 The final phase of the restoration will start when all the accessible sand and gravel deposits have been exhausted. All plant associated solely with extraction will be removed from site.

7.119 Following extraction all plant, machinery and ancillary infrastructure will be removed from the site, so there will be on potential adverse impacts on the water environment during this stage.

Residual Impact Assessment

7.120 Following the implementation of mitigation measures, a residual impact assessment has been undertaken. An assessment of the impacts with mitigation measures in place is presented in **Table 7-10** below, and the residual impact for all potential impacts is assessed as being Not Significant.

7.121 Examination of the identified potential impacts on the receiving environment show that with the mitigation measures in place, there are no significant residual impacts with respect to groundwater and surface water during the construction / operational / post operational stages of the proposed sand and gravel pit development.

7.122 Following mitigation, the significance of all potential negative impacts identified will be reduced to Not Significant.

Monitoring

7.123 Development of the sand and gravel pit presents an opportunity to protect and improve surface water quality in a sub-catchment. The proposed monitoring program will allow for the following data collection in this sensitive sub-catchment.

7.124 A network of groundwater monitoring boreholes has been installed across the site.

7.125 The following monitoring activities will be carried out to demonstrate that the development is not having an adverse impact on the surrounding environment and will document any improvements in water quality:

- surface water quality monitoring to be undertaken on a bi-annual basis for the duration of the proposed development, with grab sample from the Yellow River upstream and downstream of the site;
- groundwater levels in all boreholes will be monitored on a bi-annual basis for the duration of the proposed development; and
- groundwater quality monitoring to be undertaken on an annual basis for the duration of the proposed development.

Table 7-10: Summary of potential impacts and residual effects with mitigation measures in place

No.	Potential Impacts	Significance of Impact (No Mitigation)	Mitigation Required	Residual Effect
Construction Stage - Indirect - Surface Water				
1	Improvement in surface water quality due to removal of land from agriculture.	Moderate and positive	No	Not Significant
Construction Stage - Direct - Groundwater				
2	Reduction in groundwater quality in bedrock aquifer from accidental fuel leakage/ spillage, which could migrate into the underlying bedrock aquifer	Slight	Yes	Not Significant
Construction Stage - Indirect - Surface Water				
3	Impact on surface water quality in the Yellow River via groundwater baseflow to the watercourse	Moderate	Yes	Not Significant
Operational Stage - Direct - Surface Water				
4	Improvement in surface water quality due to removal of land from agriculture.	Moderate and positive	No	Not Significant
Operational Stage - Direct - Groundwater				
5	Reduction in groundwater quality in bedrock aquifer from accidental fuel leakage/ spillage, which could migrate into the underlying bedrock aquifer	Slight	Yes	Not Significant
Operational Stage - Indirect - Surface Water				
6	Impact on surface water quality in the Yellow River via groundwater baseflow to the watercourse	Moderate	Yes	Not Significant

Figures

645300 E | 646300 E | 647300 E | 648300 E | 649300 E | 650300 E | 651300 E | 652300 E | 653300 E

740000 N | 739000 N | 738000 N | 737000 N | 736000 N | 735000 N | 734000 N

ROCHFORTBRIDGE STREAM_010

CASTLEJORDAN_010

CASTLEJORDAN_020

CASTLEJORDAN_030

Boyne

Yellow[Castlejordan]_SC_010

YELLOW (CASTLEJORDAN)_020

YELLOW (CASTLEJORDAN)_010

YELLOW (CASTLEJORDAN)_030

2km

CASTLETOWN TARA STREAM_010

ESKER STREAM_010

Barrow

0 | 1,000 | 2,000 | 3,000 | 4,000 | 5,000m

Scale 1:50,000

N

Notes:

1. Extract from Ordnance Survey Discovery Series Map No. 48
2. Extract from EPA WFD © EPA

Legend:

- Proposed Sand and Gravel Extraction Area (11.7 Hectares)
- Planning Application Area (c.19.5 Hectares)
- Applicants Land Interest Area
- Catchment Boundary
- Sub-Catchment Boundary
- Rivers

EPA WFD River Sub-basins in Yellow (Castlejordan) Sub-Catchment_010:

- YELLOW (CASTLEJORDAN)_010
- CASTLEJORDAN_020
- YELLOW (CASTLEJORDAN)_020
- CASTLEJORDAN TARA STREAM_010
- YELLOW (CASTLEJORDAN)_030
- CASTLEJORDAN_010
- ROCHFORTBRIDGE STREAM_010

Rev	Amendments	Date	By	Chk	Auth

SLR

www.slrconsulting.com

Client: BD Flood Unlimited Company

Project: Proposed Sand and Gravel Development at Derryarkin, Co. Offaly

Figure Title: Surface Water Features Map

Scale	SLR Project No.
1:50,000 @ A3	501.00023.065657

Designed	Drawn	Checked	Authorised
NB	NB	PG	PG
Date 12/24	Date 12/24	Date 09/25	Date 09/25

Figure Number: **Figure 7-1** | Rev.: **R0**

19/09/2025

\\slr.local\ie\Offices\IE\Dublin\SLR DATA\SLR Projects\0023 BD Flood\065657 Derryarkin EIAR PA NS\3 EIAR\07 WaterDrwgs\CAD\Wking\00023.065657 EIAR Fig 7-1 Water features map.dwg

CYAL50450033

645300 E | 646300 E | 647300 E | 648300 E | 649300 E | 650300 E | 651300 E | 652300 E | 653300 E

740000 N | 739000 N | 738000 N | 737000 N | 736000 N | 735000 N | 734000 N

Notes:

1. Extract from Ordnance Survey Discovery Series Map No. 48
2. Extract from GSI Bedrock Aquifer © GSI

Legend:

- Proposed Sand and Gravel Extraction Area (11.7 Hectares)
- Planning Application Area (c.19.5 Hectares)
- Applicants Land Interest Area

GSI Bedrock Aquifers:

- Lm - Locally Important Aquifer - Bedrock which is Generally Moderately Productive
- Ll - Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones
- Lk - Locally Important Aquifer - Karstified
- Lg - Locally important gravel aquifer

GSI Karst Landforms:

- Spring

Rev	Amendments	Date	By	Chk	Auth

SLR

www.slrconsulting.com

Client: BD Flood Unlimited Company

Project: Proposed Sand and Gravel Development at Derryarkin, Co. Offaly

Figure Title: Bedrock Aquifer Map

Scale	SLR Project No.
1:50,000 @ A3	501.00023.065657

Designed	Drawn	Checked	Authorised
NB	NB	PG	PG
Date: 12/24	Date: 12/24	Date: 09/25	Date: 09/25

Figure Number: **Figure 7-2** | Rev.: **R0**

0 1,000 2,000 3,000 4,000 5,000m

Scale 1:50,000

\\slr.local\ea\Offices\IE\Dublin\SLR DATA\SLR Projects\00023 BD Flood\065657 Derryarkin EIAR PA NIS\3 EIAR\07 Water\Dwgs\CAD\Wxrg\00023.065657 EIAR Fig 7-2 Bedrock Aquifers.dwg 19/09/2025

CYAL50450233

645300 E | 646300 E | 647300 E | 648300 E | 649300 E | 650300 E | 651300 E | 652300 E | 653300 E

740000 N | 739000 N | 738000 N | 737000 N | 736000 N | 735000 N | 734000 N

N

RECEIVED: 04/02/2026

Athboy

Trim

Rhode

2 km

0 500 1000 1500 2000 2500m

Scale 1:25,000

Notes:

1. Extract from Ordnance Survey Discovery Series Map No. 48
2. Extract from GSI GWB Data © GSI

Legend:

- Proposed Sand and Gravel Extraction Area (11.7 Hectares)
- Planning Application Area (c.19.5 Hectares)
- Applicants Land Interest Area

GSI Groundwater Bodies:

- Athboy
- Trim
- Rhode

Rev	Amendments	Date	By	Chk	Auth

SLR

www.slrconsulting.com

Client: BD Flood Unlimited Company

Project: Proposed Sand and Gravel Development at Derryarkin, Co. Offaly

Figure Title: Groundwater Body Map

Scale	SLR Project No.
1:25,000 @ A3	501.00023.065657

Designed	Drawn	Checked	Authorised
NB	NB	PG	PG
Date: 12/24	Date: 12/24	Date: 09/25	Date: 09/25

Figure Number: **Figure 7-3** | Rev: **R0**

\\ie1-localfiles\Offices\IE\Dublin\SLR DATA\SLR Projects\00023 BD Flood\065657 Derryarkin EIAR PA NI\S3 EIAR\07 Water\Dwgs\CAD\Wkng\00023.065657 EIAR Fig 7-3 GWB.dwg 19/09/2025

CYAL50450233

645300 E | 646300 E | 647300 E | 648300 E | 649300 E | 650300 E | 651300 E | 652300 E | 653300 E

740000 N | 739000 N | 738000 N | 737000 N | 736000 N | 735000 N | 734000 N

N

0 500 1000 1500 2000 2500m

Scale 1:25,000

Notes:

1. Extract from Ordnance Survey Discovery Series Map No. 48
2. Extract from GSI GW Vulnerability © GSI

Legend:

- Proposed Sand and Gravel Extraction Area (11.7 Hectares)
- Planning Application Area (c.19.5 Hectares)
- Applicants Land Interest Area

GSI Groundwater Vulnerability:

- Rock at surface
- Extreme
- High
- Moderate
- Low

Rev	Amendments	Date	By	Chk	Auth

SLR

www.slrconsulting.com

Client: BD Flood Unlimited Company

Project: Proposed Sand and Gravel Development at Derryarkin, Co. Offaly

Figure Title: Groundwater Vulnerability Map

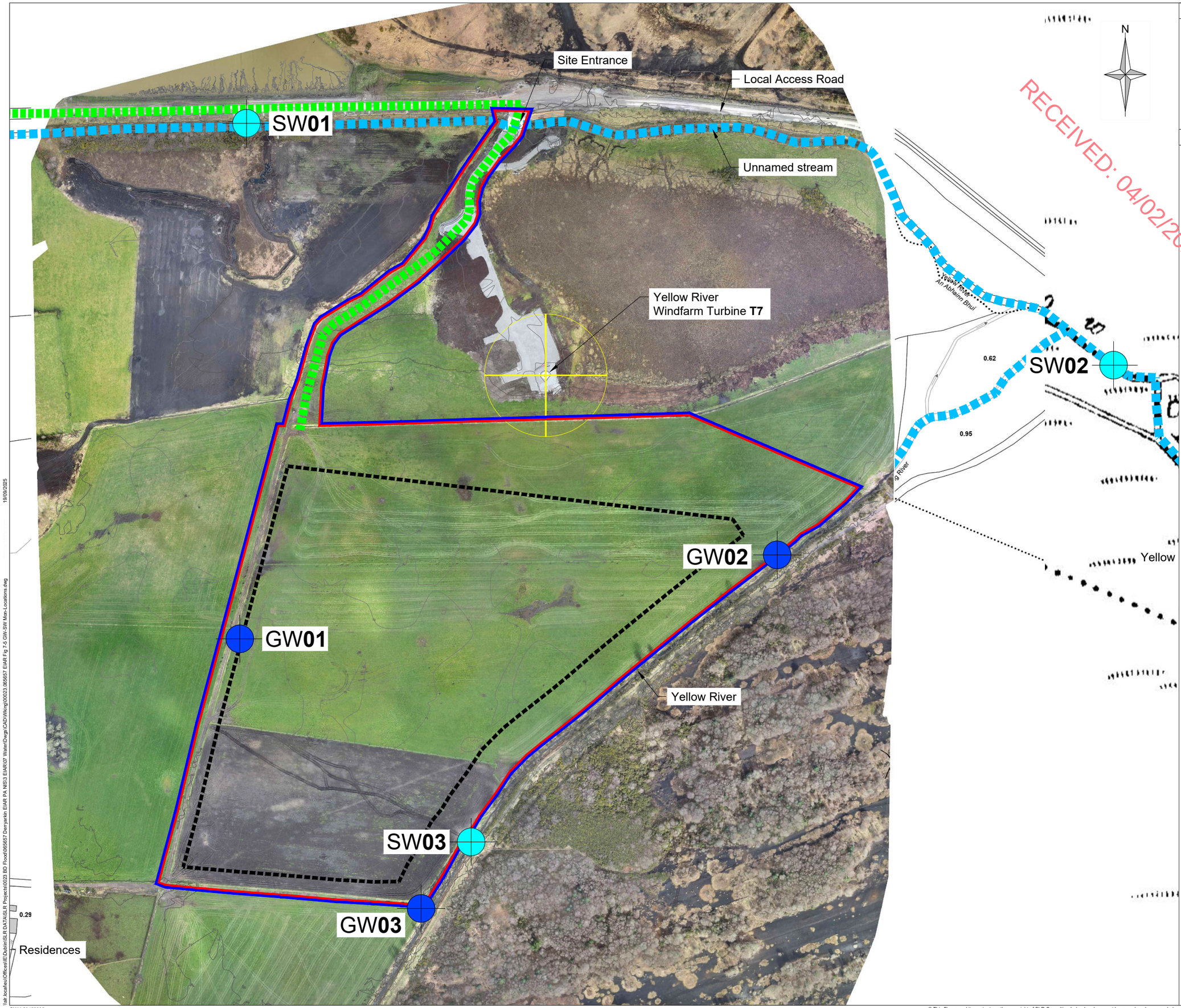
Scale	SLR Project No.
1:25,000 @ A3	501.00023.065657

Designed	Drawn	Checked	Authorised
NB	NB	PG	PG
Date: 12/24	Date: 12/24	Date: 09/25	Date: 09/25

Figure Number: **Figure 7-4** | Rev. **R0**

\\slr.local\eu\Offices\IE\Dublin\SLR DATA\SLR Projects\00023 BD Flood\065657 Derryarkin EIAR PA NIS\3 EIAR\07 Water\Dwgs\CAD\Wking\00023.065657 EIAR Fig 7-4 GW Vulnerability.dwg 19/09/2025

CYAL50450233



Notes:

Tailte Éireann OSi Mapping 5,000 scale - sheet no.'s 3180 & 3181

Legend:

- Applicant Land Interest Boundary
- Proposed Planning Application Area 19.5 hectares
- Proposed Sand and Gravel Extraction Area 11.7 hectares
- BD Flood Ltd. Land Interest Boundary 2.5 hectares
- GW01 — Baseline **Groundwater** Monitoring Well Locations
- SW01 — Baseline **Surface Water** Monitoring Locations

Rev	Amendments	Date	By	Chk	Auth

SLR

www.slrconsulting.com

Client: BD Flood Unlimited Company

Project: Proposed Sand and Gravel Development at Derryarkin, Co. Offaly

Figure Title: Groundwater Well / Surface Water Stream Monitoring Locations

Scale	SLR Project No.
N.T.S @ A3	501.00023.065461

Designed	Drawn	Checked	Authorised
smcd	smcd	pg	pg
Date: 04/25	Date: 04/25	Date: 09/25	Date: 09/25

Figure Number: **Figure 7-5** Rev.: **0**

\\slr.local\ie\Offices\IE\Dublin\SLR DATA\SLR Projects\00023 BD Flood\065657 Derryarkin EIAR PA NI\S3 EIAR\07 Water\Dwgs\CAD\Wkng\00023.065657 EIAR Fig 7-5 GW-SW Mon-Locations.dwg

19/09/2025

CYAL50450233

Appendices

Appendix 7-A
EU Directives / National Legislation and Regulations / Guidelines / Technical Standards

Appendix 7-B
Groundwater Borehole Logs

Appendix 7-C
Rating of Existing Environment Significance / Sensitivity

Appendix 7-D
Descriptions of Effects (EPA, 2022)

Appendix 7-E
Classification of the Significance of Impacts

Appendix 7-A
EU Directives / National Legislation and Regulations / Guidelines / Technical Standards

European Directives

- Environmental Impact Assessment. Directive (2011/92/EU) on the assessment of the effects of certain public and private projects on the environment;
- Environmental Impact Assessment Directive (2014/52/EU) on the assessment of the effects of certain public and private projects on the environment;
- Water Framework Directive (2000/60/EC);
- Groundwater Directive (2006/118/EC);
- Flooding Directive (2007/60/EC)
- Integrated Pollution and Prevention Control Directive (2008/1/EC); and
- The management of waste from extractive industries (2006/21/EC).

Irish Government Acts, National Legislation and Regulations

- S.I. No. 349 of 1989, European Communities (Environmental Impact Assessment) Regulations, and subsequent amendments (S.I. No. 84 of 1994, S.I. No. 352 of 1998, S.I. No. 93 of 1999, S.I. No. 450 of 2000 and S.I. No. 538 of 2001);
- The Planning and Development Acts, 2000 to 2009, The Planning and Development (Amendment) Act 2010, S.I. 600 of 2001 Planning and Development Regulations and subsequent amendments including, S.I. No. 364 of 2005 and S.I. 685 of 2006.

National legislation on the protection of the water environment. Since 2000 water management in EU member states has primarily been directed by the Water Framework Directive (2000/60/EC) and the associate 'daughter' Groundwater Directive (2006/118/EC). Irish legislation implementing these, and other relevant directives currently includes:

- S.I. No. 9 of 2010 European Communities Environmental Objectives (Groundwater) Regulations 2010 and amendments (S.I. No. 389 of 2011 and S.I. No. 149 of 2012);
- European Union (Drinking Water) Regulations 2014 (S.I. No. 122 of 2014);
- S.I. No. 278 of 2007 European Communities (Drinking Water) (No. 2) Regulations;
- S.I. No. 272 of 2009 European Communities Environmental Objectives (Surface Waters) Regulations 2009 and amendment (S.I. No. 327 of 2012);
- S.I. No. 684 of 2007 Waste Water Discharge (Authorisation) Regulations, 2007, as amended (S.I. No. 231 of 2010);
- S.I. No. 122 of 2010 European Communities (Assessment and Management of Flood Risks) Regulations 2010;
- S.I. No. 457 of 2008 European Communities (Environmental Liability) Regulations which bring into force the European Liability Directive (2004/35/EC);
- European Union (Planning and Development) (Environmental Impact Assessment) (No. 2) Regulations 2018 (S.I. No. 404 of 2018);
- Local Government (Water Pollution) Acts 1977 to 1998;
- European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293 of 1988);
- European Communities (Quality of Shellfish Waters) Regulations, 2006 (S.I. No. 268 of 2006) and amendments (S.I No. 55 and 464 of 2009), and;

- Bathing Water Quality Regulations, 2008 (S.I. No. 79 of 2008) and amendments (S.I No. 351 of 2011 and S.I. No. 163 of 2016);

Guidelines

- CIS (2007). Common Implementation Strategy (CIS) for the Water Framework Directive (2000/60/EC) Guidance on preventing or limiting direct and indirect inputs in the context of the Groundwater Directive 2006/118/EC. Guidance Document No. 17.
- CIS (2010). Common Implementation Strategy (CIS) for the Water Framework Directive (2000/60/EC). Guidance on risk assessment and the use of conceptual models for groundwater. Guidance document No. 26.
- DEHLG (2004). National Urban Waste Water Study. National Report.
- DEHLG (2009). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities.
- DELG/EPA/GSI (1999). Groundwater Protection Schemes. Document prepared jointly by the Geological Survey of Ireland (GSI), the Environmental Protection Agency, and the Department of Environment, Heritage and Local Government.
- EPA (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.
- EPA (2010b). Methodology for Establishing Groundwater Threshold Values and the Assessment of Chemical and Quantitative Status of Groundwater, Including and Assessment of Pollution Trends and Trend Reversal.
- EPA (2011). Guidance on the Authorisation of Discharges to Groundwater. Version 1, December 2011.
- EPA (2003). Towards Setting Guideline Values for the Protection of groundwater in Ireland. Interim Report.
- EPA (2006). Ireland Water Framework Directive Monitoring Programme.
- Fitzsimons, V., Daly, D. and Deakin, J. (2003). Draft GSI guidelines for assessment and mapping of groundwater vulnerability to contamination. Groundwater Chapter, Geological Survey of Ireland.
- GSI (2006). Criteria used in aquifer classification. 1Available from http://www.gsi.ie/Programmes/Groundwater/Aquifer+Classification.htm
- IGI (2007). Guidelines on Water Well Construction. Available from http://www.igi.ie/assets/files/Water%20Well%20Guidelines/Guidelines.pdf
- Kilroy, G., Dunne, F., Ryan, J., O'Connor, A., Daly, D., Craig, M., Coxon, C., Johnston, P. and Moe, H. (2008). A Framework for the Assessment of Groundwater – Dependent Terrestrial Ecosystems under the Water Framework Directive. Environmental Research Centre Report Series No. 12.
- Institute of Geologists of Ireland, 2007. Recommended collection, presentation and interpretation of geological and hydrogeological information for quarry developments.

Technical Standards

- British Standards (2015). Code of Practice for Ground Investigations BS5930:2015;.
- CIRIA (2007). The SuDS Manual. (C697). CIRIA publication, February 2007.

Appendix 7-B
Groundwater Borehole Logs

BOREHOLE LOG

BOREHOLE No
GW 1

Client:
B.D.FLOOD LIMITED

Project No:	Date:	Ground Level:	Co-ordinates:
501.065657.00001	02/04/2025	79.52m	E648804 N736188

Project:
Derryarkin S&G Pit Development EIAR & PA

Sheet
1 of 1

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument Backfill
					78.62		(0.90) 0.90	Soft dark PEAT	
								Loose fine grey SAND AND GRAVEL	
					74.32		(4.30) 5.20		
					73.02		(1.30) 6.50	Soft grey sandy SILT	
								Dense coarse grey sub-angular silty GRAVEL very frequent cobbles	
					69.72		(3.30) 9.80		
					68.52		(1.20) 11.00	Stiff very gravelly sandy CLAY high cobble content	
								Borehole Complete at 11.00m	

Boring Progress and Water Observations				
Date	Depth	Casing Dpt	Casing Dia	Water Dpt
02/04/2025	11.00	4.00	140.00	

Chiselling			Water Added	
From	To	Hours	From	To

General Remarks
Drillers Descriptions

All dimensions in metres	Contractor: Petersen Drilling Ltd.	Method: Rotary open hole	Logged By:	Approved By:
Scale 1:73	Plant: Knebel HY79	Hole Size: 154mm	SP & MH	SP

LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH BS5930:2015+A2:2020

BOREHOLE LOG

BOREHOLE No
GW 2

Client:
B.D.FLOOD LIMITED

SLR

Project No:	Date:	Ground Level:	Co-ordinates:
501.065657.00001	02/04/2025	78.43m	E649326 N736317

Project:
Derryarkin S&G Pit Development EIAR & PA

Sheet
1 of 1

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument Backfill
					77.63		(0.80) 0.80	Soft dark brown PEAT	
					73.73		(3.90) 4.70	Loose fine grey well rounded SAND AND GRAVEL	
					68.83		(4.90) 9.60	Soft to firm grey clayey SILT	
					68.43		10.00	Firm to stiff grey silty gravelly CLAY	
								Borehole Complete at 10.00m	

Boring Progress and Water Observations				
Date	Depth	Casing Dpt	Casing Dia	Water Dpt
02/04/2025	10.00	4.00	140.00	

Chiselling			Water Added	
From	To	Hours	From	To

General Remarks
Drillers Descriptions

All dimensions in metres	Contractor: Petersen Drilling Ltd.	Method: Rotary open hole	Logged By:	Approved By:
Scale 1:66	Plant: Knebel HY79	Hole Size: 154mm	SP & MH	SP

LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH BS5930:2015+A2:2020

BOREHOLE LOG

BOREHOLE No
GW 3

Client:
B.D.FLOOD LIMITED

SLR

Project No:	Date:	Ground Level:	Co-ordinates:
501.065657.00001	02/04/2025	79.86m	E648986 N735980

Project:
Derryarkin S&G Pit Development EIAR & PA

Sheet
1 of 1

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument Backfill
					79.56		0.30	Soft to firm brown peaty TOPSOIL	
							(4.80)	Medium dense coarse grey well rounded SAND AND GRAVEL frequent cobbles and boulders	
					74.76		5.10		
					74.36		5.50	Loose fine brown SAND	
							(4.10)	Loose to Medium dense fine grey silty SAND	
					70.26		9.60		
					68.86		(1.40) 11.00	Soft to firm grey sandy SILT	
								Borehole Complete at 11.00m	

Boring Progress and Water Observations					Chiselling			Water Added		General Remarks
Date	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	Drillers Descriptions
02/04/2025	11.00	3.50	140.00							

All dimensions in metres	Contractor: Petersen Drilling Ltd.	Method: Rotary open hole	Logged By:	Approved By:
Scale 1:73	Plant: Knebel HY79	Hole Size: 154mm	SP & MH	SP

LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH BS5930:2015+A2:2020

Appendix 7-C
Rating of Existing Environment Significance / Sensitivity

Rating of Existing Environment Significance / Sensitivity (IGI, 2013 Guidelines)

Importance	Criteria	Typical Example
High	Attribute has a high quality or value on an international scale	Groundwater/ Surface Water supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status
	Attribute has a high quality or value on a regional or national scale	Regionally Important Aquifer with multiple wellfields. Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – e.g. NHA status. Regionally important potable water source supplying >2,500 homes Inner source protection area for regionally important water source. Drinking water supply from river. Amenity use of waterbody
	Attribute has a high quality or value on a local scale	Regionally Important Aquifer. Groundwater provides large proportion of baseflow to local rivers. Locally important potable water source supplying >1000 homes. Outer source protection area for regionally important water source. Inner source protection area for locally important water source.
Medium	Attribute has a medium quality or value on a local scale	Locally Important Aquifer Potable water source supplying >50 homes. Outer source protection area for locally important water source. No specific recreational use of waterbody
Low	Attribute has a low quality or value on a local scale	Poor Bedrock Aquifer. Potable water source supplying <50 homes. No water supply from surface water, no abstraction designation for watercourse No amenity value of waterbody
Negligible	Attribute has negligible quality or value on a local site scale	No groundwater supply from a bedrock aquifer inn vicinity of site. Surface water not used for any specific purpose.

Appendix 7-D
Descriptions of Effects (EPA, 2022)

Descriptions of Effects (EPA, 2022)

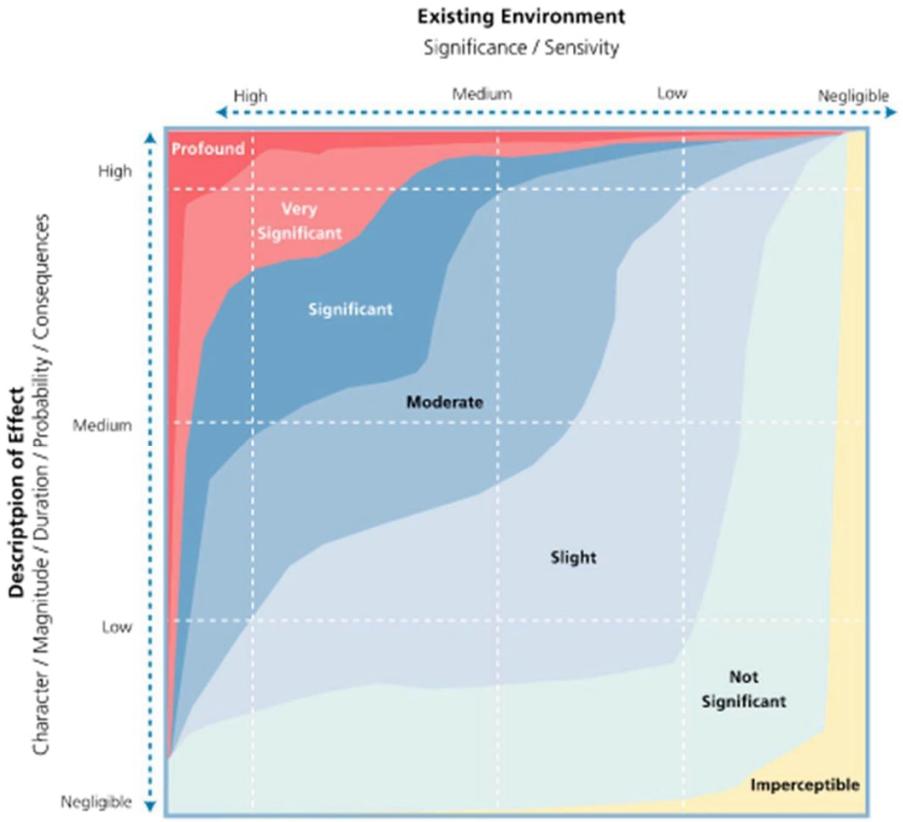
Impact Characteristic	Term	Description
Quality of Effects	Positive Effects	A change which improves the quality of the environment
	Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
	Negative / Adverse Effects	A change which reduces the quality of the environment
Describing the Significance of Effects	Imperceptible	An effect capable of measurement but without significant consequences
	Not significant	An effect which causes noticeable2 changes in the character of the environment but without significant consequences.
	Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
	Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound Effects	An effect which obliterates sensitive characteristics
Describing the Extent and Context of Effects	Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect
	Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Describing the Probability of Effects	Likely Effects	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
	Unlikely Effects	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Describing the Duration and Frequency of Effects	Momentary Effects	Effects lasting from seconds to minutes
	Brief Effects	Effects lasting less than a day
	Temporary Effects	Effects lasting less than a year
	Short-term Effects	Effects lasting one to seven years
	Medium-term Effects	Effects lasting seven to fifteen years
	Long-term Effects	Effects lasting fifteen to sixty years
	Permanent Effects	Effects lasting over sixty years

Impact Characteristic	Term	Description
	Reversible Effects	Effects that can be undone, for example through remediation or restoration
	Frequency of Effects	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually.
Describing the Types of Effects	Indirect / Secondary Effects	Likely, significant effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative Effects	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
	Do-Nothing Effects	The environment as it would be in the future should the subject project not be carried out.
	Worst Case Effects	The effects arising from a project in the case where mitigation measures substantially fail.
	Indeterminable Effects	When the full consequences of a change in the environment cannot be described.
	Irreversible Effects	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
	Residual Effects	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
	Synergistic Effects	Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of SOx and NOx to produce smog).

Appendix 7-E
Classification of the Significance of Impacts

Determining Significance

Figure 3.4 shows how comparing the character of the predicted effect to the sensitivity of the receiving environment can determine the significance of the effect.



There are seven generalised degrees of effect significance that are commonly used in EIA. Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant and Profound. Generalised definitions of each of these are provided in Table 3.4. When more specific definitions exist within a specialised factor or topic, e.g. biodiversity, these should be used in preference to these generalised definitions. (ref. Advice Notes[68].)

(Source: Figure 3.4 Environmental Protection Agency (May 2022), *'Guidelines on the Information to be contained in Environmental Impact Assessment Reports'*).

Appendix E Environmental Management System (EMS)

Appropriate Assessment (AA) Screening & Natura Impact Statement (NIS) Report

Proposed Derryarkin Sand and Gravel Pit, Croghan, Rhode, Co Offaly

SLR Project No.: 501.065657.00001

3 February 2026

Environmental Management System (EMS) P. Ref. 25/60688

Proposed Sand and Gravel Pit at Derryarkin Townland, Croghan, Rhode, Co. Offaly

BD Flood
Building with Confidence

Prepared by:

SLR Environmental Consulting (Ireland) Ltd

7 Dundrum Business Park, Windy Arbour, Dublin, D14
N2Y7

SLR Project No.: 501.065657.0001

Client Reference No: 0023

30 January 2026

Revision: Final

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
0	22 December 2025	KR	LH	
Final	30 January 2026	KR	SMcD	SMcD

Basis of Report

This document has been prepared by SLR Environmental Consulting (Ireland) Ltd (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with BD Flood (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

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Table of Contents

Tables in Text

Figures in Text

Acronyms and Abbreviations

1.0 Management Organisation & Responsibilities

- John Flood - Managing Director
- Vincent Flanagan - Operations Manager
- Sean Monaghan - Environmental Manager

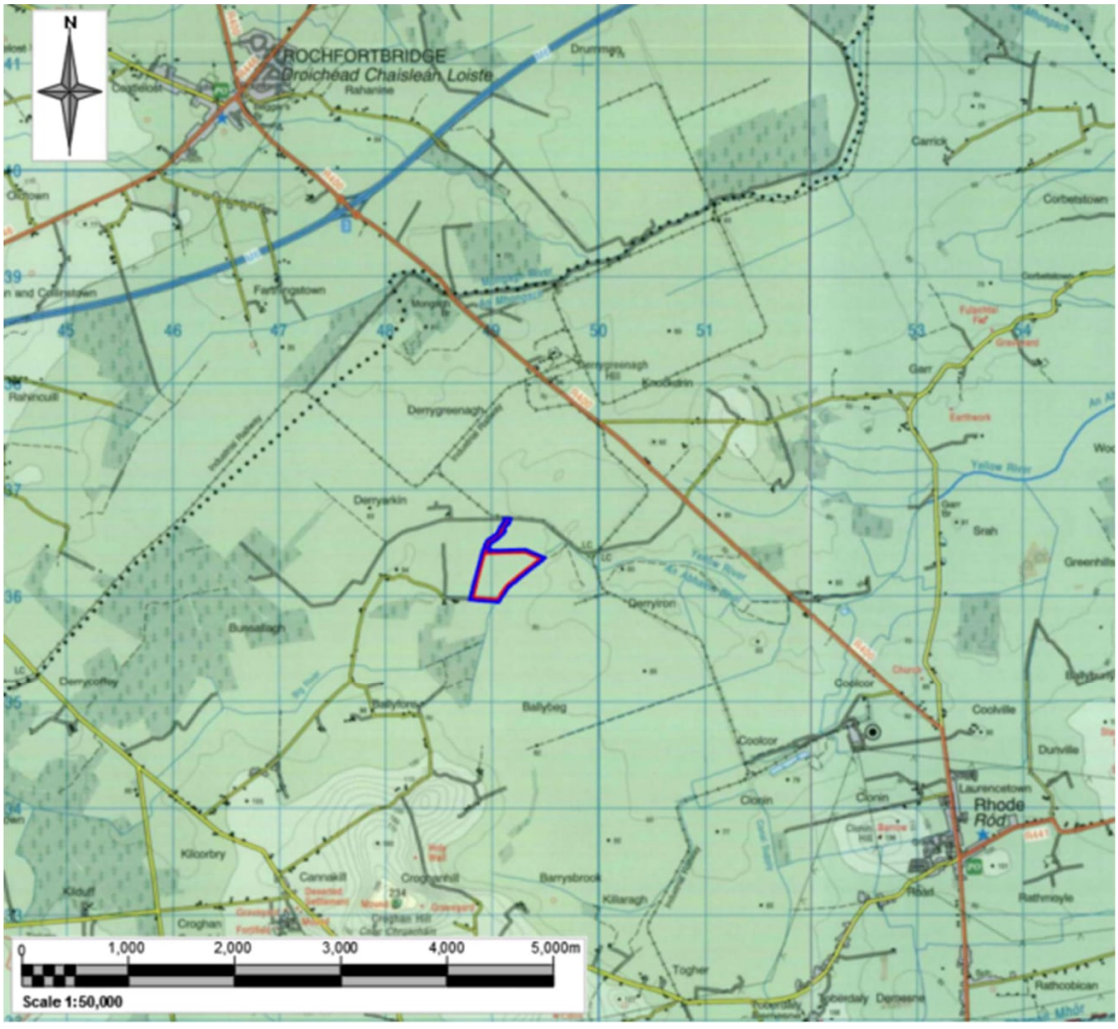

Figure 1 Site Location

2.0 List of relevant Irish planning and environmental legislation.

2.1 Table of Statutes

The Forestry Act 1946
Local Government (Planning and Development) Act 1963
Local Government (Planning and Development) Act 1976
Local Government (Water Pollution) (Amendment) Act 1976
Local Government (Water Pollution) Act 1977
Local Government (Planning and Development) Act 1982
Local Government (Planning and Development) Act 1983
Air Pollution Act 1987
Safety, Health and Welfare at Work Act 1989
Derelict Sites Act 1990
Local Government (Water Pollution) Act 1990
Local Government (Planning and Development) Act 1990
Local Government (Planning and Development) Act 1991
Local Government (Planning and Development) Act 1992
Environmental Protection Agency Act 1992 Local Government (Planning and Development) Act 1993
Waste Management Act 1996 & Amendments
Planning & Development Act 2000

2.2 Table of Statutory Instruments

Local Government (Planning and Development) Regulations 1964.
Local Government (Planning and Development) Regulations 1977 (SI. No.65)
The EC (Waste) Regulations 1979
The EC (Toxic and Dangerous Waste) Regulations 1982
Air Pollution 1987 (Air Quality Standards) Regulations 1987 (SI No.244)
Local Government (Water Pollution) Regulations 1987 (SI No.108)
Air Pollution 1987 (Licensing of Industrial Plant) Regulations 1988 (SI No.266)
European Communities (Environmental Impact Assessment) Regulations 1989 (SI No.349)
The EC (Environmental Impact Assessment) Regulations 1990
The EC (Asbestos Waste) Regulations 1990

Local Government (Planning and Development) Regulations 1990 (SI. No.25)
The EC (Waste oil) Regulations 1992
Local Government (Water Pollution) Regulations 1992 (SI No.271)
Access to information on the Environment Regulations 1996
The EC (Waste) Regulations 1994
Environmental Protection Agency Act 1992 (Commencement) Order 1994 (SI No.82)
Environmental Protection Agency (Licensing) Regulations 1994
European Communities (Environmental Impact Assessment) (Amendment) Regulations 1994 (SI No.84)
Local Government (Planning and Development) Regulations 1994 (SI No.86)
Local Government (Planning and Development) Regulations 2001 (SI No.600)

2.3 List of Technical Reference Documents

1. Sand and Gravel Association (SAGA) Code of Practice, August 1991.
2. BACMI The British Aggregate Construction Materials Industries, Environmental Code, March 1992.
3. The Extractive Industry and the Environment in Ireland, Britain and the rest of the EC. Irish Mining and Quarrying Society Conference 1993.
4. Environmental Practices and Audit Checklist for the Ready Mixed Concrete Industry. ERMCO 1996.
5. Environmental Protection Agency (EPA). Guidance Notes on Noise in Relation to Scheduled Activities 1996.
6. Secretary of State's Guidance - Blending, packing, loading and use of bulk cement. Department of the Environment, London, February 1991.
7.
    a) Secretary of State's Guidance - Quarry Processes PG3/9 (96) Department of the Environment, London.
    b) Secretary of State's Guidance - Mineral Drying and Roadstone Coating Processes, PG3/15 (96) Department of the Environment, London.
    c) Secretary of State's Guidance - Mobile Crushing and Screening Processes, PG3/16 (96) Department of the Environment, London.
8. Minerals Planning Guidance: The control of noise at surface mineral workings (MPG 11), Department of Environment, London, April 1993.
9. Quarries and Ancillary Activities, Guidelines for Planning Authorities, Dept. of the Environment, Heritage & Local Government, April 2004
10. Environmental Management in the Extractive Industry, EPA, 2005

3.0 Environmental Guidelines

These Guidelines provide advice on possible Environmental Standards and Emission Limit Values to be adopted in accordance with the BATNEEC principle (Best Available Technology Not Entailing Excessive Cost).

Note: The Irish Concrete Federation Environmental Code shall apply where no particular environmental standards have been set for the Location in applicable Planning Permissions, Air Pollution Licenses, Water Discharge Licences, etc.

Areas of Environmental Concern

- **Noise Control**
- **Control of Air Emissions**
- **Water Management**
- **Waste Management**
- **Visual Amenity and Housekeeping**
- **Archaeology, Ecology & Reinstatement**
- **Energy and Transport**
- **Security & Public Safety**

3.1 Environmental Guidelines on Noise control

3.1.1 Introduction

The guideline provides advice on possible actions to improve environmental performance and to minimise impacts in accordance with the BATNEEC the principle (Best Available Technology Not Entailing Excessive Costs).

This guidance refers to general quarry operations including overburden removal, drilling & blasting, crushing & screening, materials handling & loading and to the production of concrete and blocks.

Table 3-1 Emissions Limit Values-Noise

Emissions Limit Values		
Parameter	**Emissions Standard**	**Basis of Standard**
Noise-Day (08:00-20:00 hours)	<55 dB (A)	ICF Environmental Code
Noise-Night (20:00-08:00 hours)	<45 dB (A)	ICF Environmental Code

3.1.2 Monitoring of Emissions:

Night work noise emissions

- Measure noise at property boundary at least twice a year
- Noise measurement to be monitored for a period of 60 minutes

3.1.3 Guideline Basis/Useful References:

- *"Guidance note for noise in Relation to Scheduled Activities*" EPA, Wexford 1995
- "*Environmental Code",* ICF, Dublin, 2005 Revised Edition

3.1.4 Actions to Control Noise (-refer BATNEEC principle):

- Where practical, operate within day hours
- Close door of buildings
- Repair damaged cladding of buildings
- Regular maintenance of noisy plant & equipment
- Use rubber or polyurethane cloths in screens
- Enclose noisy equipment such as, crushers, screens, burners, compressors, etc
- Fit silencers or attenuators
- Fit anti-vibration mountings
- Place screening berms
- In relation to control of noise, maintain plant & equipment, deal promptly with malfunctions and train staff.
- Access / internal haul roads will be kept clean and maintained in a good state of repair, i.e., any potholes are filled, and large bumps removed, to avoid unwanted rattle and "body-slap" from heavy goods vehicles.
- Vehicles waiting within the site will be prohibited from leaving their engines running and there will be no unnecessary revving of engines.

3.2 Environmental Guidelines on Control of Air Emissions

3.2.1 Introduction

The guideline provides general advice on possible actions to improve environmental performance and to minimise impacts in accordance with the BATNEEC the principle (Best available Technology Not Entailing Excessive Cost).

This guidance refers to operations including loading materials & blocks. Not that processing of wet Sand & Gravel is not normally likely to result in release of dust to air.

Table 3-2 Emissions Limit Values Air Pollutants

Emissions Limit Values		
Parameter	**Emissions Standard**	**Basis of Standard**
Measured total solids deposition rate	<350 mg/m2/day (Total = Soluble +Insoluble)	T.A. Luft
Visibility of dust emission	Aim for no visible dust emissions	ICF

3.2.2 Monitoring of Emissions to Air:

- Visually check emissions at least once per day–aim to minimise visible dust/smoke/fume emissions
- Measure fugitive dust deposition levels monthly (using T.A. Luft Bergerhoff Gauges as the property perimeter)

3.2.3 Guideline Basis/Useful References:

- "Environmental Code", ICF, Dublin, 2005 Revised Edition
- Environmental Management in the Extractive Industry, EPA, 2005
- The Ambient Air Quality Standards Regulations (AAQSR) 2022

3.2.4 Actions to Control Emissions to Air (-refer BATNEEC principle):

- Hard surface internal roadways with compacted stone generally and with macadam or concrete at exit
- Keep roadways clean or wet with adequate drains to avoid ponding
- All HGVs exiting the site will be routed through a bath type wheel wash; Ensure all vehicle exhausts are vertical & modify dump truck radiator fans to minimise dust rising
- Use deep trough conveyors at ground level to minimise wind whipping
- Enclose conveyors to minimise wind whipping (check strength of structure for increased wind loading) & fit belt scrapers
- Fit last meter of stockpile conveyors & first 0.5 metre of the fall with a full hood, and use water suppression
- Fit a properly sized filters on top of bulk powder silos and control filling/blowing rate
- Condition material containing 0-5mm fines with water before handling
- Place stockpiles in sheltered areas; construct & profile stockpiles to minimise wind-entrainment
- Load to & from stockpiles and load trucks so as to minimise the generation of airborne dust
- Sheet or dampen trucks loaded with material containing 0-3mm fines – as soon as possible after loading
- Avoid the generation of smoke – do not burn rubbish
- In relation to control of emissions, maintain plant & equipment, deal promptly with malfunctions and train staff
- Small discreet working areas with progressive stripping / restoration
- Construction of perimeter screening berms using stripped soils / overburden
- Screening berms to be vegetated as soon as practicable and maintained as part of the restoration scheme.
- Stockpiles of soil / overburden – moderate to high dust potential during short term unvegetated period
- Tractor and water bowser for use during dry / windy weather conditions
- Haulage requirements limited to short distances from working area / mobile plant area / graded stockpiling area adjacent to the mobile plant area.
- Raw material of low to moderate dust potential (allowed to dry prior to processing but would have an inherently high moisture content)
- Stockpiles of raw mineral @ working area – low dust potential (high moisture content)
- Material will not be removed during either periods of prolonged dry weather or excessively wet weather

3.3 Environmental Guidelines on Water Management

3.3.1 Introduction

The guideline provides general advice on possible actions to improve environmental performance and to minimise impacts in accordance with the BATNEEC the principle (Best available Technology Not Entailing Excessive Cost).

Table 3-3 Emissions Limit Values-Water

Emissions Limit Values		
Parameter	**Emissions Standard**	**Basis of Standard**
Total Suspended solids	<=35 mg/litre	ICF
Biological Oxygen Demand	<= 25 mg/ litre	ICF
pH	<= 9	ICF

3.3.2 Monitoring of Water Discharges (where appropriate):

- Check quality of discharge quarterly or as conditioned in planning permission/discharge licence
- Visually check discharges at least once per month
- Visually check settlement lagoons at least once per month for efficiency

3.3.3 Guideline Basis/Useful References:

- "*Environmental Code*", ICF, Dublin, 2005 Revised Edition
- *Environmental Management in the Extractive Industry*, EPA, 2005

3.3.4 Actions to Manage and Protect Water Quality (-refer BATNEEC principle):

- There will be no off-site discharge from the proposed development to any surface watercourse; Minimise use of water generally
- Maximise catchment and recycling of process water and storm water (as appropriate)
- Recycle water from washouts and wheel wash by use of suitable settlement tanks
- Ensure sewage treatment facilities are fully functional and comply with good practice
- Install an oil class interceptor to receive surface water in the area of bunded fuel tanks or as appropriate
- Minimise use of drummed products, see also Section 4.4 Waste Management
- Refer also to Section 5 on Emergency Response Procedures
- There will be no surface water run-off or overground flow across the site;
- During any fuelling or servicing of plant and equipment at the site a spill kit and drip trays will be available in the event of any accidental spills or leakages;
- No fuel and oils will be stored at the site. HGV's will be refuelled off-site at other BD Flood sites.

- Mobile 'bunded' double-skinned fuel dispenser will be brought to site by a third-party fuel supplier (with road certified trucks, competent drivers, and spill kits) in order to refuel the long reach excavator, loading shove and crusher / screener.

All HGVs exiting the site will be routed through a bath type wheel wash.

3.4 Environmental Guidelines on Waste Management

3.4.1 Introduction

The guideline provides general advice on possible actions to improve environmental performance and to minimise impacts in accordance with the BATNEEC the principle (Best available Technology Not Entailing Excessive Cost)

3.4.2 Monitoring:

- Check property regularly for waste generation

3.4.3 Guideline Basis/Useful References:

- "*Environmental Code*", ICF, Dublin, 2005 Revised Edition
- *Environmental Management in the Extractive Industry*, EPA, 2005

3.4.4 Actions to Manage Waste (-refer BATNEEC principle):

- Minimise generation of waste generally
- Maximise recycling through careful separation of waste streams
- Maintain designated areas for different streams such as metal, timber, tyres, batteries, oils/filters etc.
- If appropriate, specify that suppliers remove the old component when supplying new ones
- Discontinue use of drums or IBCs by installing tanks for bulk deliveries
- Use Just In Time purchasing techniques, if possible, where drum supplies must continue
- Ensure staff are aware of need for diligence where waste is concerned by ongoing training
- Refer also to Section 4.5 on Visual Amenity & Housekeeping
- No waste oils or batteries will be stored on site
- All waste generated at the site will be appropriately stored and removed by licenced contractors.

3.5 Environmental Guidelines on Visual Amenity & Housekeeping

3.5.1 Introduction

The guideline provides advice on possible actions to improve visual amenity & housekeeping.

3.5.2 Monitoring:

Check property regularly

3.5.3 Guideline Basis/Useful References:

- "Environmental Code", ICF, Dublin, 2005 Revision
- Down, C.G. "*Amenity Banks and Quarry Landscaping", Quarry Management and Products, September 1997*
- The National Landscape Strategy for Ireland 2015-2025

3.5.4 Actions to Improve Visual Amenity (-refer BATNEEC principle):

- Keep entrance tidy
- Tidy up litter and remove unsightly features
- Clean up spillages
- Keep scrap in designated areas
- Maintain buildings in good condition and renew paintwork regularly
- Repair damaged cladding on buildings
- Maintain signs in good condition
- Maintain lighting and roadways and entrances
- Place screening berms to minimise visual impact
- Profile overburden mounds with regard to visual amenity avoiding long, uniform banks
- Seed newly constructed overburden mounds
- Where necessary, plant hawthorn hedging along the property boundary to provide a tough, hardy, fast growing and inexpensive dense barrier
- Where applicable, minimise and monitor dust & smoke emissions
- Where applicable, ensure discharged water is clear of silt & free of oil traces
- Planting of trees & hedgerows along the eastern boundary
- Restore the proposed development after the completion of excavation to natural habitat
- Planting of willow and birch if colonisation of local vegetation has not completely taken over the lake shore.

3.6 Environmental Guidelines on Archaeology, Ecology & Reinstatement

3.6.1 Introduction

The guideline provides advice on possible actions to improve protection of Archaeology & Ecology

3.6.2 Monitoring:

- Check property regularly
- Check water discharges regularly

3.6.3 Guideline Basis/Useful References

- *"Environmental Code",* ICF, Dublin, 2005 Revised Edition
- *"Irish Field Monuments",* Edition, 1991, Stationery Office, Dublin

- *"Code of Practice between the ICF & the Minister for Arts, Heritage, Gaeltacht and the Islands",* Dublin, 2002
- The EIA Directive, Council Directive 85/337/EEC, 27 June 1985
- The Habitats Directive, 92/43/EEC, 21 May 1992
- Wildlife Amendment Act 2000
- Floral (Protection) Order 2015

3.6.4 Actions to Improve Archaeology & Ecology Management (-refer BATNEEC principle):

- Refer to the Record of Monuments and Places for your county before carrying out soil stripping operations (copies may be obtained from the ICF Archaeology Manager). Give two months' notice to the Monuments Section, Department of the Environment, Heritage and Local Government of your intention to carry out works within an archaeological zone defined within the record.
- Report discoveries of archaeological features or artifacts to the Chief Archaeologist, Monuments Section, Department of the Environment, Heritage and Local Government, or the ICF Archaeology Manager can report them on your behalf.
- If you require any advice regarding archaeology contact the ICF Archaeology manager.
- Protect habitats, including hedgerows, which have had to be removed
- Contain dust emissions
- Ensure discharged water is clear of silt & free of oil traces
- Progress after use plans
- Disturbance to Nocturnal fauna will be kept minimum due to operating hours of 07.00 hours until 18.00 hours Monday to Friday and until 14.00 hours on Saturdays.
- A pre-commencement otter survey should be undertaken at the Site if the construction works do not commence within 18-months of the initial survey (survey undertaken on 5th February 2025).
- A 20m riparian corridor will be maintained between the proposed development and the Yellow River regardless of any otter presence. This will minimise disturbance to this species throughout the duration of the project.
- Surface water quality monitoring to be undertaken on a bi-annual basis for the duration of the proposed development, with grab samples from the Yellow River upstream and downstream of the site.
- Replanting of new vegetation at the earliest opportunity to encourage native species to recolonise the area after phased extraction.
- The 20m riparian corridor along the length of the easter extraction boundary between the retained screening berm and the Big River will be planted with blocks of native tree species and allow to develop naturally and will provide a habitat refuge linking the new water body created by the extraction works and the river and into the areas of forestry and scrubland beyond.
- Phased restoration to naturally regenerated habitat for biodiversity use, including a permanent water body. Therefore, in the long-term, the proposed development will increase the value of the Site for whooper swan, other waterbirds, and a variety of passerine bird species

3.7 Environmental Guidelines on Energy and Transport Management

3.7.1 Introduction

The guideline provides advice on possible actions to improve Energy and Transport in the proposed development.

3.7.2 Monitoring of Energy and Transport:-

- Monitoring of the traffic impacts to the surrounding road and junction network's performance is not considered to be required, as the Opening Year+5 and Opening Year+15 analysis has determined that the local road network will continue to operate within capacity, with an imperceptible impact from the proposed development.
- Monitor, report, and review progress in achieving GHG reductions at the site

3.7.3 Guideline Basis/Useful references:

- "*Environmental Code*", ICF, Dublin, 2005 Revised Edition

3.7.4 Actions to Improve Energy & Transport (-refer BATNEEC principle):

- Haulage requirements limited to short distances from working area / mobile plant area / graded stockpiling area adjacent to the mobile plant area.
- No fuel and oils will be stored at the site. HGV's will be refuelled off-site at other BD Flood sites.
- The Applicant will implement its company-wide Energy and Carbon Policy.
- Renewable energy sources / suppliers and use of energy efficient machinery / energy will be considered where applicable
- Future use of electric plant & machinery will be considered where practical,
- Unnecessary equipment / transport journeys should be avoided by management of transport and travel demands.
- Training programme for GHG mitigation to be provided for employees/ contractors

3.8 Environmental Guidelines on Security & Public Safety

3.8.1 Introduction

The guideline provides advice on possible actions to improve locations security and public safety.

3.8.2 Monitoring of Security & Public Safety:-

- Check that lifebelt rings are in place at ponds – at least each month
- Check that fencing is in place at ponds – at least each month
- Check perimeter fencing & signs – at least each quarter

- At a minimum, fences should be designed to keep out farm animals & toddlers and to prevent easy access by adults.
- Signs should read DANGER/HAZARD IDENTIFICATION/DO NOT ENTER

3.8.3 Guideline Basis/Useful References:

- Occupier's Liability Act,1995
- Specification for Chain Link Fences up to 1.8 high BS 1722:part 1:1986
- Down, C.G. "Amenity Banks and quarry Landscaping", Quarry Management and Products, November 1997
- Local Government (Planning & Development) Regulations, 1994, S.1. No.86 of 1994
- "Environmental Code", ICF, Dublin 2005 Revised Edition

3.8.4 Actions to Improve Security (-refer BATNEEC principle):

- Post DANGER//HAZARD IDENTIFICATION/DO NOT ENTER signs along property boundary
- Post DANGER/HAZARD IDENTIFICATION/DO NOT ENTER signs at ponds & water bodies
- Safety warning notices should be clearly visible from all along the length of the fence, give clear warning of the danger, prohibit entry, be of black text on yellow background and should include an appropriate pictorial symbol of the danger to warn children or those who cannot read
- Erect fence along property boundary and around ponds
- Place large boulders alongside of roads over high fences
- Fences should be designed to keep out farm animals & toddlers and to prevent casual access by adults.
- 1.4m general purpose chain link with 1 row of barbed wire to keep out farm animals & toddlers and to prevent casual access by adults – refer BS 1722; Part 1:1986
- Barbed wire should be fixed so as to be clearly apparent and not be a hidden hazard. Any dangers from the fence must be obvious to the trespasser and it is necessary to ensure that the trespasser can only be harmed by his own decision to risk the danger.
- Fences under 2m in height are classed as "exempt development" not requiring planning permission
- Advise Gardai of trespassers
- Promptly clear material spills on public roads
- Fences, gates, signs & hedgerows need to be regularly inspected and needs to be maintained (Assign Person for this task)
- All components of the barrier system of the site consisting of existing mature boundary hedgerows, fences and walls will remain in place after extractive/ processing operations have ceased.
- Existing hedges surrounding the development will be gapped up and thickened where required. These combined with the secure and locked entrance gates to the development will prevent unauthorised third-party access.

- The access gate will be locked outside operational hours, and the application site will be fully enclosed with a stockproof fence and automated barrier.

The following are examples of possible Warning Signs:-

DANGER

High Quarry Faces

DO NOT ENTER

DANGER

Deep Water

NO SWIMMING – NO FISHING

DO NOT ENTER

DANGER

Quarry Traffic

HAULIERS MUST STOP AT WEIGHBRIDGE

4.0 Environmental Emergency Response Procedure

To ensure that environmental accidents and potential emergency situations relating to oil and chemical spills are dealt with in an appropriate manner, it is necessary to identify the potential occurrence and appropriate response to such incidents and to prevent and mitigate any associated harm to human health and the environment.

Oil and chemical spills present a great environmental risk to this business, and as such, spill response is a key competency requirement for the Environment Manager. However, in the event of spillage, it is imperative that all staff are aware of the need for immediate implementation of containment measures and communication with Environment Manager.

The Environment Manager, or his nominee, is responsible for carrying out this procedure in the event of a spillage. It is the responsibility of the individual who discovers the spill to:

1. Immediately contain the spill ONLY IF IT IS POSSIBLE AND SAFE TO DO SO.
2. Report it immediately to the Environment Manager.

If a spill occurs out of hours, the Manager or his nominee shall be contacted for advice. The Environment Manager shall identify the substances involved, direct the response accordingly and contact the appropriate personnel and external emergency services as necessary. Where the spill is of a high risk nature, the Environment Manager shall inform the Managing Director and, if appropriate, the Regulatory Authorities.

It is the responsibility of the Environment Manager concerned to ensure that all personnel are trained and are aware of this procedure and that it is periodically tested.

The Environment Manager concerned will ensure all sources of ignition are extinguished. In the event of a fire the Fire Safety Procedure shall be followed. Keep the area well-ventilated if the spill is in a confined space. Ensure that all unnecessary untrained personnel are kept well away from the scene. The main risk associated with oil or chemical spills is the potential for the spill to enter drains watercourses, soils and the ground water system, causing contamination and/or fire or explosion risk. Site drainage is detailed on individual site plans, copy held by the Environment Manager.

Identify the material spilled and obtain the MSDS to ensure that handling and PPE requirements are clearly understood and that those tackling the spill are wearing the appropriate PPE. Stop the spill and contain it as best as possible, use the materials provided in the Environmental Spill Kits and ensure that the drains in the surrounding areas are sealed. Spill kits shall be maintained in the garage and chemical storage areas.

Remediation depends on the impact the contaminant has on the receptor. Remediation may involve aeration, addition of biological surfactants and restocking of fish reserves. Contact the appropriate government or concerned body to discuss, as and when required. Any waste or contaminated materials generated during the clean-up of a spill shall be disposed of as per the Waste Management Guidelines.

A report form shall be completed by the Environmental Manager and reviewed after each incident by the whole management team.

This emergency Response Procedure shall be tested at least once annually under the direction of the Environmental Manager. These drills cover both key personnel and operatives whose work involves a significant degree of environmental risk. These drills will either comprise of items 1 and/or 2 below:

1. A “desktop” exercise conducted where the Manager or personnel concerned is questioned closely on how he/they would respond to various environmental incidents. Responses are compared to the procedure. Immediately on completing the desktop exercise, a follow-up check is carried out to verify the actual availability of any spill kit etc. that would have been used.
2. A drill involving the practical demonstration of spill kit materials –(booms, pads, granules etc.) and how they would be used/deployed in various environmental accidents.

Such drills shall be followed by a review of the response conducted by the Environment Manager and changes made to training and/or the procedure as appropriate. Names of drill attendees and a brief description of the drill content will be recorded by the Environment Manager after each drill has been completed.

EMERGENCY TELEPHONE NUMBERS

Contact Numbers:

First Aiders:

EMERGENCY NUMBERS		
Emergency	All Services	**999 or 112**
Ambulance		999 or 112
Doctor		
Gardai	Rhode Edenderry Daingean Tullamore	(046) 9737002 (046) 9731290 (057) 9353042 (057) 9327600
Catholic Priest Church of Ireland		
E.S.B		1800 372 999
Telecom	Repairs Service	1902
Offaly Co. Council	Tullamore	(057) 9346800
Poisons information		01 8379964 01 8379966
Oil spillage recovery	Boyne Waste Services	046 9024860
Xxxx Oil separators	Boyne Waste Services	046 9024860

5.0 Harmful Substances

Operational Guidelines

- Guidelines for Fuel & Fuel Tanks
- Receiving Oil, Fuel & Chemical Deliveries
- Operation & Maintenance of Oil Interceptors
- Septic Tanks
- MSDS for Diesel / Gas Oil
- MSDS for Oils, Lubricants etc.

5.1 Guidelines for Fuels and Fuel Tanks

5.1.1 Introduction

Fuels, (hydrocarbons, liquid chemicals, lubricating oils, greases and waste oils) should be kept at a waterproof bunded area, and treated with extreme caution. In the case of hydrocarbons and waste oils the capacity of the bund should be 110% of the largest tank volume or 25% of the total volume of tanks bunded, whichever is the greater. All valves and pumps on the tank should be contained within the bunded area. The bunded area should be fitted with a locking valve that should only be opened to discharge storm water to the interceptor. Alternatively, a sump should be provided in the floor of the bunded area to allow for a suction pipe to be inserted when discharging storm water.

5.1.2 Environmental Instructions

Environmental Instructions should be posted or distributed to anybody working with or in the general area of fuels. These instructions should include steps on how to deal with an oil/fuel spill. All staff should be aware of the need for immediate implementation of containment measures in the likelihood of a spillage.

5.1.3 Guidelines when working with fuels / lubricants:

The following guidelines should be followed when working with fuels and handling lubricants:

- There should be no smoking in and around the substances • Ignition sources should be kept at a distance
- The Material Safety Data Sheets (MSDS) should be checked on or should be easily accessed
- PPE should be worn at all times
- When handling drums, the proper loading equipment should be used • Stands and bunded trays should be provided
- Drums should be stored under cover and the surrounding area kept clean
- A spill kit should be present

In the event of spillage the Environment Manager is notified and he must record the details on a nonconformity notice, and the Emergency Response Procedure implemented.

5.2 Receiving Oil, Fuel, and Chemical Deliveries

5.2.1 Scope

Receiving bulk and containerised oil, fuel and chemical deliveries should be carried out in a controlled and environmentally responsible manner to minimise the risk of spills and their environmentally harmful effects.

5.2.2 Bulk oil and fuel deliveries to site

Delivery requests – deliveries of oils and fuels are ordered by the Purchasing Manager, who will advise the supplier of the grade and quantity to be delivered.

All delivery drivers shall report to the weighbridge office on arrival. The weighbridge operator shall contact the Quarry Manager or his nominee who shall direct the driver to the appropriate fill or delivery point and supervise the delivery. He shall check that there is sufficient ullage to

receive the complete load, monitor the delivery and ensure that after delivery all valves are properly closed and locked. The delivery driver should remain at the vehicle shut-off valve while the discharge is taking place. The Quarry Manager or his nominee shall sign the delivery note to confirm the product quantity received and that the delivery has been made correctly and safely.

Fuelling company vehicles, bowsers, generators and mobile plant – The driver shall check the ullage in the tank to receive the load, and remain at the delivery point at all times to monitor the delivery. After delivery he shall check that all valves are properly closed and locked. Drivers of lorries, vans and cars, not using the electronic key system, record the date, the vehicle registration and volume received in the office fuel log.

5.2.3 Spills

Any spillages occurring during delivery should be immediately dealt with as from the Emergency Response Procedure. Any waste materials generated as a result of this should be disposed of as waste.

5.3 Guidelines on Harmful Substances

5.3.1 Diesel, Gas Oil, Other Oils, Lubricants

Ref – Supplier Material Safety Data Sheet

6.0 Environmental Inspection

I. Audits
II. Monitoring Reports
III. Environmental Action Plan

7.0 Training Record Sheet

Employee	Safety Training (Initial & Date)	Environmental Awareness (Initial & Date)	Operational Work & Procedures (Initial and Date)	Other (Reference, Initial and Date)

8.0 Permits, Plant Layout, etc.

This section contains records of Planning Permissions, Permits, Plant Layouts, Site Layout Maps etc as applicable to this site.

9.0 Community Relations

The Aggregate Industry provides essential building materials for the social and economic development of the Country. Without aggregates, the built environment could not be enhanced with safe, structurally sound buildings for homes, schools, offices, shops and hospitals. In terms of protection of the environment, no water or wastewater treatment systems could be constructed. The Industry recognises that each activity and product it provides has a potential impact on the environment and the overall objective of ICF members is to minimise the environmental impacts and maximise the environmental enhancements at their sites. The ICF Environmental Award Competition is held on an annual basis for the membership to promote and showcase positive and proactive on-site environmental measures that have been taken.

This company will aim at all times to be a good neighbour and play its part in the community, for example giving presentations on their work to local groups, allowing schools and other local parties interested in their activity to visit the quarry pit or plant on conducted tours or local open days or by supporting local events.

Concerns in relation to new developments at this site will be examined and designed for, where practicable and reasonable, by consulting with the public at an early stage in the development process.

To ensure good environmental practice is achieved on-site, This company is committed to maintaining an on-site Environmental Management System (EMS). As part of this EMS, this company will maintain written records of all complaints and incidents, including the company's actions to investigate the problem, the causes and necessary mitigation measures required, as applicable. The following complaints record sheet shall be used for this purpose.

BD Flood Unlimited Company

Full name, Credentials
Position/title

Full name, Credentials
Position/title