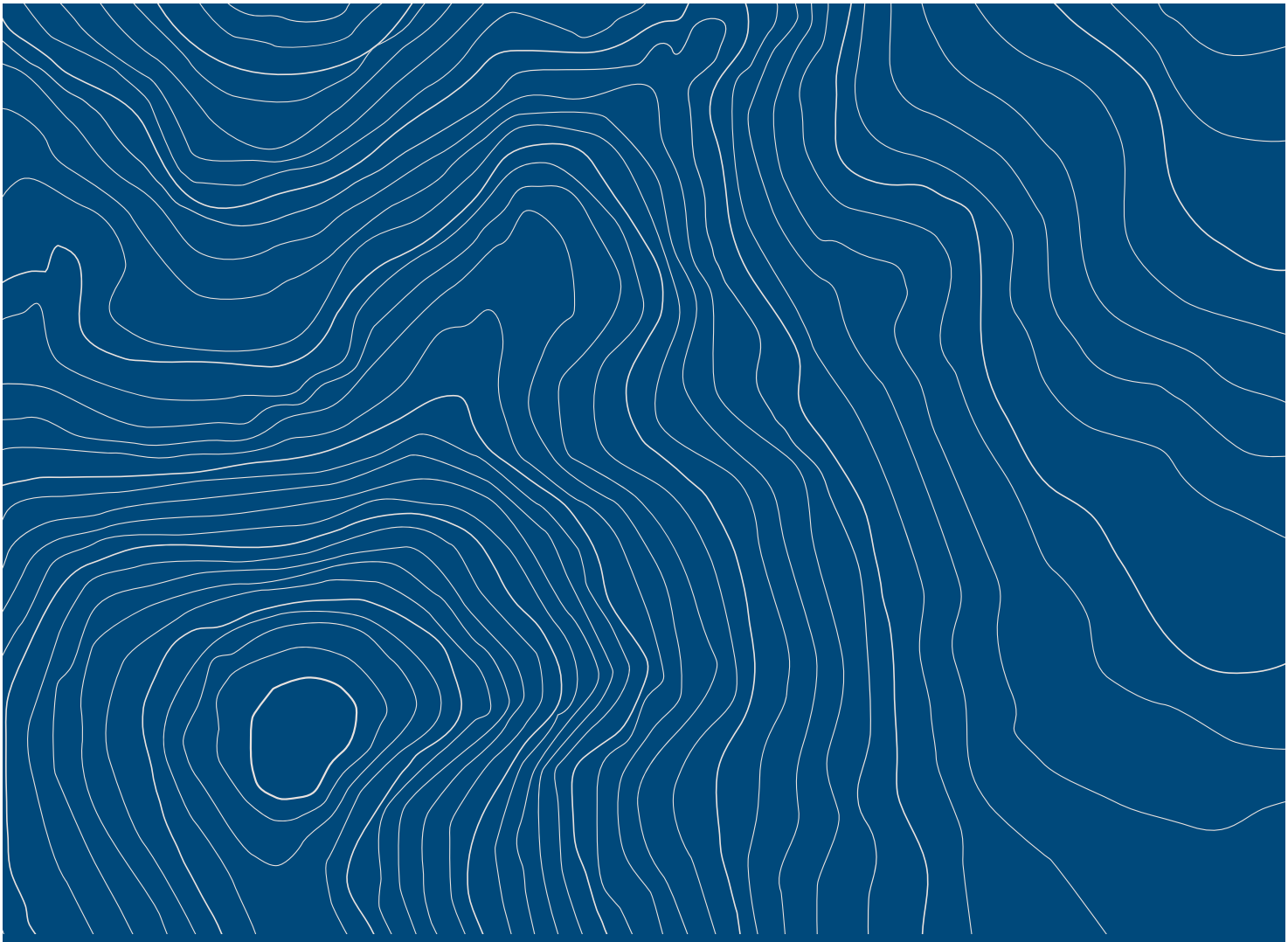

DublinArray
Generation for generations

EIAR Volume 6: Onshore Infrastructure Technical Appendices Appendix 6.5.4-4: Onshore Water Framework Directive Compliance Report

Kish Offshore Wind Ltd

RWE SLR GoBe APEM Group

www.dublinarray-marineplanning.ie

Dublin Array Offshore Wind Farm

Environmental Impact Assessment Report

Volume 6, Appendix 6.5.4-4: Onshore Water Framework Directive Compliance Report

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Glossary

Term	Definition
Abstraction	The process of extracting water from natural sources, such as rivers, lakes, or aquifers. This can include water for drinking, irrigation, industrial processes, and other purposes.
Aquifer	A geological formation that can store and yield groundwater to wells and springs. Aquifers are typically composed of permeable materials such as sand, gravel, or fractured rock, which allow water to move through them.
Applicant	The Applicant for Dublin Array is Kish Offshore Wind Limited on behalf of Kish Offshore Wind Limited and Bray Offshore Wind Limited with the written consent of DLRCC.
Bedrock	The solid rock layer beneath soil and loose material, forming the Earth's crust foundation
Catchment Flood Risk Assessment and Management (CFRAM)	A study to assess flood risk and develop strategies to manage and reduce it.
Culvert	A structure that allows water to flow under a road, railway, trail, or similar obstruction.
Construction Environmental Management Plan (CEMP)	A plan outlining measures to manage and mitigate environmental impacts during construction.
Dewatering	The process of removing water from an excavation or construction site.
Flood Risk Assessment (FRA)	An evaluation of the potential flood risks associated with a project and measures to mitigate them.
Fluvial	Refers to rivers and streams and the processes associated with them.
Horizontal Directional Drilling (HDD)	A trenchless method of installing underground pipes, conduits, and cables.
Hydrogeology	Concerns the distribution and movement of groundwater in soil and rocks. It involves the study of the properties of aquifers and the flow of water through them, as well as the interaction between groundwater and surface water.
Hydromorphology	The study of the shape and form of water bodies and their physical characteristics.
MHWs	Mean High Water Springs
Qualifying Interests (QI)	The habitats and species for which each European site is selected are the QI for SACs and special conservation interests (SCI) for SPAs of each site. These are collectively referred to as qualifying interests (QI) in this report.
Subsoil	Subsoil is the layer of soil beneath the topsoil, consisting of minerals and organic matter.
Surface Water	Water that collects on the surface of the ground, including rivers, lakes, and streams.
Sustainable Drainage Systems (SuDS)	Systems designed to manage surface water runoff sustainably, reducing flood risk and improving water quality.

Term	Definition
Tufa springs	Springs that deposit calcium carbonate, forming tufa, a type of limestone.
Water Framework Directive (WFD)	European Union legislation aimed at protecting and improving the quality of water resources.

Acronyms

Term	Definition
CBS	Cement Bound Sand
CCTV	Closed Circuit Television
JB	Joint bay
CEMP	Construction Environmental Management Plan
CFRAM	Catchment Flood Risk Assessment and Management
CGBM	Cement Bound Granular Mixture
CMS	Construction Method Statement
DART	Dublin Area Rapid Transit
DHLGH	Department of Housing, Local Government and Heritage
DLRCC	Dún Laoghaire-Rathdown County Council
DPM	Direct Pipe Method
EC	European Community
ECR	Export Cable Route
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
EQS	Environmental Quality Standard
EU	European Union
GCP	Grid Connection Point
GIS	Gas Insulated Substation
GSI	Geological Survey of Ireland
GWB	Groundwater Body
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
HWM	High Water Mark (tidal)
IFI	Inland Fisheries Ireland
IAS	Invasive Alien Species
ISMP	Invasive Species Management Plan
LI	Locally Important Aquifer
MTBM	micro-tunnel boring machine

Term	Definition
NHA	Natural Heritage Areas
MHWS	Mean High Water Springs
NIS	Natura Impact Statement
O&M	Operations and Maintenance
OES	Onshore Electrical System
OPW	Office of Public Works
OSi	Ordnance Survey of Ireland
OSS	Onshore Substation
PEMP	Project Environmental Management Plan
PI	Poor Aquifer
pNHA	proposed Natural Heritage Areas
QI	Qualifying Interest
RBD	River Basin District (under WFD)
rBWD	revised Bathing Water Directive
RBMP	River Basin Management Plan
S.I.	Statutory Instrument
SAC	Special Area of Conservation
SSC	Suspended Sediment Concentrations
SFRA	Strategic Flood Risk Assessment
SISAA	Supporting Information for Screening for Appropriate Assessment
SPA	Special Protection Area
SuDS	Sustainable Drainage Systems
TCC	Temporary Construction Compound
TJB	Transition joint bay
TSO	Transmission System Operator
UK	United Kingdom
UWWTD	Urban Waste Water Treatment Directive
WFD	Water Framework Directive
WTG	Wind Turbine Generator
WWTP	Waste-Water Treatment Plant

1 Introduction

1.1.1 This Water Framework Directive (WFD) Compliance Report addresses the onshore infrastructure, landward of the high-water mark (HWM), of the Dublin Array Offshore Wind Farm (Dublin Array), which includes the Operations and Maintenance (O&M) Base at Dún Laoghaire Harbour and the Onshore Electrical System (OES) comprising the Landfall Site, Onshore Export Cable Route (ECR), Onshore Substation (OSS) and grid connection. The purpose of this report is to assess the potential effects of the construction, Operational and Maintenance (O&M) and decommissioning phases of onshore infrastructure on water quality and aquatic ecosystems, ensuring that the development complies with the WFD's requirements for maintaining and improving water quality, preventing deterioration, and achieving good ecological status.

1.1.2 The purpose of this document is to demonstrate Kish Offshore Limited's (hereafter referred to as the Applicant) compliance with the WFD (2000/60/EC) by ensuring that the proposed onshore activities associated with the Dublin Array do not result in a deterioration in a designated water body. In line with the WFD, this assessment evaluates the potential direct and indirect impacts on watercourses, other water bodies and protected areas throughout the construction, operational and decommissioning phases of the project. It reviews the baseline environment and current status of WFD waterbodies within the Dublin Array study area, as defined in the Volume 5, Chapter 4: Water (Hydrology, Hydrogeology and Flood Risk). The assessment examines potential risks arising from specific construction techniques, including open cut trenching and trenchless techniques (Horizontal Directional Drilling (HDD) or similar) at watercourse crossings along the Onshore ECR, and determines whether these activities could cause deterioration of the waterbodies concerned, or hinder the achievement of the waterbodies' objective. Mitigation measures are identified to minimise adverse effects and, where possible, enhance the condition of the water environment. This assessment also aligns with relevant national and European Union (EU) guidance to ensure full compliance with WFD objectives.

1.1.3 The document is part of the Environmental Impact Assessment Report (EIAR) that has been produced in support of the application for development consent by Applicant for the onshore infrastructure of the Dublin Array in terms of surface water and groundwater and has been informed by the assessments presented within the EIAR. This WFD Compliance report draws from, and signpost to, where relevant information is provided within the EIAR in order to demonstrate compliance with the WFD, rather than seeking to duplicate other assessments. Where appropriate a summary of the EIAR information is provided. Therefore, this document should be read in conjunction with the following chapters of the EIAR:

- Volume 2, Chapter 6: Project Description (hereafter referred to as the Project Description Chapter);
  - To be referenced for a detailed description of the proposed project design, construction methodologies and operational activities;

- Volume 5, Chapter 2: Biodiversity (hereafter referred to as the Biodiversity Chapter);
  - To be referenced for detailed assessments of potential impacts on aquatic habitats and species, as well as proposed mitigation measures to protect water-dependent ecosystems;
- Volume 5, Chapter 4: Water (Hydrology, Hydrogeology and Flood Risk) (hereafter referred to as the Onshore Water Chapter);
  - To be referenced for a characterisation of the onshore water receiving environment. This chapter also provides an assessment of the potential impacts of the project upon water quality;
- Volume 6, Appendix 6.5.4-1: Water (Hydrology, Hydrogeology, and Flood Risk) Technical Baseline Report (hereafter referred to as the Water Technical Baseline Report;
  - Contains the detailed baseline information for the Onshore Water Chapter, and associated appendices and drawings.
- Volume 3, Chapter 20: Operations and Maintenance Base – Offshore (hereafter referred to as the O&M Base Chapter)
  - To be referenced for detailed assessments of potential impacts specific to the marine-based infrastructure and activities associated with the Dublin Array Offshore Wind Farm (Dublin Array) Operations and Maintenance (O&M) Base upon the receiving marine environment.
- Part 4: Habitats Directive Assessments, Volume 4: Natura Impact Statement (NIS) and Supporting Information for Screening for Appropriate Assessment (Volume 3); (hereafter referred to as the NIS)
  - To be referenced for detailed information and assessment of Dublin Array's proposed activities on the Natura 2000 sites.
- Part 4: Habitats Directive Assessments, Volume 3: Supporting Information for Screening for Appropriate Assessment (SISAA);
  - To be referenced for detailed information and assessment of Dublin Array's proposed activities on the Natura 2000 sites. (hereafter referred to as the SISAA)

1.1.4 Volume 4, Appendix 4.3.2-1: Water Framework Directive and Marine Strategy Framework Directive Summary contains the WFD Compliance Report for the assessment of the offshore infrastructure on coastal and transitional waterbodies. This includes offshore activities associated with the landfall installation that are below Mean High Water Springs (MHWS).

1.1.5 Volume 7, Appendix 8: Planning Stage Construction Environmental Management Plan (CEMP) provides a framework of the necessary environmental management and mitigation measures (as identified in the EIAR) that will be implemented prior to commencement of, and throughout the duration of the OES and O&M Base construction phase. This will ensure that during the construction phase, daily operations have a negligible effect on the local environment and sensitive receptors and are implemented in accordance with the development consent.

1.1.6 A planning stage CEMP has been included with the application for development consent and is included in Volume 7, Appendix 8. The purpose of the planning stage CEMP is to set out the measures which will be taken to manage the potential environmental impacts of the onshore construction of Dublin Array and limit the disturbance from onshore construction activities such as site preparation, material delivery and removal, works activities and site reinstatement as far as is reasonably practicable.

1.1.7 The CEMP is an outline document that, by reference to the assessments reported in the EIAR, sets out the key elements that will be secured in the Final CEMP which the Applicant will be required to submit to Planning Authority for approval, as relevant planning authority, under a requirement of the consent.

1.1.8 The CEMP outlines the minimum requirements with regard to environmental management during the construction phase works. The CEMP includes details including a construction Traffic Management Plan (TMP) and an invasive species management plan which will be developed further post consent prior to construction commencing.

1.1.9 A separate offshore Project Environmental Management Plan (PEMP) has been prepared in Volume 7, Appendix 1, with similar information. The PEMP is a project-specific plan developed to ensure that appropriate environmental management practices are followed during the project lifetime.

2 Regulatory background

2.1 Water Framework Directive

2.1.1 Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishes a framework for Community action in the field of water policy. The WFD was established in 2000 in order to provide a single framework for the protection of surface waterbodies (including rivers, lakes, transitional and coastal waters) and groundwater.

2.1.2 Each waterbody has an assigned ecological status through the consideration the biological, hydromorphological, chemical determinants and the levels of specific chemicals. The WFD aims to prevent the deterioration of water quality and to enhance the status of aquatic ecosystems. The WFD assigns five different statuses to surface water, and these are:

- High status;
- Good status;
- Moderate status;
- Poor status; or
- Bad status.

2.1.1 Groundwater is treated slightly differently under the WFD and is assigned as being of either Good Status or Poor Status.

2.1.2 The WFD's objective of a 'Good surface water chemical status' is defined in terms of compliance with all the quality standards established for chemical substances at a European level such as Benzo(a)pyrene as defined in the Water Environmental Quality Standards Directive. This will ensure at least a minimum chemical quality, particularly in relation to toxic substances and chemicals. The WFD objective of 'good ecological status' also requires the achievement of environmental quality objectives for discharged priority substances and any other substances liable to cause pollution.

2.1.3 The WFD defines 'surface water status' as the general expression of the status of a body of surface water, determined by the poorer of its ecological status and its chemical status. 'Good surface water status' means the status achieved by a surface waterbody when both its ecological status and its chemical status are at least 'Good'.

2.1.4 'Good ecological status' means the status of a surface waterbody classified in accordance with Annex V of the WFD as it relates to the quality of the structure and functioning of aquatic ecosystems.

2.1.5 'Good surface water chemical status' means the chemical status required to meet the environmental objectives for surface waters in Article 4(1)(a), that is the chemical status achieved by a body of surface water in which concentrations of pollutants do not exceed the environmental quality standards established in Annex IX and under Article 16(7) of the WFD, and under other relevant Community legislation setting environmental quality standards at Community level.

2.1.6 Each member state is required to implement a programme of measures specified in river basin management plans for surface water and groundwater. For surface waters:

- (i) Member States are required to implement the necessary measures to *prevent deterioration of the status* of all bodies of surface water, subject to certain circumstances as specified in the WFD;
- (ii) Member States are required to protect, enhance and restore all bodies of surface water, that are neither artificial nor heavily modified water bodies, with the aim of *achieving good surface water status* at the latest 15 years after the date of entry into force of the WFD, in accordance with the provisions laid down in Annex V, subject to certain circumstances as specified in the WFD;
- (iii) Member States are required to protect and enhance all artificial and heavily modified bodies of water, with the aim of *achieving good ecological potential* and *good surface water chemical status* at the latest 15 years from the date of entry into force of the WFD, in accordance with the provisions laid down in Annex V, subject to certain circumstances as specified in the WFD; and
- (iv) Member States are required to implement the necessary measures in accordance with Article 16(1) and (8), with the aim of progressively reducing pollution from priority substances and ceasing or phasing out emissions, discharges and losses of priority hazardous substances.

2.1.7 For groundwaters:

- (i) Member States are required to implement the measures necessary to prevent or limit the input of pollutants into groundwater and to prevent the deterioration of the status of all bodies of groundwater, subject to certain circumstances as specified in the WFD;
- (ii) Member States are required to protect, enhance and restore all bodies of groundwater, ensure a balance between abstraction and recharge of groundwater, with the aim of achieving good groundwater status at the latest 15 years after the date of entry into force of the WFD, in accordance with the provisions laid down in Annex V, subject to certain circumstances as specified in the WFD; and

- Member States are required to implement the measures necessary to reverse any significant and sustained upward trend in the concentration of any pollutant resulting from the impact of human activity in order progressively to reduce pollution of groundwater.

2.1.8 The WFD was given legal effect in Ireland by The European Communities (Water Policy) Regulations 2003 (S.I. 722 of 2003), as amended by the following:

- European Communities (Water Policy) (Amendment) Regulations 2005 (S.I. No. 413/2005);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations 2005 (S.I. No. 788/2005);
- European Communities (Water Policy) (Amendment) Regulations 2008 (S.I. No. 219/2008);
- European Communities (Environmental Liability) Regulations 2008 (S.I. No. 547/2008);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations 2009 (S.I. No. 101/2009);
- European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272/2009);
- European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 (S.I. No. 296/2009);
- European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9/2010);
- European Communities (Water Policy) (Amendment) Regulations, 2010 (S.I. No. 93/2010);
- European Communities (Water Policy) (Amendment) (No. 2) Regulations, 2010 (S.I. No. 326/2010);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations 2010 (S.I. No. 610/2010);
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489/2011);
- European Union (Good Agricultural Practice for Protection of Waters) Regulations 2014 (S.I. No. 31/2014);
- Local Government (Performance of Reserved Functions in Respect of Municipal District Members) Regulations 2014 (S.I. No. 231/2014);

- European Union (Water Policy) Regulations 2014 (S.I. No. 350/2014);
- European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (S.I. No. 386/2015); and
- European Union (Water Policy) (Amendment) Regulations 2022 (S.I. No. 166/2022).

2.1.9 The Directive requires that management plans are prepared for each river basin. The third River Basin Management Plan (RBMP) 'The Water Action Plan 2024: A River Basin Management Plan for Ireland[1]' was issued in September 2024 (Government of Ireland, 2024). The RMBP 'sets out the measures that are necessary to protect and restore water quality in Ireland.'

2.1.10 The Environmental Quality Standards (EQSs) for classifying surface water status are established in the Schedule 5 of the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009), as amended.

2.2 Protected areas

2.2.1 Under the WFD implemented by Department of Housing, Local Government and Heritage (DHLGH), member states are also required to establish a register of protected areas. Protected areas that are relevant to the onshore component of Dublin Array include:

- Drinking waters: These areas are designated for the abstraction of water intended for human consumption. Compliance with the WFD ensures that infrastructure does not adversely affect water quality in these areas;
- Economically significant aquatic species: These are designated areas for the protection of economically significant aquatic species. Onshore infrastructure should avoid disruption to aquatic habitats that support these species;
- Bathing waters: Bodies of water designated as recreational waters, including areas designated as bathing waters under the revised Bathing Water Directive (rBWD) (2206/7/EC). These bodies are monitored for bacterial pollution, including E. coli and enterococci. Construction activities should avoid causing water quality degradation that could impact bathing water classification;
- Nutrient sensitive waters: Areas sensitive to nutrient pollution, including areas identified as NVZs under the Nitrates Directive or areas designated as sensitive under Urban Waste Water Treatment Directive (UWWTD). Projects must prevent water quality deterioration from runoff or wastewater; and

[1] https://www.gov.ie/en/policy-information/8da54-river-basin-management-plan-2022-2027

- Protected Areas (Natura 2000): Sites designated for the protection of specific habitats or species, including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), where the maintenance or improvement of the status of water is an important factor in their protection. Onshore infrastructure must avoid impacts that would harm the status of these areas.

2.2.2 In Ireland, the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272/2009), as amended, require all new developments potentially affecting the water environment to comply with WFD objectives.

2.2.3 The WFD requires the protection and improvement of both surface water and groundwater bodies by maintaining or achieving good ecological and chemical status. The ecological status for surface water is defined through assessment of biological quality elements (such as aquatic flora, benthic invertebrates, and fish), supported by physico-chemical and hydromorphological elements. Chemical status focuses on controlling priority substances and priority hazardous substances listed under the EC Environmental Quality Standards Directive (2008/105/EC[2]), which Ireland implements through the 2009 Regulations.

2.2.4 Developments must not cause the deterioration of the water body's status or hinder the achievement of its future objectives. Even if overall status remains unchanged, a decline in any individual quality element (biological, physio-chemical, or hydromorphological) is considered non-compliant. Surface water impacts are most likely to affect biological elements (aquatic flora and fauna) and physico-chemical conditions (such as oxygenation), highlighting the need for stringent environmental protection in development planning.

2.2.5 The third RBMP does not set out specific measures for Natura 2000 protected areas, instead referring back to the Second RBMP and notes that all of the measures from the earlier plan continue to apply. The Second RBMP highlights that in relation to water-dependent habitats and species protected under the Birds and Habitats Directive, the role of the river basin management planning process is to contribute to achieving water conditions that support 'Favourable' Conservation Status. It also notes that specific objectives for SPAs have not been determined at this stage, and a default objective of achieving good status has therefore been applied.

[2] Directive - 2008/105 - EN - EUR-Lex

3 Methodology

3.1 Overview

3.1.1 This document seeks to draw from, and signpost to where relevant information is provided within the Applicant's EIAR. The information has been presented in the context of a WFD assessment to demonstrate compliance, rather than seek to duplicate other assessments. This approach has been adopted to ensure that this document is concise and focussed whilst providing all relevant information in an appropriate context.

3.1.2 The methodology for undertaking this impact assessment comprised a combination of a detailed desktop review and site walkover surveys.

3.2 Guidance

3.2.1 At the time of writing, no specific Irish guidance has been published for conducting a WFD assessment for onshore developments. However, guidance can be taken from a number of established resources from jurisdictions with similarly robust environmental regulatory frameworks. Where appropriate, the Water Framework Directive: Directive assessment: estuarine and coastal waters (Environment Agency, 2023[3]) has been applied. This document, recommended for similar projects in England and Wales, provides methodologies for assessing the impacts of onshore developments on water bodies.

3.2.2 Although this Environment Agency guidance is not directly applicable to the Irish context, it has been chosen to complement existing Irish regulations due to the geographical proximity of Ireland and the UK, as well as the considerable experience in incorporating WFD assessments into Environmental Impact Assessment (EIA) processes for onshore projects in the UK. The guidance informs the assessment of potential impacts on water quality, hydrology, and ecology, incorporating industry-standard approaches to scoping, terminology, and the identification of risks. The principles and recommendations from this guidance have been applied where relevant within this document.

3.3 Data sources

3.3.1 The following data sources and published literature have been collated and used to inform this assessment:

- EPA Catchments.ie web portal. The website is a collaboration between the DHLGH, the Environmental Protection Agency (EPA), and the Local Authority Waters Programme;
- Tailte Éireann (formerly Ordnance Survey of Ireland) mapping to establish former channel courses and any diversion/culvert works in streams and rivers;

[3] Environment Agency (2023) Water Framework Directive: Directive assessment: estuarine and coastal waters Accessed at Water Framework Directive assessment: estuarine and coastal waters - GOV.UK

- Office of Public Works (OPW) stream flow, fluvial and tidal flood risk data and flood modelling information including proposals under the OPW Catchment Flood Risk Assessment and Management (CFRAM) for a flood relief scheme along the Shanganagh River at Loughlinstown;
- Office of Public Works/Dún Laoghaire-Rathdown Flood Relief Scheme for Deansgrange (Kill-o-The-Grange) Stream[4];
- Geological Survey of Ireland (GSI) groundwater and hydrogeology information[5];
- EPA consented abstractions, discharges and licences (www.epa.ie);
- EPA water quality results and WFD surface water and groundwater status (www.epa.ie);
- Third River Basin Management Plan (RBMP) 'The Water Action Plan 2024: A River Basin Management Plan for Ireland;
- Inland Fisheries Ireland (IFI) survey and water quality information;
- Dublin Array Onshore Site Investigation Report May 2023, undertaken for Dublin Array (see EIAR Volume 6, Technical Appendix 6.5.3-2); and
- Dublin Array Onshore Cable Route Ground Investigation Report, February 2024, undertaken for Dublin Array (see EIAR Volume 6, Technical Appendix 6.5.3-3).

3.3.2 These data sources are presented by receptor group in Table 1.

Table 1 Data Sources consulted for the baseline

Environmental data	Data source
Subsoil geology	Teagasc/GSI/EPA (Subsoil Mapping).
Bedrock geology	GSI (Bedrock Geology).
Surface water	Tailte Éireann (OSi Discovery Series mapping); Environmental Protection Agency (Water Framework Directive data and catchment flow); OPW CFRAM; DLRC Development Plan (2022-2028)[6] SFRA.
Groundwater	GSI (bedrock and gravel aquifer); GSI (Groundwater body description documents); and Environmental Protection Agency (Water Framework Directive data).

[4] Deansgrange Flood Relief Scheme Deansgrange Flood Relief Scheme - DeansgrangeFRS
[5] published available information at www.gsi.ie
[6] Dún Laoghaire-Rathdown County Development Plan 2022-2028, Accessed at County Development Plan 2022-2028 | Dún Laoghaire-Rathdown County Council

Environmental data	Data source
Climate	Met Éireann (Rainfall data).
Protected Areas, Environmental Pressures	Environmental Protection Agency (Water Framework Directive data); National Parks and Wildlife Service (Designated Areas).

3.3.3 In addition, site walkover surveys were undertaken in July and August 2020 and September 2024 to identify water features and potential sensitive receptors.

3.3.4 The purpose of the walkover surveys was to confirm the key features identified from desktop study. The walkover also focused on the proposed alignment of onshore infrastructure, and river/stream crossing points along the proposed ECR.

3.4 Process

3.4.1 The onshore WFD assessment methodology follows a 3-stage process as set out in the following sections:

Stage 1 – Screening

3.4.2 The screening stage involves identifying the proposed onshore activities that could potentially result in the deterioration of waterbodies from the overall project design. This includes identifying whether there are any waterbodies or protected areas in the vicinity of the onshore infrastructure, as well as a consideration of the scale, location, and nature of the activities associated with Dublin Array (during construction, operation and maintenance and decommissioning).

3.4.3 In line with the Onshore Water Chapter in volume 5, the onshore WFD assessment is based upon a 2 km study area around the planning application boundary. The 2 km area is used in considering activities which has potential to cause deterioration of water bodies (ecologically and chemically) and protected areas. A buffer of 2 km to reflect the sensitivity of the surface water and groundwater. This is in line with the Institute of Geologists of Ireland's (IGI) guidelines (2013). IGI guidelines state that the minimum distance of 2 km should be reviewed in the context of the geological/hydrogeological environment as well as the scale of development and increased to reflect the sensitivity of the subsurface.

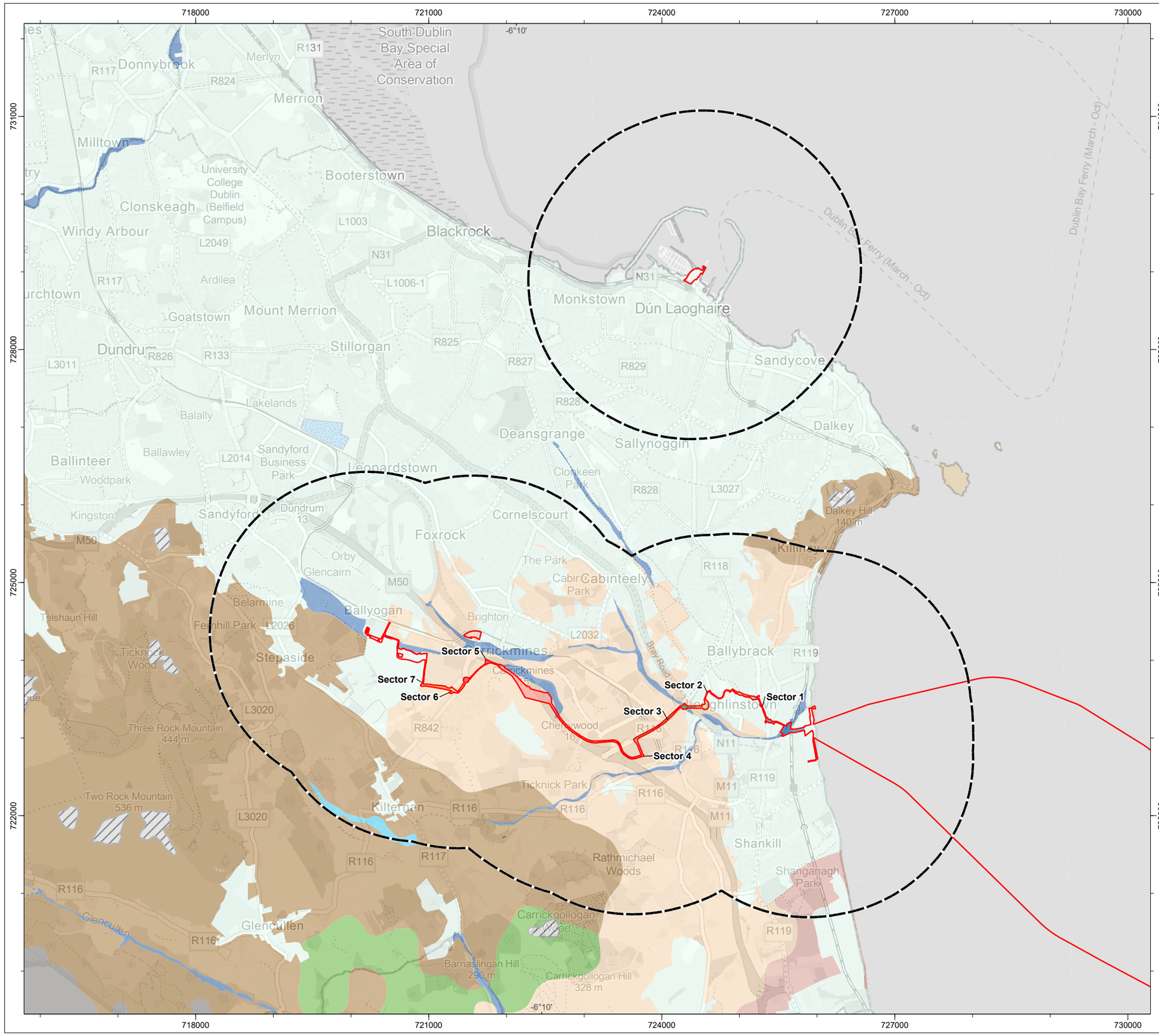
3.4.4 The application of a 2 km radius from onshore Dublin Array proposed development is also recommended in Environment Agency guidance (2023) for considering activities which would result in deterioration of water bodies (ecologically and chemically) and protected areas. This screening buffer is common practice in the UK for assessing Offshore Wind Farms on waterbodies and protected areas and has been applied in lieu of Irish specific guidance on the matter (as detailed above).

3.4.5 The 2 km buffers are considered appropriate for data collection taking into account the likely zone of influence of surface water and ground water receptors from onshore infrastructure.

3.4.6 The key onshore infrastructure of the project, alongside the corresponding 2 km buffers, are shown in Figure 1, and include:

- Onshore Electrical System (OES): comprises all of the onshore electrical transmission infrastructure that are necessary to facilitate the operation of the wind farm. This includes transition joint bays (TJBs) at the Landfall Site to be located at Shanganagh; ; an onshore substation (OSS) at Jamestown; Onshore export cable route (ECR) connecting the TJBs to the OSS; and a grid connection route connecting the OSS to the existing Carrickmines 220 kV substation, the grid connection point (GCP). Apart from the OSS, all the OES infrastructure will be underground.

- The Operations and Maintenance (O&M) Base: will be located at Dún Laoghaire Harbour and will comprise the O&M Base for the proposed wind farm. Once the O&M Base is operational, it will also be used to support the construction of the offshore wind farm.



Application Site Boundary

Onshore Electrical System (OES) and Operations and Maintenance Base (O&M) 2 km Study Area

Export Cable Route (ECR) Sector

- Sector 1
- Sector 2
- Sector 3
- Sector 4
- Sector 5
- Sector 6
- Sector 7

Soil Association

- Carrigavanagh Assoc. – Lithosol (0410a)
- Lake Alluvium (05LAK)
- River Alluvium (05RIV)
- Knockboy Assoc. – Brown Podzolic (0960e)
- Crosstown Assoc. – Luvisol (1030a)
- Clonroche Assoc. – Brown Earth (1100a)
- 1xx
- Island
- Rock
- Urban
- Water body

DRAWING STATUS

PUBLIC

DISCLAIMER

MAP NOTES / DATA SOURCES:

PROJECT TITLE

Dublin Array

DRAWING TITLE

Onshore Water Framework Directive: Study Area

DRAWING NUMBER: **Figure 1**

PAGE NUMBER: **1 of 1**

VER	DATE	REMARKS	DRAW	CHEK	APRD
01	2025-02-10	PUBLIC	JK	SW	AE

0 0.3 0.5 0.8 1 Kilometres

0 0.3 0.5 0.8 1 Miles

N GRID NORTH

SCALE 1:50,000 PLOT SIZE A3

DATUM IRENET95 VERTICAL REF ODN/LAT/MLLW

PRJ IRENET95 Irish Transverse Mercator

SLR

Dublin Array Generation for generations

Kish Offshore Wind Limited - Bray Offshore Wind Limited

Stage 2 – Scoping

3.4.7 The aim of the WFD scoping stage is to identify and characterise the WFD waterbodies and protected areas which have the potential to be impacted as a result of the onshore activities associated with the Dublin Array. Any identified elements, both chemical and ecological, are then taken forward for a detailed impact assessment (Stage 3). Where robust justification could be provided, impacts on waterbodies can be scoped out from further consideration.

3.4.8 The scoping stage identifies the receptors that are potentially at risk from the proposed activities and, therefore, may have needed to be subject to an impact assessment. At the scoping stage, it is necessary to identify all potential risks to each receptor associated with the proposed activities.

3.4.9 The following impacts were scoped in for detailed assessment:

- Construction Phase:
  - Pollution of surface waters due to accidental spillage of chemicals/fuels;
  - Pollution of groundwaters due to accidental spillage of chemicals/fuels;
  - Sedimentation of surface waters due to construction activities; and
  - Changes in groundwater levels and flow due to excavation and dewatering.
- Operation and Maintenance Phase:
  - Pollution of surface water: accidental spillage impact on surface water quality.

3.4.10 Impacts scoped out from further evaluation are detailed in section 4.9 of the Onshore Water Chapter.

Stage 3 – Detailed assessment

3.4.11 Following the scoping stage, if it is determined that the impact assessment stage is required, i.e. a receptor cannot be scoped out, an impact assessment is undertaken for each receptor identified as being at risk from the activity.

3.4.12 The impact assessment considers what (if any) pressures the activity may create on the environment and specifically the receptors identified. The key aim of the impact assessment is to determine whether there is potential for deterioration in the status of the waterbody receptor or a risk of the waterbody receptor not achieving or maintaining its objective.

3.4.13 Deterioration is defined as when the status (ecological or chemical) of a quality element reduces by one class, for example, ecological quality elements move from 'good' to 'moderate' status. If a quality element is already at the lowest status (Bad), then any reduction in its condition also counts as deterioration. According to the Environment Agency (2017)[7] guidance, temporary effects due to short-duration activities like construction and maintenance are not considered to cause deterioration if the waterbody would recover in a short time without any restoration measures. However, it is noted that works which are temporary in nature may have longer term effects in aspects such as ecology. Insofar as Dublin Array is concerned, project has been designed in such a way as to avoid, prevent and reduce the risk of deterioration. In particular, the project incorporates a range of project design features which have this specific effect, as more fully described with Section 3.4 of Volume 2, Chapter 3: EIA Methodology. This assessment is reliant upon identifying those effects that are 'non-temporary' which, for the purposes of this WFD compliance assessment, is defined as *'a period of time that is greater than the recommended monitoring period interval as stated by the WFD (2000/60/EC)'*.

3.4.14 If the activity may cause deterioration or hinder achievement of the waterbody's objective (or potential), either of the quality element or supporting habitat, an explanation must be provided of how this deterioration could occur, including consideration of whether the impact is:

- Direct and immediate – It will happen at the same time and place as the activity; or
- Indirect – It will happen later or further away, including in other linked waterbodies.

[7] Environmental Impact Assessment - GOV.UK

4 Stage 1 – Screening

4.1 Project description

4.1.1 The proposed Dublin Array is located on the Kish and Bray Banks, approximately 10 km off the east coast of Ireland. The Kish and Bray Banks are located off the coast of counties Dublin and Wicklow.

4.1.2 Dublin Array will include 39-50 wind turbine generators (WTGs). These WTG's will be connected by subsea cables to an offshore substation and then connected to the shore via underground electricity cables.

4.1.3 This section provides an overview of the proposed onshore infrastructure (i.e. the OES and O&M Base) and associated onshore activities of relevance to this onshore WFD assessment. Further details are provided in in detail in the EIAR Project Description.

Onshore Electrical System (OES)

4.1.4 The proposed OES comprises all of the onshore electrical transmission infrastructure above the High Water Mark (HWM) associated with Dublin Array. This includes the transition joint bays (TJBs) at Shanganagh Cliffs, a new onshore substation at Ballyogan and the onshore export cables connecting the TJB and onshore substation to the national transmission network. The Dublin Array onshore transmission infrastructure is cumulatively referred to as the OES. The following sections provide a description of the OES infrastructure components

Landfall Site

4.1.5 The Landfall Site for Dublin Array is proposed at Shanganagh Cliffs at the open green space area adjacent to the Uisce Éireann Shanganagh Waste-Water Treatment Plant (WWTP). It is the location where the offshore submarine export cables make landfall at the coastline and join with the onshore export cables in an underground plinth called a transition joint bay (TJB), of which there are two proposed side by side.

4.1.6 The offshore export cable ducts will be installed from this location using trenchless technology, and the circuits will then be pulled through the ducts.

4.1.7 There will be two export cable circuits. Each of the offshore export cable circuits will be jointed to the onshore export cable circuits at an underground TJB. Each TJB will require a co-located underground link box chamber and communication chamber. These chambers will have an inspection/manhole cover at surface level for periodic inspection and monitoring for future maintenance purposes.

4.1.8 An onshore site investigation at the Landfall Site was undertaken in September 2022, and a further nearshore/intertidal site investigation campaign was also carried out in June 2024 which included geotechnical and geo-environmental studies and testing to understand the geology and geomorphology of Shanganagh Cliffs. The ground conditions of the Landfall Site at Shanganagh Cliffs are described in Volume 5, Chapter 3: Land, Soils and Geology of the EIAR.

4.1.9 Once the Landfall Site Temporary Construction Compound (TCC), Heavy Goods Vehicle (HGV) access tracks and footpath diversion have been established, the next phase of activities will be to install the offshore export cables under the beach and cliffs.

4.1.10 The EIAR Project Description Chapter, provides a detailed description of the trenchless installation techniques. Trenchless techniques avoid interaction with surface features and are used to install ducts underground beneath surface water features or existing infrastructure, through which cables can be pulled.

4.1.11 Horizontal Directional Drilling (HDD) involves the use of a mechanical drill to bore a long hole underground using a drilling rig located at the entry pit within a trenchless crossing compound, established within the Landfall Site TCC.

4.1.12 Direct Pipe Method (DPM) is a trenchless construction technique that combines elements of micro-tunnelling and HDD to simultaneously excavate a borehole and install a steel pipe in place of cable ducts. This method uses a pipe thruster to push pre-assembled steel pipes behind a micro-tunnel boring machine (MTBM), ensuring precise alignment and minimizing ground disturbance.

4.1.13 The TJBs are likely to be constructed after the cable ducts (or steel pipes if DPM is used) have been installed and prior to cable pulling.

4.1.14 Once the export cables are joined at the TJBs, the entry pit will be back filled with a combination of the excavated material stored on site and suitable material such as Cement Bound Sand (CBS).

4.1.15 Once the export cables onshore and offshore are joined, the TJBs will be covered and the surface area above reinstated. It is not anticipated that the TJBs will require further access during the operational phase, except for unplanned activities such as unforeseen repairs.

Onshore Export Cables

4.1.16 The Onshore ECR will run in a linear east to west direction between the TJBs at Shanganagh Cliffs to the proposed OSS at Jamestown. The Onshore ECR is the cumulative term for the two 220 kV electrical transmission circuits, telecommunications cables, cable ducts and associated joint bays (JBs), link box chambers and communications chambers along the ECR. This infrastructure is described in detail within the EIAR Project Description Chapter and summarised below.

4.1.17 The onshore ECR between the TJBs and the OSS has been subdivided into seven sectors as shown on Figure 1. At eight points along the onshore ECR the route will cross under significant transport networks and watercourses. Trenchless drilling techniques (HDD or similar) will be utilised at these locations. The eight trenchless crossing locations are identified using TX-01, TX-02…TX-08 references as set out in Table 2.

Table 2 Onshore ECR sector breakdown

Sector No.	TX No.	Key Locations
1	TX-01 TX-02 TX-03 TX-04	▪ Shanganagh Cliffs ▪ Dart/Railway Line ▪ Clifton Park/Shanganagh River ▪ Bayview ▪ Shanganagh Road ▪ Achill Road
2	TX-04 TX-05	▪ Loughlinstown Linear Park ▪ Gleanntan ▪ Loughlinstown Drive (L1067) ▪ DLRCC Parks Depot ▪ Eurofound
3	TX-06	▪ Cherrywood Park ▪ Wyattville Road (R118)
4	TX-06 TX-07	▪ Cherrywood Avenue ▪ Beckett Road ▪ Kilternan Link Road
5	-	▪ Golf Lane
6	TX-08	▪ Glenamuck Road South (R842) ▪ Glenamuck District Distributor Road
7	TX-08	▪ Carrickmines Great ▪ Jamestown

4.1.18 The total length of the Onshore ECR between the TJBs and the OSS will be 7.4 km. The two circuits and associated infrastructure will be installed in two underground trenches side by side along the onshore ECR using standard open cut trenching construction techniques.

4.1.19 Cable joint bays will be required at intervals of approximately 600 m to 850 m along the Onshore ECR. JBs are underground pre-cast concrete chambers measuring 8 m long by 2.5 m wide. They facilitate the joining of individual lengths of export cable sections. Up to 20 JBs in total will be installed at strategic locations along the Onshore ECR.

4.1.20 The Onshore ECR will predominantly follow the local road network within the extent of the road carriageway or adjacent soft verge in publicly accessible areas. Some sections of the Onshore ECR traverse privately owned agricultural lands.

4.1.21 Where the Onshore ECR is proposed to be installed in public roads trench boxes or trench sheets and bracing will be used in excavations to ensure the stability of the open trench. On completion of setting out the proposed alignment of the Onshore ECR, the road surface shall be cut to the required trench width using an excavator and the pavement removed from site for disposal. Once the trench has been excavated to the required depth a trench box or trench sheets and lateral bracing supports will be installed. Sand bedding shall be placed to the correct depth and compacted prior to installation of the ducts. The base of the trench will be prepared by laying a base fill material of cement bound granular mixture (CGBM). HDPE ducting for each cable and separate ducts for fibre optic bundle will be laid on the base fill material and surrounded with compacted CGBM material before being backfilled with an engineered stone fill material as per EirGrid specification.

4.1.22 The construction methodology of the ducting installation within green space areas or agricultural fields is generally the same as that for duct installation on hard surfaced or public roadway as described above. Any vegetation within the trench corridor will be cleared, and topsoil is stripped and stored for reuse during reinstatement works. Trenches are excavated, and, where required, temporary access tracks are constructed to minimise disruption of adjacent grassed areas from construction vehicles and plant.

4.1.23 A permanent access track of 3 m wide will be installed to access the JB in green field north of the Beckett Road in Sector 4, east of the M50.

4.1.24 The cables will be installed at greater depths in greenfield to facilitate 1 m backfill of topsoil. This depth facilitates continued farming activities as normal.

Watercourse crossings

4.1.25 At four points along the onshore ECR the route will cross watercourses where Trenchless drilling techniques (HDD or similar) will be utilised to avoid any disruption of the watercourse or aquatic ecology by open-cut trenching.

4.1.26 Trenchless drilling techniques will be used at the following watercourse crossings:

- Sector 1: One trenchless crossing of the Shanganagh River (also known as the Loughlinstown River) (TX-02);
- Sector 2: Two trenchless crossings of Kill-o-the-Grange Stream (also known as Deansgrange Stream) at Achill Road and Loughlinstown Linear Park (TX-04/TX-05);
- Sector 3: One trenchless crossing of the N11 and Carrickmines Stream at Loughlinstown (TX-06); and
- Sector 4: One trenchless crossing of the M50 and Laughanstown Stream (TX-07).

4.1.27 Sector 7: There are two stream crossings in Sector 7 on land to the south of Carrickmines Retail Park (Glenamuck North and Jamestown_10 streams), both of which are considered to form part of the Carrickmines Stream in EPA data. Onshore cables will be installed across the watercourses by open-cut trenching techniques as opposed to HDD.

4.1.28 Open cut crossings works will involve the installation of a temporary dam at either side of the cable crossing location to create a dry section of the steam to facilitate a dry working area for installation of the cable ducts. Temporary dam methods such as sandbagging, sheet pilling or an aqua dam will be used to construct the temporary dam. To maintain the flow of the stream it is proposed to over-pump from upstream of the dam to downstream of the works area. The trench will then be excavated in the dry area to the required depth. The ducts will be placed, and a concrete surround poured around the ducts with a steel reinforcement mesh set in the concrete above the ducts. Cement bound granular mixture (CBGM) will then be backfilled on top of the concrete surround to the required depth and the riverbed reinstated above the CBGM. The dam will then be removed and the stream returned to its natural state.

4.1.29 The grid connection between the proposed OSS and the existing Carrickmines substation in Sector 7 will cross the Carrickmines Stream within existing infill ground sitting above an existing culvert of the stream and this will use an open cut trench method. The cable trench will be above the stream culvert.

4.1.30 Construction works will be set back from river and stream channels, except for the two trench crossings at Sector 7, and one crossing of the Kill-o-the-Grange Stream at Achill Road. Where it is not possible to maintain an adequate set back to prevent runoff going to the watercourse, then additional control measures such as silt fences will be deployed.

Temporary Construction Compounds (TCCs)

4.1.31 Four temporary construction compounds (TCCs) are proposed to support the construction phase of the OES. These will be located at the Landfall Site, Clifton Park, Leopardstown and the OSS site in Jamestown. The four main TCCs will be used to support the safe construction and installation of the OES. They will also be used for the provision of parking, welfare facilities, site office cabins, construction material laydown and storage for the duration of the construction phase. All TCCs will be removed at the end of the construction phase, and sites reinstated.

4.1.32 Appropriate temporary drainage measures will be implemented as part of the TCC enabling works to manage surface water run-off and prevent water polluted with sediment and/or other contaminants leaving the site. This will include the implementation of measures such as filter drains, silt fencing, soakaways, infiltration trenches and settlement ponds/tanks where the cleaned water will discharge into the local network. If required, the surface water will be stored and removed off-site by a licensed service provider for treatment at a licensed wastewater facility.

4.1.33 A number of smaller localised compounds will be utilised during the construction phase along the onshore ECR specifically at trenchless crossing points around the entry and exit pits.

Onshore substation and grid connection

4.1.34 A new OSS is proposed in the townland of Jamestown, near the existing 220 kV Carrickmines substation.

4.1.35 The proposed OSS will consist of buildings, plant, equipment and ancillary devices to ensure appropriate operation, protection, control and monitoring of the transmission system. It will provide necessary voltage regulation, reactive power compensation, and harmonic filtering to ensure compliance with transmission system operational parameters as well as safe and reliable operation of Dublin Array and the overall electrical system.

4.1.36 During Operation of the OSS, the surface runoff will be controlled to match existing greenfield runoff rates using a flow control device and an attenuation basin will store and attenuate runoff. An attenuation tank will be located below ground and have sufficient capacity to prevent flooding during the critical 1:100-year storm event (1% AEP) including + 20% allowance for climate change. The attenuated runoff will be discharged into the nearby Carrickmines Stream. The GIS building at the OSS will feature a green roof.

4.1.37 Within the operational drainage design for the OSS, the discharge from the attenuation tank will go through a flow control chamber including hydrobrake or similar which will limit storm water discharge from the site to the greenfield equivalent rate of 3.3 l/s. The discharge line will also include a bypass oil/fuel separator to remove any hydrocarbons in the discharge waters.

4.1.38 The storm water components been designed in accordance with and comply with the requirements of the Greater Dublin Regional Code of Practice for Drainage Works. The applicant will apply to the local authority for a Section 4 license to discharge treated storm water runoff from the OSS site.

4.1.39 Two underground 220 kV circuits will connect the OSS to the Carrickmines GCP. The grid connection circuits shall each be approximately 800 m in length.

4.1.40 To facilitate the construction of the OSS, site preparation works will be undertaken including the provision of a TCC onsite. The construction works will involve necessary earth works and the installation of site drainage and attenuation measures.

4.1.41 Enabling works will be required to establish the TCC and OSS platform. This will require the removal of vegetation and topsoil, followed by any required earthworks and site levelling works to create a suitable TCC platform.

4.1.42 Appropriate temporary drainage measures will be implemented as part of the OSS TCC enabling works to manage surface water run-off and prevent water polluted with sediment and/or other contaminants leaving the site. This will include the implementation of measures such as filter drains, silt fencing, soakaways, infiltration trenches and settlement ponds/tanks. Where required the surface water will be stored and removed off-site by a licensed service provider for treatment at a licensed wastewater facility.

OES operational phase

4.1.43 Onshore operations and maintenance activities can be categorised as preventative and corrective. Preventative maintenance will be undertaken according to scheduled services whereas corrective maintenance covers unexpected repairs, component replacements, retrofit campaigns and breakdowns.

4.1.44 Onshore, the operation and maintenance requirements will be largely preventative, accompanied by infrequent on-site inspections of the onshore transmission infrastructure.

4.1.45 The onshore infrastructure will be consistently monitored remotely by the Transmission System Operator (TSO). There may be maintenance staff visiting the OSS to undertake works on a regular basis (expected to be once per week). The OSS will not be manned, and lighting will only be required during scheduled activities.

4.1.46 It is not expected that the TJB will need to be accessed during the operational phase.

OES decommissioning phase

4.1.47 The construction, operation and maintenance works associated with the OES will be managed by the Applicant until the end of the proving period and handover of ownership to EirGrid. As the enduring asset owner, EirGrid will become responsible for decommissioning of the transferring assets at the end of their deemed lifetime.

4.1.48 Accordingly, the planning application that this WFD supports does not seek permission for decommissioning of the OES. However, for the purpose of enabling a comprehensive environmental impact assessment, we have set out below our recommended approach to decommissioning, should EirGrid choose to decommission any aspect of the OES, and this approach is what has been assessed as part of this WFD. This approach is informed by the Applicant's experience of decommissioning onshore substations and onshore export cables on other projects.

4.1.49 At the end of the operational lifetime of Dublin Array, it is assumed that the decommissioning activities will generally be similar to construction.

4.1.50 A decommissioning plan, along with an environmental management plan, should be prepared before any decommissioning works begin. If necessary, an application for consent should be made by EirGrid, and submitted to the relevant competent authority, in respect of any decommissioning works which require consent. The Applicant would expect any such application to involve further environmental assessment and public participation, and for any decision made by the competent authority to be judicially reviewable

Decommissioning of the Onshore Export Cables

4.1.51 It is recommended that the onshore export cables be removed following the reverse process of the construction phase. The cable lengths should be disconnected at the joint bays and pulled through the cable ducts. All the remaining underground infrastructure, including the TJBs, are anticipated to remain in situ following cable removal, according to standard best practice. Surveys should be undertaken prior to decommissioning and discussions held with stakeholders to agree the most appropriate approach at the time of decommissioning.

4.1.52 All above-ground infrastructure including access tracks, should be dismantled, and the areas fully reinstated. Pre-existing planting should remain undisturbed. Decommissioning should require similar machinery as the construction phase, though with a smaller workforce and shorter duration. All decommissioned materials should be managed according to waste regulations in place at the time.

Decommissioning of the onshore substation and grid connection

4.1.53 The expected asset life of a substation is typically 50 years, though they may continue to operate as part of the national grid beyond this timeframe and some components of the OSS will have longer operational lifespans. When Dublin Array reaches the end of its life, EirGrid may choose to decommission or repower the OSS in consultation with the regulator. This decision would be made in consultation with the regulator and based on the existing or proposed use of the OSS.

4.1.54 If decommissioning, it is recommended that all buildings and above-ground structures be removed. As above, the decommissioning process should follow a reverse programme of the construction process. Decommissioning should require similar machinery as the construction phase, though with a smaller workforce and shorter duration. All decommissioned materials should be managed according to waste regulations in place at the time.

4.1.55 It is recommended that the grid connection infrastructure between the OSS and Carrickmines GCP remain part of the Transmission System, owned by ESB Networks and operated by EirGrid, and therefore not decommissioned.

Operations and Maintenance Base

4.1.56 In order to service and maintain the offshore infrastructure, a storage and coordination facility is required, referred to as the O&M Base, which will act as a storage and loading area for small and medium spare parts for the wind turbines and small ancillary equipment such as tools and consumables.

4.1.57 The proposed O&M Base will be located on, and directly adjacent to St. Michaels Pier, within Dún Laoghaire Harbour, Co. Dublin. It will provide offices and warehouse space together with berthing facilities for maintenance vessels (hereafter referred to as crew transfer vessels) associated with the ongoing operation and maintenance of the Dublin Array Offshore Wind Farm.

4.1.58 The proposed works which form part of this development application include the demolition of existing harbour infrastructure, including the existing single storey Harbour Maintenance Building located on St. Michael's Pier. The existing mooring fender which is located adjacent to St. Michael's Pier, and which was previously used during berthing operations for the ferry terminal, will be partially removed. The existing Ro-Ro ramp located at Berth 5, will be partially demolished to facilitate the construction of a new concrete pavement slab and hardstanding area.

4.1.59 A new floating pontoon will be installed adjacent to the existing Berth 5 quay wall. The proposed pontoon will be anchored to the quay wall by means of steel guide beams.

4.1.60 A new O&M building will be constructed on St. Michael's Pier and will include office space, meeting rooms, toilet and changing facilities and an operations control centre which will be the main base for the Dublin Array support team. It will also include a warehouse which will store small spare parts for the wind farm and a workshop. A new ESB substation will be constructed to facilitate a new electrical connection to the O&M building.

4.1.61 Appropriate temporary drainage measures will be implemented as part of the OSS TCC enabling works to manage surface water run-off and prevent water polluted with sediment and/or other contaminants leaving the site. This will include the implementation of measures such as filter drains, silt fencing, soakaways, infiltration trenches and settlement ponds/tanks. Where required the surface water will be stored and removed off-site by a licensed service provider for treatment at a licensed wastewater facility.

4.2 Description of study area

4.2.1 The following sections provide a description of the 2 km WFD Assessment study area around the key onshore elements on Dublin Array.

4.2.2 The EIAR Water Technical Baseline Report can be referred to for a presentation of wider baseline data. This section is a summary of the key findings of the technical baseline report (and points of relevance to the assessment). This section is not intended to repeat or to carry out any additional assessment of impacts within the technical report.

OES

4.2.3 The study area is located within the Dargle River sub catchment of WFD hydrometric Area No. 10, which includes the Avoca, Vartry and Dargle Rivers. The Dargle_SC_010 sub-catchment covers an area of 176.94 km2, with the study area located to the north of the sub-catchment area. There are eleven rivers, two lakes, one coastal waterbody, one transitional waterbody and four groundwater bodies located within the sub-catchment. The EPA Water maps show the following surface water bodies to be in the study area:

- Shanganagh River;
- Carrickmines Stream; and
- Kill-o-the-Grange Stream (also known as Deansgrange Stream).

4.2.4 The Carrickmines Stream is a tributary of the Shanganagh River. There are a number of colloquial names for the local watercourses including the Barnacullia Stream and Ballyogan Stream for parts of the Carrickmines Stream, and the Loughlinstown River for parts of the Shanganagh River. The Kill-o-the-Grange Stream is often referred to as the Deansgrange Stream.

4.2.5 The land use throughout the study area is predominantly urban with areas of parkland and open space particularly along the river valleys. Other land uses include amenity and transport comprising road and light-rail.

4.2.6 The surface watercourses within the study area have been significantly modified in the past; channels have been canalised and straightened with a loss of the natural floodplain. Significant sections of the watercourses have also been culverted, particularly along the Kill-o-the-Grange Stream at Kilbogget Park.

4.2.7 Only a few short sections of relatively natural channel and floodplain remain in the study area, and these occur along the Druid Valley to the north of Sector 3.

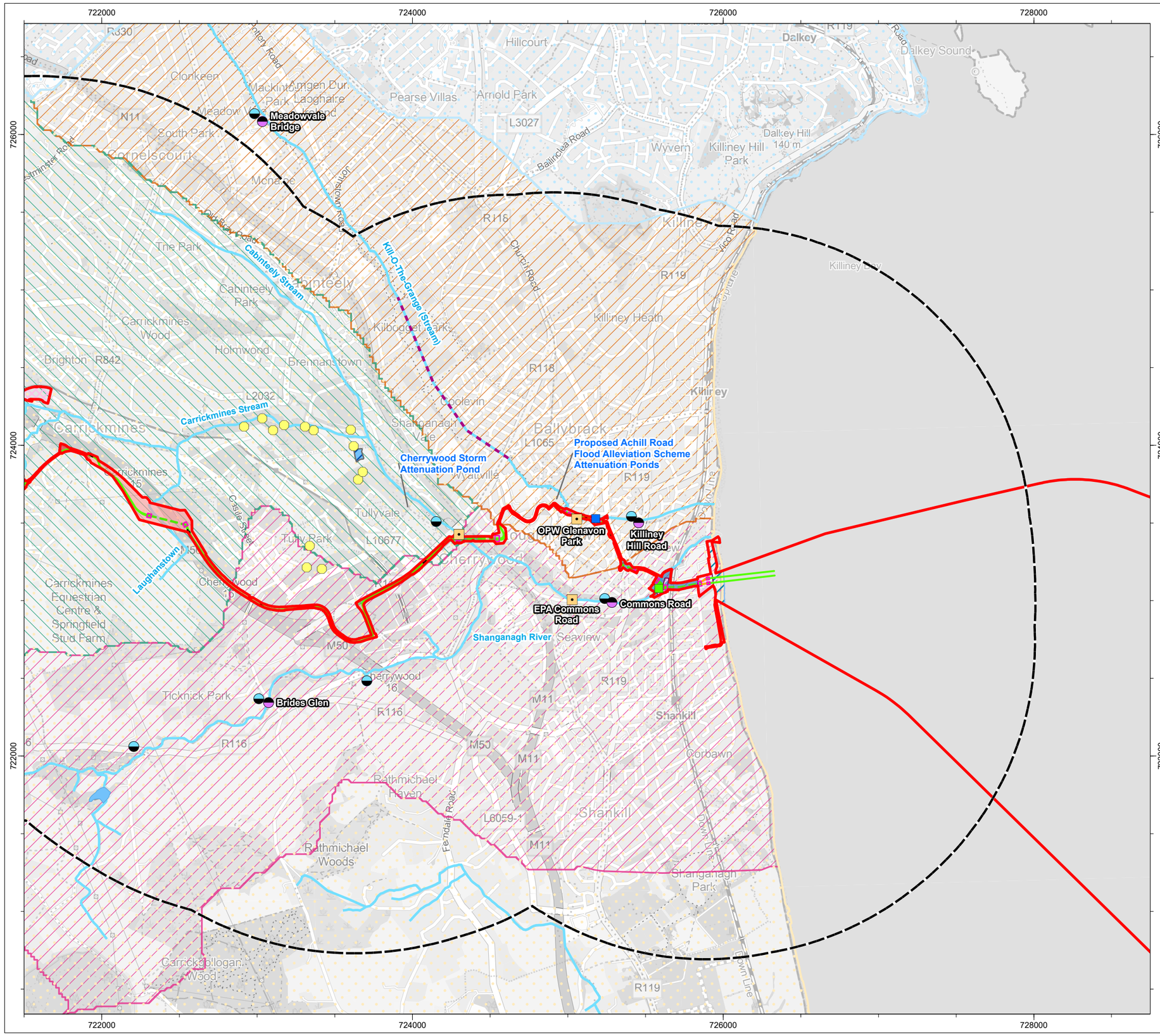
4.2.8 The watercourse channels are considered to be of low sensitivity due to their hydromorphology which has been modified.

4.2.9 The Shanganagh River is designated for drinking water abstraction although it is understood that there is no abstraction from the river for drinking water at present.

4.2.10 The EPA catchment assessment classifies the Shanganagh River and Carrickmines Stream as having 'Good' water quality under the WFD 2016 - 2021, whilst the Kill-o-the-Grange Stream is reported to have Poor water status under WFD 2016 - 2021. Under the WFD Third Cycle from 2022 – 2027 the Shanganagh River and Carrickmines Stream are classified as not being at risk of failing to meet their WFD objectives by 2027 while the Kill-o-the-Grange Stream is classified as being at risk failing to meet their Water WFD objectives by 2027.

4.2.11 The EPA catchment assessment report highlights two significant pressures on the Kill-o-the-Grange stream: hydromorphology, primarily due to the presence of culverts, and the Urban Wastewater agglomeration network. For both the Carrickmines and Kill-o-the-Grange streams, diffuse urban runoff pressures have also been identified. These pressures are caused by misconnections, leaking sewers and runoff from paved and unpaved areas, impacting the quality of these waterbodies.

4.2.12 Surface Water Features are shown in Figure 2 and Figure 3.



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MAP NOTES / DATA SOURCES:

PROJECT TITLE

Dublin Array

DRAWING TITLE

Water Framework Directive: Surface Water Features OES Study Area (East)

DRAWING NUMBER: **Figure: 2**

PAGE NUMBER: **1 of 3**

VER	DATE	REMARKS	DRAW	CHEK	APRD
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0 0.1 0.2 0.3 0.4 Miles

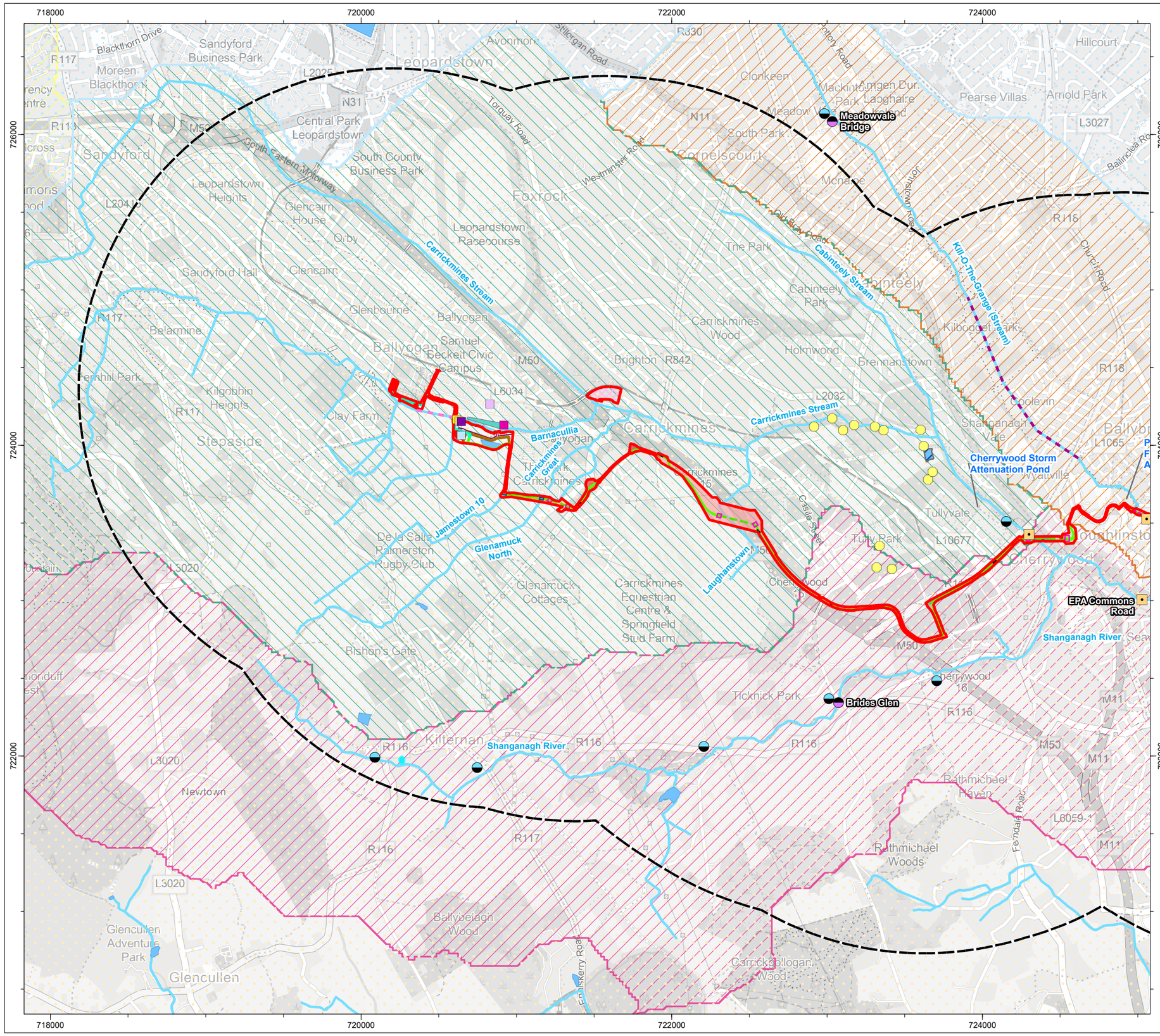
N GRID NORTH

SCALE 1:25,000 PLOT SIZE A3
DATUM IRENET95 VERTICAL REF. ODN/LAT/MLLW
PRJ IRENET95 Irish Transverse Mercator

SLR

Dublin Array Generation for generations

Kish Offshore Wind Limited - Bray Offshore Wind Limited



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PROJECT TITLE

Dublin Array

DRAWING TITLE

Water Framework Directive: Surface Water Features OES Study Area (West)

DRAWING NUMBER: **Figure: 3**

PAGE NUMBER: **2 of 3**

VER	DATE	REMARKS	DRAW	CHEK	APRD
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0 0.1 0.2 0.3 0.4 Miles

N GRID NORTH

SCALE 1:25,000 PLOT SIZE A3

DATUM IRENET95 VERTICAL REF ODN/LAT/MLLW

PRJ IRENET95 Irish Transverse Mercator

SLR

Dublin Array Generation for generations

Kish Offshore Wind Limited - Bray Offshore Wind Limited

4.2.13 The study area is within the Wicklow Groundwater Body (GWB) as designated under the WFD. The geology, both bedrock and subsoils, has implications for groundwater and the aquifer types which will vary depending on the geological characteristics.

4.2.14 Groundwater flow within the Wicklow GWB occurs mostly in a shallow upper weathered zone. However, deeper groundwater flow is possible along fractures, joints and major geological faults. Groundwater recharge occurs diffusely through the subsoils and via outcropping bedrock at the surface. There are large areas where the rock is close to surface, which would suggest high potential recharge values, but any recharge calculations must consider the effect of rejected recharge from the lower permeability rocks.

4.2.15 The aquifers within the Wicklow GWB are generally unconfined but may become locally confined where the subsoil is thicker and/or of lower permeability. Groundwater flow is considered to recharge and discharge on a local scale. Watercourse drainage density values suggest shorter flow paths in the granites than on the flatter Lower Palaeozoic's.

4.2.16 Groundwater discharges to the numerous small streams crossing the aquifers, to springs and seeps and also directly to the Irish Sea.

4.2.17 Within the study area the bedrock aquifer is classified as a locally important aquifer (Ll) along the coastal area around Shanganagh and is classified as a Poor Aquifer (Pl) across the remainder of the study area inland.

4.2.18 Poor aquifers and Locally Important aquifers are generally not suitable to provide a sustainable groundwater supply.

4.2.19 The groundwater is assessed as being of Good Status by the EPA across the study area but is at risk under the WFD 2016-2021.

4.2.20 A number of Tufa springs have been identified in the vicinity of Cherrywood along the steep valley sides of the Carrickmines Stream. The tufa springs are fed by localised permeable limestone deposits within the glacial till subsoils.

4.2.21 Localised areas of Tufa spring formation appear to be supported by relatively shallow groundwater flow systems within permeable zones of the subsoil with the limestone parent material within the subsoil acting as the source of the calcium carbonate. The Tufa spring formation is limited to where the limestone parent material is present in the subsoils and where there is a groundwater flow and discharge at spring lines for example along localised valley sides. Whilst the tufa springs are located within the OES study area, they are approximately 600 m northwest of the onshore ECR. At the closest point the Onshore ECR will follow the route of the existing R118 road carriageway between the N11 and the M50 and will be located above the water table and therefore will not alter any groundwater flows that sustains the deposits. There will therefore be no adverse changes to the surface water and groundwater flow paths and contribution areas to the Tufa deposits and effects have been scoped out from further assessment.

O&M Base study area

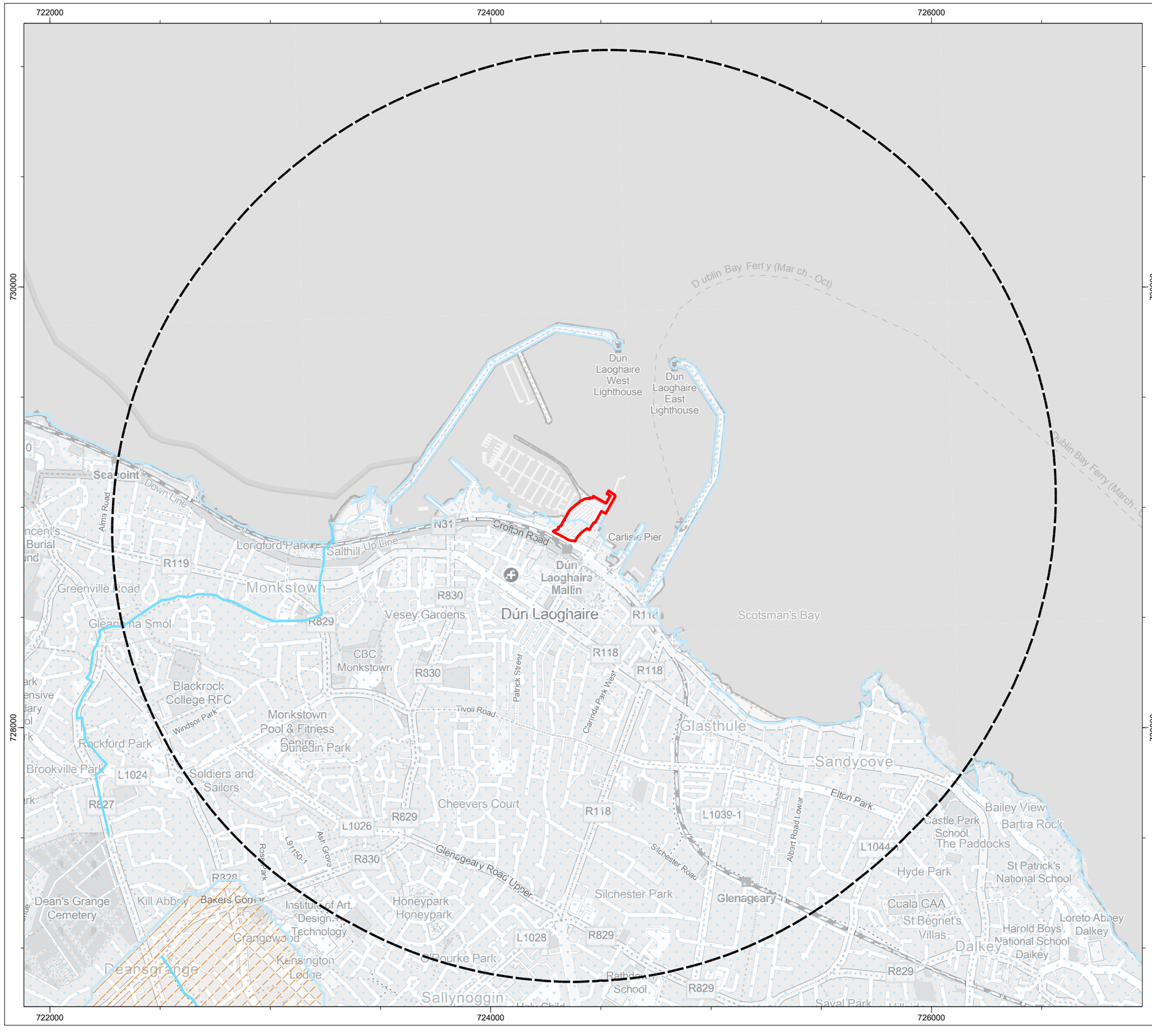
4.2.22 The O&M Base is proposed to be located at St. Michael's Pier in Dún Laoghaire Harbour. The study area is located within the Dublin Bay coastal waterbody. The Harbour is located in the Dodder_SC_010 sub-catchment (09_16), of the wider Liffey and Dublin Bay Catchment (09), and the study area includes the Dublin Bay coastal waterbody.

4.2.23 The EPA latest water quality monitoring indicates that the Dublin Bay coastal waterbody has a 'Good' water quality status and is not at risk under the WFD 2016 – 2021.

4.2.24 Brewery Stream is a highly modified urban watercourse that is heavily culverted. The stream discharges into Dublin Bay approximately 1 km to the west of the O&M Base.

4.2.25 There are no other rivers, streams or lakes identified on the EPA Water Maps within the O&M study area.

4.2.26 The study area around the O&M Base is shown in Figure 4.



Application Site Boundary

Onshore Electrical System (OES) and Operations andMaintenace Base (O&M) 2 km Study Area

Hydrology Feature

Watercourse

Subcatchment

Dargle SC 010

Dodder SC 010

River Basins

Kill of the Grange Stream 010

DRAWING STATUS

PUBLIC

DISCLAIMER

MAP NOTES / DATA SOURCES:

PROJECT TITLE

Dublin Array

DRAWING TITLE

Water Framework Directive: Surface Water Features O&M Base Study Area

DRAWING NUMBER: **Figure: 4**

PAGE NUMBER: **3 of 3**

VER	DATE	REMARKS	DRAW	CHEK	APRD
01	2025-02-10	PUBLIC	JK	AB	AE

0 125 250 375 500 Meters

0 0.1 0.2 0.3 0.4 Miles

N GRID NORTH

SCALE 1:17,500 PLOT SIZE A3

DATUM IRENET95 VERTICAL REF CDN/LAT/MLW

PRJ IRENET95 Irish Transverse Mercator

SLR

Dublin Array Generation for generations

Kish Offshore Wind Limited - Bray Offshore Wind Limited

4.2.27 The available EPA online maps do not indicate the presence of any surface water abstractions at or downstream of the study area, either for drinking water purposes or any other uses.

4.2.28 The O&M Base study area is in the northern part of the Kilcullen GWB as designated under the WFD. The geology, both bedrock and subsoils, has implications for groundwater and the aquifer types which will vary depending on the geological characteristics.

4.2.29 The study area is underlain by igneous granite rocks which are classified as a 'Poor' aquifer. Poor aquifers are generally not suitable to provide a sustainable groundwater supply.

4.2.30 The groundwater is assessed as being of 'Good' status by the EPA across the study area but is at risk under the WFD 2016 – 2021. The GWB is also a designated drinking water protected feature. All groundwater in Ireland is automatically designated as drinking water and is thereby protected, irrespective of the aquifer type or the presence of any abstraction for drinking water.

4.3 Project design features

4.3.1 This WFD has been undertaken on the basis of no additional mitigation measures being applied. Inherent and designed in measures which are project design features and adoption of industry best practice to avoid or prevent impacts have been taken into account.

4.3.2 As outlined within Volume 2, Chapter 3: EIA Methodology in accordance with the EPA Guidelines (2022), the EIAR describes the following:

- Project design features: These are features of the Dublin Array project that were selected as part of the iterative design process, which are demonstrated to avoid and prevent potential adverse effects on the environment in relation to the onshore water environment; and
- Other avoidance and preventative measures: These are measures that were identified throughout the early development phase of the Dublin Array project, also to avoid and prevent likely significant effects, which go beyond design features. These measures were incorporated in as constituent elements of the project, they are referenced in the Project Description Chapter of the EIAR and they form part of the project for which development consent is being sought. These measures are distinct from design features and are found within our suite of emergency response procedures.

4.3.3 The project design features and other avoidance and preventative measures applicable to this WFD assessment are presented within Table 3.

Table 3 Project design features and other avoidance and preventative measures relating to hydrology, hydrogeology and flood risk

Project design feature/other avoidance or preventative measure	Where secured
Project Design Features	
Landfall Site The Landfall has been sited outside of either Flood Zone A or B to avoid areas at risk of flooding. As set out in this chapter, both HDD and DPM methods will protect the physical integrity of the cliff.	Project Description Chapter.
Onshore ECR Trenchless crossing (HDD or similar) will be used for cable installation for the majority of the watercourses along the onshore ECR to avoid adverse impacts on river channels or exacerbation of flood risk. Trenchless technology will be adopted at the following watercourse crossings: ▪ Sector 1: Trenchless crossing of the Shanganagh River (TX-02); ▪ Sector 2: Two trenchless crossings of Kill o' the Grange Stream (TX-04/TX-05) at Achill Road; ▪ Sector 3: Trenchless crossing of Carrickmines Stream (and N11) at Loughlinstown (TX-06); and ▪ Sector 7: Trenchless crossing of the Laughanstown Stream, which includes the M50 (TX-07). Two crossings in Sector 7 will include open trench techniques, these are:	Project Description Chapter

Project design feature/other avoidance or preventative measure	Where secured
▪ Two open cut trench crossings proposed for the streams south of the Carrickmines Retail Park (Glenamuck North and Jamestown 10 streams). The water flows will be managed through use of a temporary dam to hold back waters with over pumping of the water downstream to enable the construction of the trenchless crossings ▪ The grid connection between the proposed OSS and the existing Carrickmines substation will cross the Carrickmines Stream within existing infill ground sitting above an existing culvert of the stream. An open cut trench method will be used for the installation of the cable in this location. The water flows will be managed through use of a temporary dam to hold back waters with over pumping of the water downstream to enable the construction of the trenchless crossings. Construction works will be set back from the river and stream channels, except for the two open-cut trenched crossings at Sector 7, and where it is not possible to maintain an adequate set back to prevent runoff going to the watercourse. Additional control measures such as silt fences will be deployed.	
OSS During Operation of the OSS, the surface runoff will be controlled to match existing greenfield runoff rates using a flow control device and an attenuation basin will store and attenuate runoff. An attenuation tank will be located below ground and have sufficient capacity to prevent flooding during the critical 1:100-year storm event (1% AEP) including + 20% allowance for climate change. The attenuated runoff will be discharged into the nearby Carrickmines Stream. The GIS building at the OSS will feature a green roof.	Project Description Chapter
O&M Base The O&M Base has been sited outside of either Flood Zone A or B to avoid areas at risk of flooding.	Project Description Chapter

Project design feature/other avoidance or preventative measure	Where secured
Finished levels on-site for the O&M Base have been designed such that in the event of the surface water system surcharging, surface water can still escape from the site and away from building structures, into the Irish Sea, by overland flood routing without damaging properties. A green roof is proposed as part of the design of the O&M Building to improve stormwater management and water quality.	
Pollution and sedimentation – design features to manage risk or sedimentation of surface waters or pollution of surface or ground waters	
Onshore ECR The onshore ECR has been routed to minimise the number of water course crossings which are necessary. Trenchless crossing (HDD or similar) will be used for cable installation for the majority of the watercourses along the onshore ECR to avoid adverse impacts on river channels or exacerbation of flood risk. Trenchless technology will be adopted at the following watercourse crossings: ▪ TX-02; ▪ TX-04; ▪ TX-05; ▪ TX-06; and ▪ TX-07. **Trenchless crossings** For trenchless crossings (TX-02/TX-04/TX-05/TX-06/TX-07), temporary drilling compounds will be established on either side of the watercourse to facilitate the set-up of the necessary plant and equipment. Limited surface excavation works will be required to create the launch and exit pit in the temporary drilling compounds. The excavated drill pit will	Project Description Chapter

Project design feature/other avoidance or preventative measure	Where secured
collect drill mud returns, the pumps will move the fluid from the pit into the recycling plant/tanks. **Open cut crossings in Sector 7** The open cut crossings in Sector 7 will involve the installation of a temporary dam at either side of the cable crossing location to create a dry section of the steam to facilitate a dry working area for installation of the cable ducts. Temporary dam methods such as sandbagging, sheet pilling or an aqua dam will be used to construct the temporary dam. To maintain the flow of the stream it is proposed to over-pump from upstream of the dam to downstream of the works area. The trench will then be excavated in the dry area to the required depth. The ducts will be placed, and a concrete surround poured around the ducts with a steel reinforcement mesh set in the concrete above the ducts. Cement bound granular mixture (CBGM) will then be backfilled on top of the concrete surround to the required depth and the riverbed reinstated above the CBGM. The dam will then be removed and the stream returned to its natural state. **TCCs – Landfall, Clifton Park TCC and Leopardstown TCC** Appropriate temporary drainage measures will be implemented as part of the TCC enabling works to manage surface water run-off and prevent water polluted with sediment and/or other contaminants leaving the site. This will include the implementation of measures such as filter drains, silt fencing, soakaways, infiltration trenches and settlement ponds/tanks. Where required the surface water will be stored and removed off-site by a licensed service provider for treatment at a licensed wastewater facility.	

Project design feature/other avoidance or preventative measure	Where secured
OSS Appropriate temporary drainage measures will be implemented as part of the OSS TCC enabling works to manage surface water run-off and prevent water polluted with sediment and/or other contaminants leaving the site. This will include the implementation of measures such as filter drains, silt fencing, soakaways, infiltration trenches and settlement ponds/tanks. Where required the surface water will be stored and removed off-site by a licensed service provider for treatment at a licensed wastewater facility. Within the operational drainage design for the OSS, the storm water components have been designed in accordance with and comply with the requirements of the Greater Dublin Regional Code of Practice for Drainage Works. The applicant will apply to the local authority for a Section 4 license to discharge treated storm water runoff from the OSS site. Within the operational drainage design for the OSS, the discharge from the attenuation tank will go through a flow control chamber including hydrobrake or similar which will limit storm water discharge from the site to the greenfield equivalent rate of 3.3 l/s. The discharge line will also include a bypass oil/fuel separator to remove any hydrocarbons in the discharge waters. **O&M Base** The existing surface water drainage network at the O&M Base will be upgraded in the vicinity of St. Michaels Pier and the proposed hardstanding area. The new operational drainage network will tie into the existing oil interceptor in the harbour which will clean surface water run off of all sediment and of any potentially hazardous material prior to discharging the surface water into tidal waters within the harbour. Details of the proposed drainage system are presented in the Project Description Chapter.	

Project design feature/other avoidance or preventative measure	Where secured
Other Avoidance and Preventative Measures	
A planning stage CEMP has been included with the application for development consent and is included in Volume 7, Appendix 8. The purpose of the planning stage CEMP is to set out the measures which will be taken to manage the potential environmental impacts of the onshore construction of Dublin Array and limit the disturbance from onshore construction activities such as site preparation, material delivery and removal, works activities and site reinstatement as far as is reasonably practicable. The CEMP is a planning stage document that, by reference to the assessments reported in the EIAR, sets out the key construction stage environmental commitments. The Final Construction Stage CEMP will be sent by the Applicant to the Planning Authority for approval, as a condition of the development consent. The CEMP included at Volume 7, Appendix 8 includes the following measures which are relevant to hydrology, hydrogeology and flood risk, notably the impacts relating to Construction Phase Pollution Risk (Impact 1) and sedimentation of surface waters (Impact 2). The construction phase surface water management measures will apply the relevant CIRIA guidelines (CIRIA C648 Control of Water Pollution from Linear Construction Projects) and will include the construction activities and water pollution issues: ▪ Chemicals, fuel storage and refuelling; ▪ Site compounds; ▪ Dewatering; ▪ Horizontal directional drilling (HDD); ▪ Runoff and sediment control; ▪ Earthworks; ▪ Floodplain works on/in;	Volume 7, Chapter 8: Onshore CEMP

Project design feature/other avoidance or preventative measure	Where secured
▪ Topsoil stripping and reinstatement; ▪ Watercourse crossing works on/near; ▪ Water discharge; and ▪ Water treatment. The surface water control measures which will be implemented during the construction phase will be subject to routine visual inspection with appropriate maintenance undertaken as identified and required to ensure that the management measures are effective. In addition to the CEMP, construction management measures will include the provision of an Emergency Incident Response procedure which will be prepared and deployed in the event of an emergency event. The measures outlined here will be secured within the CEMP and the Emergency Incident Response procedure.	
An outline Invasive Species Management Plan (ISMP) has been provided in the CEMP. This details the measures to be undertaken to avoid the uncontrolled spread of Invasive Alien Species (IAS) that are present within the following areas of the project: ▪ Landfall Site; ▪ Sector 1; ▪ Sector 2; ▪ Sector 7; and ▪ TCCs. Management measures including general prevention measures, general containment measures, and species-specific treatment measures have been detailed in the ISMP.	The CEMP

4.4 Waterbodies screening

4.4.1 The study area has been reviewed, and waterbodies have been identified and considered in conjunction to the relevant project activities, as presented in the sections above. This enables a determination of those waterbodies that are likely to be impacted to be identified, as presented in Table 4, that are considered in Stage 2 Scoping.

4.4.2 All trenchless watercourse crossings, where drill entry pits are to be located away from the watercourse, are scoped out of the WFD assessment as these will not involve any in-stream works and will avoid direct impacts on watercourses by HDD under the watercourses.

4.4.3 Where the trenchless technology approach is to be adopted, and the drill compounds are to be located away from the watercourse then it is considered that the risk to surface water from sediment in the runoff is negligible.

4.4.4 However, at Achill Road the exit and entry pits for the trenchless crossing will be located in close proximity to the Kill-o-the-Grange Stream (also known as Deansgrange Stream) due to physical constraints at this location. Measures are included to prevent sediment in runoff from the drill compound going to the watercourse.

4.4.5 Where the exit and entry pits are located close to a watercourse (at Kill-o-the-Grange Stream) and at the two trench crossings in Sector 7 (Jamestown 10 Stream and Glenamuck North Stream), then activities at these locations have potential to release suspended solids to surface watercourses, resulting in the potential for increased turbidity of receiving waters, which could potentially affect the water quality of downstream water bodies. Therefore, the following watercourse crossings have been screened into the assessment:

- Trenchless crossing of Kill-o-the-Grange Stream (also known as Deansgrange Stream) at Achill Road (TX-04); and
- Two open cut trench crossings of the small streams/field drain to the south of the Carrickmines Retail Park (Glenamuck North and Jamestown_10streams. Both of these streams are considered to form part of the Carrickmines Stream in EPA data.

4.4.6 During operation of Dublin Array, there is potential for a pollution event to occur albeit unlikely and limited to operation of the OSS and the O&M Base.

4.4.7 The Coastal waterbody that is adjacent to the landfall location (Southwestern Irish Sea - Killiney Bay (HA10)), is considered within the Volume 4, Appendix 3.2-1: Water Framework Directive and Marine Strategy Framework Directive Summary.

4.4.8 Table 4 summarises the waterbodies that have been screened in and taken forward to Stage 2 Scoping.

Table 4 Waterbodies screened for consideration at Scoping

Name (WFD ID/European Code)	Risk categories	Status	Screened in/out	Qualifying reason for inclusion in screening
Dublin Bay Coastal Water Body	Not at risk	Good	In	The proposed O&M Base is partially located within the waterbody (the floating pontoon and access gangway)
Brewery Stream_010	Review	Poor	Out	Brewery Stream is a highly modified urban watercourse that is heavily culverted. The stream discharges into Dublin Bay approximately 1 km to the west of the O&M Base, however, given the stream is heavily culverted with dense residential and commercial land use in the catchment, it is not considered further.
Shanganagh River SHANGANAGH_010	Not at risk	Good	Out	Onshore ECR crosses the surface waterbody, however, trenchless techniques will be used to avoid direct impacts on watercourses. Where the trenchless technology approach for water course crossings is adopted, and the drill compounds are to be located away from the watercourse then it is considered that the risk to surface water from sediment in the runoff is negligible.
Kill-o-the-Grange Stream KILL OF THE GRANGE STREAM_010	At risk	Poor	In	Onshore ECR crosses the surface waterbody at two locations. Although, trenchless techniques will be used the exit and entry pits will be located in close proximity to the waterbody at TX-04 with potential for pollution of surface waters due to accidental spillage of chemicals/fuels, and/or sedimentation of surface waters due to construction activities.
Carrickmines Stream	Not at risk	Good	In	The Onshore ECR crosses the surface waterbody in several locations. Most crossings will use

Name (WFD ID/European Code)	Risk categories	Status	Screened in/out	Qualifying reason for inclusion in screening
CARRICKMINES STREAM_010				trenchless techniques; however, two open cut trench crossings of the small streams/field drain at Carrickmines retail park have potential for pollution of surface waters due to accidental spillage of chemicals/fuels, and/or sedimentation of surface waters due to construction activities. During operation of the OSS there is potential for pollution event to occur. Hydrocarbon interceptor at the OSS will prevent this entering the watercourse.
Wicklow Groundwater Body (GWB) IE_EA_G_076	At risk	Overall Groundwater Status (GW2016-2021): Good	In	OES crosses the groundwater body. Potential for impacts on groundwater quality due to accidental spillage of chemicals/fuels or other hazardous substances and changes in groundwater levels from dewatering excavations.
Kilcullen GWB IE_EA_G_003	At risk	Overall Groundwater Status (GW2016-2021): Good	In	The O&M Base is located within the groundwater body. Potential for impacts on the groundwater quality due to accidental spillage of chemicals/fuels or other hazardous substances and changes in groundwater levels from dewatering excavations. During operation of the O&M Base there is potential for pollution event to occur although this is likely to be negligible due to hydrocarbon interceptor installed at the O&M Base.

4.5 Protected area screening

4.5.1 The study area has been reviewed and Protected Areas, as identified by the WFD, have been identified. The Protected Areas have been considered in conjunction to the relevant project activities, as presented in the sections above. This enables a determination of those protected areas that are likely to be impacted to be identified, as presented in Table 5 that are considered in Stage 2 Scoping.

Drinking waters

4.5.2 The Shanganagh River is designated as a drinking water abstraction river and has been screened into further consideration (as a waterbody) in Section 4.4. The Kilcullen GWB is designated as a drinking water abstraction groundwater body that has also been screened into further consideration (as a waterbody) in Section 4.4.

4.5.3 The available EPA online maps do not indicate the presence of any surface water abstractions at or downstream of the study area, either for drinking water purposes or any other uses.

4.5.4 The GSI online database of wells was reviewed and shows the presence of one groundwater borehole within the study area at Cherrywood, see details below. There are no wells or springs identified in the O&M Base study area.

4.5.5 The groundwater supply borehole GSI reference number is 3221NWW003. The borehole was drilled in 1994 to a depth of 61 m and the depth to rock is 39.5 m. The GSI yield class is good, with 220 m^3/d reported. There are no reported details of the use of the well. Given the ongoing construction in the Cherrywood area, it is considered unlikely that this borehole is still in existence.

4.5.6 There are no groundwater supply well source protection zones within the study area.

Economically significant aquatic species

4.5.7 With regard to economically significant aquatic species, there are no designated salmonid rivers or shellfish waters identified within the study area.

Bathing waters

4.5.8 The following bathing waters fall within the O&M Base study area. All are coastal features:

- Seapoint beach located approximately 1.5 km west of the O&M Base
- Forty Foot Bathing Place approximately 1.3 km east of the O&M Base)
- Sandycove Beach approximately 1.3 km east of the O&M Base)

4.5.9 Potential impacts upon marine water and sediment quality are considered within the O&M Base Chapter, which concludes that there will be no impacts during the construction or operation phase.

4.5.10 Any additional sediment released during construction or operation is likely to be rapidly dispersed and settle with heavier sediments settling relatively quickly within a few hours, while finer sediments will be suspended for a longer period but at significantly reduced concentrations, below background levels. Therefore, this potential impact can be scoped out of the detailed impact assessment for this chapter.

4.5.11 With regard to accidental releases or spills of materials or chemicals, the potential for accidental releases of substances such as grease, oil, fuel, anti-fouling paints, and grouting materials into the marine environment exists. Dublin Array is committed to implementing preventative measures to minimise such incidents. No discharges of chemicals or construction materials are proposed during the construction phase and this potential impact is scoped out of further consideration.

4.5.12 The O&M Base Chapter also considers potential for impacts to occur due to temporary localised increases in Suspended Sediment Concentrations (SSC) arising from works affecting rock armour under the pontoon. The assessment notes that any temporary impact of increased SSC and deposition from construction activities is expected to be restricted to the vicinity of the development area and Dún Laoghaire Harbour. The impact would only occur during rock armour removal/reinstatement whereby sediment plumes are expected to quickly dissipate after cessation of the activities, due to settling with the concentrations reducing quickly to background levels. Therefore, the consequence will be barely discernible to noticeable.

4.5.13 Given the effects are predicted to be localised, temporary and SSC concentrations quickly returning to background levels, and the significance of effects is assessed as insignificant.

4.5.14 On the basis that the sites are all located over 1 km from the O&M Base, and there are no impacts anticipated to occur to water and sediment quality, the bathing water sites are screened out of further consideration.

4.5.15 Killiney beach, located approximately 1.5 km north of the Landfall is considered within the Volume 4, Appendix 3.2-1: Water Framework Directive and Marine Strategy Framework Directive Summary.

Nutrient sensitive waters

4.5.16 Dublin Bay coastal waterbody is designated as a nutrient sensitive water and has been screened into further consideration (as a waterbody) in Section 4.4.

4.5.17 The introduction of nutrients (mainly inorganic nitrogen) to the marine environment can result in phytoplankton blooms under the right conditions. These blooms can produce extremely toxic compounds that have harmful effects on fish, shellfish, mammals, birds and, potentially, humans. While it is predicted that sediments will be mobilised due to activities associated with the O&M Base, it is very unlikely that this will result in significant nutrient uplift in the surrounding waters. Such inputs are typically associated with, for example, agricultural use of fertilisers and surface water runoff. The proposed works will largely be completed in open waters (high potential for dispersal/dilution), effects will be temporary and do not involve the planned release of nutrients. Therefore, it is considered unlikely that activities will result in phytoplankton blooms within the Dublin Bay coastal waterbody (or any other connected waterbody) and consideration of nutrient sensitive water is screened out of further consideration.

Protected areas

4.5.18 Several international and nationally designated conservation areas have been identified within the study area and are included for consideration in Stage 2 scoping, as listed in Table 5 below.

4.5.19 Dingle Glen pNHA is located approximately 0.76 km to the south of the OES and is not hydrologically connected to the OEA, so has not been screened in for further consideration.

4.5.20 Rockabill to Dalkey Island SAC [IE003000] is considered within the Volume 4, Appendix 3.2-1: Water Framework Directive and Marine Strategy Framework Directive Summary

Table 5 Protected areas screened for consideration at scoping

Name	Qualifying reason for inclusion in screening
South Dublin Bay and River Tolka Estuary SPA	Approximately 700 m to west of O&M Base - hydrological connectivity between this SPA and the O&M Base via the marine habitat
South Dublin Bay SAC	Approximately 900 m to west of O&M Base – Potential Hydrological connectivity via the marine habitat and the Landfall Site. There is no terrestrial connectivity.
Dalkey Coastal Zone and Killiney Hill proposed Natural Heritage Areas (pNHA)	Approximately 10 m to the OES - Considered to be ecologically connected to the OES due to the short distance between the designation and the OES Approximately 0.44 km to the O&M Base – Potential hydrological connectivity between this pNHA and the O&M Base
Loughlinstown Woods pNHA	Approximately 5 m to the OES - Considered to be ecologically connected to the OES due to the short distance between the designation and the OES. Also located adjacent to hydrologically connected river habitat.
South Dublin Bay pNHA	Approximately 0.86 km to the O&M Base – Potential hydrological connectivity between this pNHA and the O&M Base

5 Stage 2 – Scoping

5.1.1 This section considers those WFD water bodies and protected areas screened in the Stage 1: Screening assessment to determine which WFD waterbodies and protected areas may require further assessment as part of the Stage 3: Detailed Assessment.

5.2 River waterbodies

5.2.1 A detailed characterisation of the hydrological baseline is provided in the EIAR Onshore Water Chapter and is summarised in Section 4.2.

5.2.2 Within the Onshore WFD Study Area, there are two designated WFD river waterbodies that have been screened into consideration at Scoping:

- Kill-o-the-Grange Stream, where trenchless crossing techniques are proposed, however, there is an operational requirement for the exit and entry pits to be located close to the watercourse; and
- Two locations on Carrickmines Stream where the OES crosses Glenamuck North and Jamestown_10 streams in sector 7 of the Onshore ECR, and open cut trench crossing techniques are proposed.

5.2.3 During the construction phase, there is the potential for a pollution event to affect surface water from construction operations. Potential pollutants include oil, fuels and cement, which have the potential to have a negative effect on surface water receptors and the resulting degradation of the water quality.

5.2.4 Construction phase activities of the onshore infrastructure will also require necessary earthworks resulting in the removal of vegetation cover and excavation of mineral subsoil. Exposed and disturbed ground may increase the risk of erosion and subsequent sediment laden surface water runoff. The release of suspended solids is primarily a consequence of the physical disturbance of the ground during the construction phase and/or from the temporary stockpiling of material.

5.2.5 Potential sources of sediment laden water include:

- Soil stripping, if necessary, to construct the cable trenches and hardstands;
- Run-off and erosion from soil stockpiles at the TCC's and excavation areas at the trenchless drilling pad sites;

- Construction of the onshore ECR cable trench resulting in entrainment of sediment from the excavations during construction, particularly where the trenching and trenchless drill pad sites have to be located close to a watercourse due to physical operational constraints. In such instances silt traps or silt fencing will be provided to prevent any material running off into the nearby watercourse; and
- Erosion of sediment at the two water crossings where open cut trench will be used.

5.2.6 Where the exit and entry pits are located close to a watercourse, for operational reasons due to spatial constraints, and at the two open-trench crossings, then activities at these locations have potential to release suspended solids to surface watercourses, resulting in the increased turbidity of receiving waters affect the water quality of downstream water bodies. Project design features, together with avoidance and preventative mitigation measures, set out in Section 4.3 will ensure that these effects are unlikely to occur.

5.2.7 The duration of any effect relating to sedimentation or pollution would be temporary lasting less than one year.

5.2.8 The EIAR Onshore Water Chapter considers the probability of occurrence to be unlikely as leakage/spillage would be accidental only and is considered unlikely given the measures (as outlined in Section 4.3) which include:

- Where it is not possible to maintain an adequate set back to prevent runoff going to the watercourse then additional control measures such as silt fences will be deployed;
- The construction phase management measures will follow the relevant CIRIA guidelines (CIRIA C648 Control of Water Pollution from Linear Construction Projects;
- The measures outlined here will be secured within the CEMP and the Emergency Incident Response procedure; and
- Where open cut techniques are proposed, the flows in the streams will be managed during the construction of the trench crossings using standard construction site management measures which include the sandbagging of the channel to hold back waters and the over pumping of waters during the construction of the trench crossings.

5.2.9 The potential for a pollution event to occur during operation is unlikely and will be limited to operation of the OSS. There will be a limited number of vehicles required onsite for routine maintenance and operational activities. This impact is not considered to be a frequent occurrence at the site and would only occur in the event of an accidental spillage occurring. The probability of an occurrence is unlikely as the measures for the OSS site outlined above in Section 4.3, these include:

- Storm water attenuation and treatment for OSS sites in line with sustainable Drainage Systems (SuDS) best practice; and

- The discharge line will also include a bypass oil interceptor to remove any hydrocarbons in the discharge waters from the OSS site.

5.2.10 The Onshore Water Chapter concludes that, with the measures detailed in Section 4.3 incorporated, no significant adverse residual effects have been predicted in respect to surface water quality, or to erosion or sedimentation during construction. Therefore, it is not considered that the onshore aspects of Dublin Array would result in deterioration of the WFD surface water bodies or prevent them from achieving the objectives by 2027.

5.3 Ground water bodies

5.3.1 Within the Onshore WFD study area, there are two designated WFD river waterbodies that have been screened into consideration at Scoping:

- Wicklow GWB (IE_EA_G_076) within which the OES is located; and
- Kilcullen GWB (IE_EA_G_003) within which the O&M Base is located.

5.3.2 As with surface water bodies, there is the potential during construction for a pollution event to affect groundwater. Potential pollutants include oil, fuels and cement, which have the potential to have a negative effect on groundwater receptors and the resulting degradation of the water quality. The Onshore Water Chapter considers the probability of occurrence to be unlikely as leakage/spillage would be accidental only and is considered unlikely given the measures (as outlined in Section 4.3) which include:

- The construction phase management measures will follow the relevant CIRIA guidelines (CIRIA C648 Control of Water Pollution from Linear Construction Projects; and
- The measures outlined here will be secured within the CEMP and the Emergency Incident Response procedure.

5.3.3 Additional measures relating to the O&M Base (potentially affecting the Kilcullen GWB), include:

- The existing surface water drainage network at the O&M Base will be upgraded in the vicinity of St. Michaels Pier and the proposed hardstanding area. The new operational drainage network will tie into the existing oil interceptor in the harbour which will clean surface water run off of all sediment and of any potentially hazardous material prior to discharging the surface water into tidal waters within the harbour. Details of the proposed drainage system are presented in the Project Description Chapter; and
- A green roof has been included in is proposed as part of the design of the O&M Base to improve stormwater management and water quality.

5.3.4 In addition to potential impacts to groundwater quality, if dewatering is required for deeper foundations at the Landfall, O&M Base and/or OSS, compared to along the Onshore ECR, there is the potential for local groundwater levels in the immediate vicinity of the deeper foundation excavations to be lowered slightly. However, any potential impacts on groundwater levels are not anticipated to be significant due to the limited extent/depth of the excavations required for foundations. In addition, the foundation excavations will not be particularly deep so will not alter the local groundwater flow regime.

5.3.5 Groundwater inflows may need to be pumped from any deeper excavations, i.e. for dewatering, resulting in short term localised drawdown of the water table and discharges to surface water channels. This could impact on local groundwater levels immediately around the excavations.

5.3.6 Location specific good practice measures around dewatering will follow the relevant CIRIA guidelines (CIRIA C648 Control of Water Pollution from Linear Construction Projects), and the measures will minimise generation of suspended solids and the treatment of any water to remove suspended solids should they be present, see Section 4.3 for construction mitigation measures in relation to water.

5.3.7 Groundwater bodies in the study area are classified as Locally Important or Poor Aquifers and the geology at site has a low bulk hydraulic conductivity. The tolerance of these receptors is relatively high, as the scale of the construction works, including any temporary dewatering, is small compared to the overall catchment and the potential magnitude of temporary groundwater ingress would be small. Groundwater bodies, however, are expected to have a slower recoverability due to their less dynamic nature compared to surface waters. These groundwater bodies are considered Low to Medium value receptors, given their local significance. As a result, the overall sensitivity of hydrogeological receptors to construction activities is rated as Low to Medium.

5.3.8 The duration of any potential effect would be short-term and is anticipated to only occur when temporary dewatering is required. The probability of this impact occurring is considered unlikely given any dewatering is likely to be of limited volume as the foundations for the OES will be relatively shallow, therefore the dewatering volumes will be small and the period for dewatering will be temporary while the foundations are excavated and built. This remains the case even if deeper foundations are required, because the extent of the extra depth needed is itself small.

5.3.9 This applies to the Landfall Site, Onshore ECR trenchless drilling sites, trenched watercourse crossings, cable trenches, OSS, O&M Base and TCCs.

5.3.10 The potential for a pollution event to occur during operation is unlikely and will be limited to operation of the OSS and the O&M Base. There will be a limited number of vehicles required onsite for routine maintenance and operational activities. This impact is not considered to be a frequent occurrence at the site and would only occur in the event of an accidental spillage occurring. The probability of an occurrence is unlikely as the measures for the OSS site outlined above in Section 4.3, these include:

- Storm water attenuation and treatment for OSS and O&M Base sites in line with SuDS best practice; and
- The discharge line will also include a bypass oil interceptor to remove any hydrocarbons in the discharge waters from the OSS and O&M Base sites.

5.3.11 The Onshore Water Chapter concludes that, with the measures detailed in Section 4.3, incorporated, no significant adverse residual effects have been predicted in respect to groundwater quality or groundwater levels and flow. Therefore, it is not considered that the onshore infrastructure of Dublin Array would result in deterioration of the WFD groundwater bodies or prevent them from achieving the objectives by 2027.

5.4 Coastal waterbodies

5.4.1 The O&M Base is partially located within the Dublin Bay coastal water body, adjacent to, and on St. Michael's Pier in Dún Laoghaire Harbour, which includes a new pontoon fixed to the existing harbour wall. This area includes the proposed site of the O&M Base on Dún Laoghaire Harbour, plus the pontoon adjacent to the harbour wall.

5.4.2 The marine-based infrastructure and activities broadly comprise; installation of a floating pontoon anchored to the quay wall and access gangway installed on the existing quay wall to facilitate access, levelling or reprofiling of existing rock armour that is in place to protect the quay wall from scouring and use of two jack-up vessels during construction. The Project Description Chapter provides full details of the O&M Base.

5.4.3 As noted in Section 4.5, potential impacts upon marine water and sediment quality are considered within the O&M Base Chapter, which concludes that there will be no impacts during the construction or operation phase and

5.4.4 Dublin Array is committed to implementing preventative measures to minimise accidental releases of substances such as grease, oil, fuel, anti-fouling paints, and grouting materials into the marine environment and no discharges of chemicals or construction materials are proposed during the construction phase.

5.4.5 The O&M Base Chapter concludes that no significant adverse residual effects have been predicted in respect to surface water quality, or to erosion or sedimentation during construction. Therefore, it is not considered that the onshore aspects of Dublin Array would result in deterioration of the WFD surface water bodies or prevent them from achieving the objectives by 2027.

5.4.6 The Coastal waterbody that is adjacent to the landfall location (Southwestern Irish Sea - Killiney Bay (HA10)), is considered within the Volume 4, Appendix 3.2-1: Water Framework Directive and Marine Strategy Framework Directive Summary.

5.5 Protected areas

5.5.1 Within the onshore WFD study area, 5 internationally and nationally designated conservation areas have been identified within the study area and are included for consideration in Stage 2 scoping. These are listed below:

- South Dublin Bay SAC;
- South Dublin Bay and River Tolka Estuary SPA;
- South Dublin Bay pNHA;
- Dalkey Coastal Zone and Killiney Hill pNHA; and
- Loughlinstown Woods pNHA;

5.5.2 The consideration of protected areas initially considers whether there is a pathway by which the OES and O&M Base could affect a protected area. Where a pathway is identified, the assessment goes on to consider how the construction and operation and maintenance activities associated with onshore infrastructure could impact on the protected area. If an impact is identified, consideration is given to whether this could affect objectives and standards for that area as identified in the RBMP. This draws upon the detailed assessment of potential impacts to designated sites or effects to their Qualifying Interests (QI)[8] presented in the following documents:

- The Biodiversity Chapter;
- O&M Chapter;
- SISAA (Section 3); and
- NIS (Section 5).

[8] The habitats and species for which each European site is selected are the QI for SACs and special conservation interests (SCI) for SPAs of each site. These are collectively referred to as qualifying interests (QI) in this report.

South Dublin Bay SAC;

5.5.3 South Dublin SAC lies 6.4 km from the ECC and is 1.2 km from the O&M Base in Dún Laoghaire Harbour. The site covers 7.2 km^2 of intertidal sandy and muddy habitats. There is hydrological connectivity between this SAC and the O&M Base via the marine habitat and the EPA has identified the SAC as having protected water dependent habitats or species.

5.5.4 The QI of the SAC include the following which could be impacted by changes in water quality through accidental pollution, suspended sediment and deposition and invasive species:

- Mudflats and sandflats not covered by seawater at low tide [1140]; and
- Salicornia and other annuals colonising, mud and sand [1310].

5.5.5 Section 6 of the SISAA notes that any spillages from construction of the O&M Base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source for pollution is anticipated and project level mitigation is anticipated to manage this risk.

5.5.6 The Applicant will implement a Marine Pollution Contingency Plan will cover accidental spills, potential contaminant release and include key emergency contact details (e.g. the Irish Coast Guard (IRCG) and will comply with the National Maritime Oil/HNS Spill Contingency Plan (IRCG, 2020). Measures include storage of all chemicals in secure designated areas with impermeable bunding (up to 110% of the volume); and double skinning of pipes and tanks containing hazardous materials to avoid contamination. The avoidance and preventative measures are outlined within the Marine Pollution Contingency Plan, contained within the PEMP (Volume 7, Appendix 1).

5.5.7 No pathway exists for accidental pollution from the onshore construction activity

5.5.8 Section 6 of the SISAA also notes that the eastern edge of South Dublin Bay SAC is 1.2 km from the O&M Base, although the western seawall of Dún Laoghaire Harbour forms a barrier between the SAC and the O&M Base. However, as any sediment plume associated with levelling of the rock armour underneath the pontoon of the O&M Base is will be limited to the immediate vicinity of the works given the works will be confined to the immediate footprint of existing rock armour with habitats outside the confines of the harbour wall experiencing no increase in SSC and associated deposition. No pathway exists from the onshore construction and given no works will interact with the seabed.

5.5.9 With regard to invasive species, taking into consideration the lack of direct overlap between the South Dublin Bay SAC and the O&M Base infrastructure, there is no identifiable impact pathway from the introduction of hard substrates which would change the type of available habitat for benthic communities. As such the potential for introduction of invasive species is limited to the movement of construction vessels transiting to and from the offshore infrastructure.

5.5.10 Marine biosecurity measures will be implemented to ensure that the risk of introduction and spread of invasive non-native species will be minimised. The measures are also outlined in the PEMP in Volume 7, Appendix 1. No pathway anticipated as a result of planned mitigation.

5.5.11 Although the SAC and O&M Base are both located within Dublin Bay, the distance of the SAC from the O&M Base (1.2 km) and the control measures proposed mean no pathway exists accidental pollution, suspended sediment and deposition and invasive species from the O&M Base and the SAC is scoped out of further consideration.

South Dublin Bay and River Tolka Estuary SPA

5.5.12 The South Dublin Bay and River Tolka Estuary SPA is located 0.6 km from the O&M Base and is designated for supporting a range of notable shorebirds and wintering wildfowl. There is hydrological connectivity between this SPA and the O&M Base via the marine habitat and the EPA has identified the SPA as having protected water dependent habitats or species.

5.5.13 The QI of the SPA are Light-bellied brent goose, Arctic tern, Black-headed gull, Oystercatcher, Bar-tailed godwit, Roseate tern, Ringed plover, Redshank, Common tern, Grey plover, Knot, Sanderling and Dunlin. Although there would not be any direct impact upon bird species due to changes in water quality, there is potential for indirect impacts upon prey species. The SISAA identifies the following QI species where an indirect impact upon prey could occur:

- Arctic tern;
- Common tern;
- Roseate tern; and
- Black headed gull.

5.5.14 Construction activities may change the behaviour or availability of prey species for seabirds, resulting in the availability of such prey species being temporarily reduced. However, the majority of seabird species have a variety of target prey species and have large foraging ranges, meaning that they can forage for alternative prey species or move to other foraging areas if prey becomes temporarily unavailable due to construction activities. The sensitivity of seabirds to indirect effects as a result of habitat loss or displacement of prey species due to increased noise and disturbance during construction is therefore considered to be low.

5.5.15 Section 6 of the SISAA notes that due to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development.

5.5.16 The O&M Base Chapter confirms no significant effects on potential prey species (benthic organisms, fish or shellfish) or on the habitats that support them have been identified. Therefore, there is no pathway for potential indirect effects to occur on foraging seabirds and the SPA is scoped out of further consideration.

South Dublin Bay pNHA

5.5.17 South Dublin Bay pNHA is located 0.86 km from the O&M Base and is listed under similar conservation objectives as its SAC and SPA designations. The considerations given for the SAC and SPA, and lack of pathways for impacts to occur, are also applicable to the pNHA which is scoped out of further consideration for these reasons.

Dalkey Coastal Zone and Killiney Hill pNHA

5.5.18 The Dalkey Coastal Zone and Killiney Hill pNHA comprises several areas of land located along the coastline between the landfall and O&M Base. The pNHA is approximately 10 m from the landfall location and 0.44 km from the O&M Base (noting the eastern harbour wall affords a degree of separation from the O&M Base). The pNHA represents a coastal system with habitats ranging from the sub-littoral to coastal heath.

5.5.19 Potential impact pathways arising from pollution, sedimentation or invasive species as a result of the O&M Base would be the same as for Dublin Bay SAC, SPA and pNHA discussed above. The considerations given for the Dublin Bay SAC, SPA and pNHA, and lack of pathways for impacts to occur, are also applicable to the pNHA which is scoped out of further consideration relating to the O&M Base for the same reasons.

5.5.20 With regard to the OES, the potential impacts relate to potential increase of suspended solids/pollutants in the surface water run-off entering river habitats and then travel downstream to affect the coastal water habitat and adversely affect the coastal pNHA.

5.5.21 Trenchless techniques (HDD or similar) will be used to cross watercourses along the Onshore ECR so there will be no risk of increased sediments entering any river habitats and potentially reaching downstream designated sites. Construction works will be set back from the river and stream channel (except for the two open-cut trenched crossings at Sector 7), and where it is not possible to maintain an adequate set back to prevent runoff going to the watercourse additional control measures such as silt fences will be deployed at these locations.

5.5.22 Measures to mitigate against pollution events happening, and measures to avoid the uncontrolled spread of IAS are summarised in Table 3.

5.5.23 The impact from pollution events upon pNHAs is considered within the Bioidiversity Chapter which concludes that that following the implementation of the mitigation measures, any potential impact would be minor and temporary. Although a pathway does exist, the low level of residual impacts and high potential for dispersal/dilution upon entering coastal waters mean that potential impacts from pollution on the Dalkey Coastal Zone and Killiney Hill pNHA are scoped out of further consideration.

5.5.24 With regard to IAS, The Bioidiversity Chapter concludes that following the implementation of the mitigation measures, the IAS will be controlled and eradicated and their accidental spread into any pNHAs will be avoided. There is, therefore, no pathway relating to IAS and this is scoped out of further consideration.

Loughlinstown Woods pNHA

5.5.25 Loughlinstown Woods pNHA, comprises riparian woodland habitat that forms a linear area along either side of the River Shanganagh to the east of the N11. At its closet point the OES passes approximately 5 m from the westernmost extent of the pNHA. Thereafter the OES is located to the north of the pHNA, separated by residential development in Loughlinstown.

5.5.26 The pNHA is downstream of crossing TX-06 which uses trenchless techniques (HDD or similar) to cross the N11 and Carrickmines Stream (Loughlinstown River). As set out for Dalkey Coastal Zone and Killiney Hill pNHA, the use of trenchless techniques and setting construction works back from watercourse channels, alongside pollution and IAS control measures in the CEMP, mean there are no impact pathways, or the low level of residual impacts mean that potential impacts from pollution on the Loughlinstown Woods pNHA are scoped out of further consideration.

5.6 Stage 2 scoping summary

5.6.1 The WFD water bodies and protected areas screened in for further consideration within Stage 1: Screening have been reviewed to determine whether they require further assessment as part of the Stage 3: Detailed Assessment. The Stage 2 Scoping assessment for Dublin Array did not identify any activities or components that would lead to deterioration of the WFD water bodies or prevent them from meeting the objectives by 2027, with the project design features and other avoidance and preventative mitigation measures implemented.

5.6.2 The Stage 2 Scoping also concluded that the project design features, and other avoidance and preventative measures, will ensure that the risk of sediments and pollutants entering watercourses and potentially reaching European or Nationally designated sites will be minimised. With these measures in place, EIAR Biodiversity Chapter, O&M Chapter and NIS predicts there will be no significant residual effect, and further assessment is not required.

5.6.3 The onshore infrastructure Dublin Array, comprising the OES and O&M Base, will not affect the protected area objectives as they will not have a detrimental impact upon achieving water conditions that support Favourable Conservation Status. Section 8 of the NIS concludes that no adverse effects on the integrity of the European sites identified in this WFD Compliance Report will arise, in view of the sites' Conservation Objectives.

6 Stage 3 – Impact assessment

6.1.1 The Stage 2 Scoping assessment for Dublin Array did not identify any activities or components that would lead to deterioration of the WFD water bodies or prevent them from meeting the objectives by 2027, therefore no further assessment is required. Best practice construction methods, project design features, and other avoidant and preventative measures, as outlined in Section 4.3, the CEMP and the EIAR are deemed sufficient to ensure that construction impacts are minimised to acceptable levels, such as to avoid deterioration of the WFD water bodies or the water bodies not meeting their objectives.

7 Conclusions

7.1.1 The detailed assessments presented in this WFD assessment concludes there is a low risk that the onshore infrastructure of Dublin Array will cause a deterioration within any identified WFD water bodies or groundwater bodies. It is concluded that there is also a low risk that the development will prevent these water bodies from achieving or maintaining their WFD objectives by the required date. Furthermore, it is concluded that the risk of deterioration within adjacent water bodies or interference with any mitigation measures identified in the River Basin Management Plan (RBMP) is also low. As such, it is concluded here that the risk of non-compliance with the WFD as a result of the proposed development is low or negligible.

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Registered office:
Unit 5,
Desart House,
Lower New Street,
Kilkenny
www.RWE.com