

FISHGUARD LINKSPAN REPLACEMENT

EIA Scoping Report

POR-00886
D01
November 2024

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
D01	EIA Scoping Report	Various	MP	GN	November 2024

Approval for issue

Gavin Nichol

28 November 2024

The report has been prepared for the exclusive use and benefit of our client and solely for the purpose for which it is provided. Unless otherwise agreed in writing by RPS Group Plc, any of its subsidiaries, or a related entity (collectively 'RPS') no part of this report should be reproduced, distributed or communicated to any third party. RPS does not accept any liability if this report is used for an alternative purpose from which it is intended, nor to any third party in respect of this report. The report does not account for any changes relating to the subject matter of the report, or any legislative or regulatory changes that have occurred since the report was produced and that may affect the report.

The report has been prepared using the information provided to RPS by its client, or others on behalf of its client. To the fullest extent permitted by law, RPS shall not be liable for any loss or damage suffered by the client arising from fraud, misrepresentation, withholding of information material relevant to the report or required by RPS, or other default relating to such information, whether on the client's part or that of the other information sources, unless such fraud, misrepresentation, withholding or such other default is evident to RPS without further enquiry. It is expressly stated that no independent verification of any documents or information supplied by the client or others on behalf of the client has been made. The report shall be used for general information only.

Prepared by:

RPS

Prepared for:

Stena Line Ports Ltd

Contents

1	INTRODUCTION	13
1.1	Context	13
1.2	Objectives of this document	13
1.3	Legislative and Regulatory Requirements	13
1.3.1	Marine Licence Context	13
1.3.2	Environmental Impact Assessment - Context.....	14
1.3.3	Screening Opinion	14
1.3.4	Scoping Opinion	14
1.4	Structure of the Scoping Report.....	15
2	PROJECT DESCRIPTION	16
2.1	Background	16
2.1.1	Site Location	17
2.2	Project Need.....	18
3	POPULATION & HUMAN HEALTH	19
3.1	Baseline Scenario	19
3.1.2	Data Sources	19
3.1.3	Baseline data	20
3.2	Legislative and Policy Context	22
3.3	Potentially Significant Effects	23
3.3.1	Construction and Operation Phase.....	23
3.4	Inclusion or Exclusion from EIA	23
3.5	EIA Assessment Methodology	7
3.6	Preliminary Mitigation Measures	8
3.6.1	Construction Phase	8
3.6.2	Operation Phase	8
3.7	Interactions.....	8
3.8	Summary of Scoping Exercise	8
3.9	References	9
4	BIODIVERSITY – MARINE	10
4.1	Baseline Scenario	10
4.1.1	Benthic Subtidal and Intertidal Ecology	11
4.1.2	Fish and Shellfish Ecology.....	18
4.1.3	Marine Mammals	28
4.2	Potentially Significant Effects	42
4.2.1	Construction Phase	42
4.2.2	Operation Phase	42
4.3	Inclusion or Exclusion from EIA	42
4.4	EIA Methodology	49
4.5	Preliminary Mitigation Measures	49
4.5.1	Construction Phase	49
4.5.2	Operation Phase	50
4.6	Interactions.....	50
4.7	Summary of Scoping Exercise	50
4.8	References	51
5	BIODIVERSITY – TERRESTRIAL & BIRDS	55
5.1	Baseline Scenario	55
5.1.1	Designated Sites.....	55

5.1.2	Terrestrial Habitats	55
5.1.3	Species	56
5.1.4	Construction Phase	56
5.1.5	Operation Phase	57
5.2	Inclusion or Exclusion from EIA	57
5.3	EIA Assessment Methodology	58
5.4	Preliminary Mitigation Measures	59
5.4.1	Construction Phase	59
5.4.2	Operation Phase	60
5.5	Interactions	60
5.6	Summary of Scoping Exercise	60
5.7	References	61
6	COASTAL PROCESSES.....	62
6.1	Baseline Scenario	62
6.1.1	EIA Scoping Area	62
6.1.2	Baseline Data Sources	64
6.1.3	Baseline Environment	65
6.2	Potentially Significant Effects	72
6.2.1	Construction Phase	72
6.2.2	Operation Phase	73
6.3	Inclusion or Exclusion from EIA	73
6.4	EIA Assessment Methodology	73
6.5	Preliminary Mitigation Measures	74
6.5.1	Construction Phase	74
6.5.2	Operation Phase	75
6.6	Interactions	75
6.7	Summary of Scoping Exercise	75
6.8	References	76
7	WATER RESOURCES AND WATER FRAMEWORK DIRECTIVE.....	77
7.1	Baseline Scenario	77
7.1.1	Study Area	77
7.1.2	Data Sources	77
7.2	Legislative Context	78
7.2.1	Water Framework Directive	78
7.2.2	Marine Strategy Framework Directive	79
7.2.3	The Environmental Permitting (England and Wales) Regulations 2016;	80
7.2.4	The Bathing Water Regulations 2013	80
7.2.5	The Urban Wastewater Treatment (England and Wales) Regulations 1994	80
7.3	Baseline Environment	80
7.3.1	Water Framework Directive Status	80
7.3.2	MSFD Status	83
7.3.3	Protected Areas	84
7.3.4	Shellfish Water Protected Areas	86
7.3.5	Bathing Water Protected Areas	86
7.3.6	National Sites Network (Special Areas of Conservation (SACs)/Special Protection Areas (SPAs))	86
7.3.7	Marine Protected Areas (MPAs)	86
7.3.8	Receiving Environment Sensitivity	87
7.4	Potentially Significant Effects	87

7.4.1	Construction Phase	87
7.4.2	Operation Phase	88
7.5	Inclusion or Exclusion from EIA	92
7.6	EIA Assessment Methodology	92
7.6.1	Criteria for Rating Impact Significance	92
7.6.2	Rating of Significance of Environmental Impacts	93
7.6.3	Compliance with the Water Framework Directive Objectives.....	94
7.7	Preliminary Mitigation Measures	94
7.7.1	Construction Phase	94
7.7.2	Operation Phase	95
7.8	Interactions.....	95
7.9	Summary of Scoping Exercise	95
7.10	References	95
8	FLOOD RISK	98
8.1	Baseline Scenario	98
8.2	Baseline Scenario	98
8.3	Potentially Significant Effects	99
8.3.1	Construction Phase	99
8.3.2	Operation Phase	100
8.4	Inclusion or Exclusion from EIA	100
8.5	EIA Assessment Methodology	101
8.6	Preliminary Mitigation Measures	101
8.6.1	Construction Phase	101
8.6.2	Operation Phase	101
8.7	Interactions.....	102
8.8	Summary of Scoping Exercise	102
8.9	References	102
9	NOISE & VIBRATION	103
9.1	Baseline Scenario	103
9.1.1	Study Area	103
9.1.2	Data Sources	103
9.2	Potentially Significant Effects	103
9.2.1	Construction Phase	103
9.2.2	Operation Phase	104
9.3	Inclusion or Exclusion from EIA	104
9.4	EIA Assessment Methodology	104
9.4.2	Data Sources	105
9.4.3	Sensitive Receptors	105
9.4.4	Baseline Noise Monitoring	105
9.4.5	Baseline Vibration Monitoring	106
9.4.6	Assessment of Construction Noise	106
9.4.7	Assessment of Construction Vibration	106
9.4.8	Assessment of Operation and Maintenance Noise	106
9.5	Preliminary Mitigation Measures	106
9.5.1	Construction Phase	107
9.5.2	Operation Phase	107
9.6	Interactions.....	107
9.7	Summary of Scoping Exercise	107
9.8	References	107

10	UNDERWATER ACOUSTICS	109
10.1	Baseline Scenario	109
10.1.1	Ambient noise	109
10.2	Potentially Significant Effects	110
10.2.1	Construction Phase	110
10.2.2	Operation Phase	114
10.3	Inclusion or Exclusion from EIA	114
10.3.1	Construction Phase	114
10.3.2	Operation Phase	115
10.4	EIA Assessment Methodology	115
10.5	Preliminary Mitigation Measures	115
10.5.1	Construction Phase	115
10.5.2	Operation Phase	115
10.6	Interactions.....	115
10.7	Summary of Scoping Exercise	116
10.8	References	116
11	AIR QUALITY & CLIMATE	117
11.1	Baseline Scenario	117
11.1.1	Air Quality	117
11.1.2	Climate	124
11.2	Potentially Significant Effects	128
	Air Quality	128
11.2.1	Construction Phase	128
11.2.2	Operation Phase	129
	Climate 129	
11.2.3	Construction Phase	129
11.2.4	Operation Phase	129
11.3	Inclusion or Exclusion from EIA	130
11.4	EIA Assessment Methodology	130
11.5	Preliminary Mitigation Measures	139
	Air Quality	139
11.5.1	Construction Phase	139
11.5.2	Operation Phase	141
	Climate 141	
11.5.3	Construction Phase	141
11.5.4	Operation Phase	142
11.6	Interactions.....	142
11.7	Summary of Scoping Exercise	142
11.8	References	143
12	ARCHAEOLOGY, ARCHITECTURAL & CULTURAL HERITAGE	144
12.1	Baseline Scenario	144
12.2	Proposed Approach	146
12.2.1	Baseline study.....	146
12.2.2	Legislation and Guidance	147
12.3	Potentially Significant Effects	147
12.3.1	Construction Phase	147
12.3.2	Operation Phase	148
12.4	Inclusion or Exclusion from EIA	148
12.5	EIA Assessment Methodology	148

12.6	Preliminary Mitigation Measures	149
12.6.1	Construction Phase	149
12.6.2	Operation Phase	149
12.7	Interactions	149
12.8	Summary of Scoping Exercise	149
12.9	References	149
13	SOILS, GEOLOGY & HYDROGEOLOGY	150
13.1	Baseline Scenario	150
13.1.1	Solid Geology	150
13.1.2	Superficial Geology	150
13.1.3	Hydrogeology and Groundwater Vulnerability	150
13.1.4	Hydrology	150
13.1.5	British Geological Survey Records	150
13.1.6	Designated Sites	151
13.2	Potentially Significant Effects	151
13.2.1	Construction Phase	151
13.2.2	Operation Phase	151
13.3	Inclusion or Exclusion from EIA	151
13.4	EIA Assessment Methodology	151
13.5	Preliminary Mitigation Measures	156
13.5.1	Construction Phase	156
13.5.2	Operation Phase	156
13.6	Interactions	156
13.7	Summary of Scoping Exercise	156
13.8	References	156
14	MATERIAL ASSETS	157
14.1	Baseline Scenario	157
14.2	Potentially Significant Effects	158
14.2.1	Construction Phase	158
14.2.2	Operation Phase	158
14.3	Inclusion or Exclusion from EIA	158
14.4	EIA Assessment Methodology	159
14.5	Preliminary Mitigation Measures	159
14.5.1	Construction Phase	159
14.5.2	Operation Phase	159
14.6	Interactions	159
14.7	Summary of Scoping Exercise	160
14.8	References	160
15	TRANSPORT	161
15.1	Baseline Scenario	161
15.2	Potentially Significant Effects	161
15.2.1	Construction Phase	161
15.2.2	Operation Phase	161
15.3	Inclusion or Exclusion from EIA	162
15.4	EIA Assessment Methodology	162
15.5	Preliminary Mitigation Measures	162
15.5.1	Construction Phase	162
15.5.2	Operational Phase	162
15.6	Interactions	162

15.7	Summary of Scoping Exercise	162
15.8	References	162
16	SEASCAPE, LANDSCAPE & VISUAL	163
16.1	Baseline Scenario	163
16.2	Potentially Significant Effects	163
16.2.1	Construction Phase	163
16.2.2	Operation Phase	163
16.3	Inclusion or Exclusion from EIA	164
16.4	EIA Assessment Methodology	164
16.5	Preliminary Mitigation Measures	165
16.5.1	Construction Phase	165
16.5.2	Operation Phase	166
16.6	Interactions	166
16.7	Summary of Scoping Exercise	166
16.8	References	166
17	WASTE.....	167
17.1	Baseline Scenario	167
17.2	Potentially Significant Effects	168
17.2.1	Construction Phase	168
17.2.2	Operation Phase	169
17.3	Inclusion or Exclusion from EIA	169
17.4	EIA Assessment Methodology	169
17.4.1	Assessment Criteria.....	170
17.4.2	Assignment of Magnitude	170
17.4.3	Significance of Effects	171
17.4.4	Determining whether an effect is significant, or not.....	171
17.5	Preliminary Mitigation Measures	172
17.5.1	Construction Phase	172
17.5.2	Operation Phase	172
17.6	Summary of Scoping Exercise	172
17.7	References	172
18	RISK OF MAJOR ACCIDENTS & DISASTERS	173
18.1	Baseline Scenario	173
18.2	Potentially Significant Effects	173
18.2.1	Construction Phase	173
18.2.2	Operation Phase	174
18.3	Inclusion or Exclusion from EIA	174
18.4	EIA Assessment Methodology	174
18.4.1	The EIA Directive 2014/EU	174
18.4.2	European Union Guidance 2017 - Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU	176
18.4.3	Institute of Environmental Management and Assessment (IEMA), Major Accidents and Disasters in EIA: A Primer, September 2020.....	176
18.5	Preliminary Mitigation Measures	176
18.5.1	Construction Phase	176
18.5.2	Operation Phase	176
18.6	Interactions	176
18.7	Summary of Scoping Exercise	177

18.8	References	177
19	CONCLUSION	178

Tables

Table 1	Structure of Scoping Report	15
Table 2.1	General Health.....	20
Table 3.5	Relevant guidance for human health assessment	7
Table 4.1:	Species with Spawning and Nursery Grounds overlapping with the Planning Boundary (Coull <i>et al.</i> , 1998, Ellis <i>et al.</i> , 2012) (N/A = Not Applicable).....	22
Table 4.2:	Designated Sites with Fish and Shellfish Features	26
Table 4.3:	Designated Sites with Marine Mammal Features.....	40
Table 4.4:	Impacts Proposed to be Scoped In and Out for Benthic Subtidal and Intertidal Ecology	43
Table 4.5:	Impacts Proposed to be Scoped In and Out for Fish and Shellfish Ecology	45
Table 4.6:	Impacts Proposed to be Scoped In and Out for Marine Mammals	47
Table 6.1:	Summary of key reports and datasets.....	64
Table 6.2:	Relevant designated marine area within or near the project scoping area and relevant features	72
Table 7.1:	Summary of Key Desktop Datasets and Materials	77
Table 7.2:	WFD Water Body (WB) Status 2021	82
Table 7.3:	Summary of Progress towards GES	83
Table 7.4:	WFD Protected Areas	86
Table 7.5:	Impact Proposed to be Scoped into the Proposed Development Assessment for WFD Compliance	89
Table 7.6:	Summary of WFD scoping undertaken in Accordance with the Guidance 'Clearing our Waters for All' (Environmental Agency, 2023)	90
Table 7.7:	Sensitivity Indication	92
Table 7.8:	Magnitude of Impact Indicating Type and Scale of Effect (DMRB, 2011).....	93
Table 7.9:	Estimating the Significance of Potential Impacts (Source: DMRB, 2011)	93
Table 9-1:	Data Sources used for Scoping Noise and Vibration	103
Table 9-2:	Data Sources used for the Assessment of Noise and Vibration	105
Table 10-1:	Overview of noisy activities relevant to an underwater noise assessment.	111
Table 10-2:	Overview of noisy activities relevant to an underwater noise assessment.	114
Table 11-1:	Air Pollution Bands and Indices μm^3	119
Table 11-2:	Air Pollution Bandings and Health Descriptor Impacts on Sensitive Receptors.....	119
Table 11-3:	Annual Mean NO ₂ Monitoring Results ($\mu\text{g}/\text{m}^3$)	123
Table 11-4:	National Air Quality Objectives	131
Table 11-5:	Example of Where Air Quality Objectives Apply	134
Table 11-6:	Targets and Carbon Budgets	136
Table 13-1	Historical borehole SM93NE14	150
Table 13-2	Historical borehole SM93NE14	151
Table 13-3	Sensitivity of Receptor.....	152
Table 13-4	Magnitude of Effect	153
Table 13-5	Assessment of Significance Matrix.....	155
Table 17.1	Importance or Sensitivity Matrix Definitions	170
Table 17.2	Magnitude of Impacts Definition	170
Table 17.3	Assessment of Significance Matrix.....	171

Table 17.4 Overall Significance of Effect.....	171
Table 18.1: Construction Phase Screening, Risk Events and Mitigation and Management Measures	173
Table 18.2: Construction Phase Screening, Risk events and Mitigation and Management Measures	174
Table 19-1: Summary of EIA Scoping	178

Figures

Figure 2-1 Site Location.....	17
Figure 4-1: Marine Biodiversity Study Area	11
Figure 4-2: EUSeaMap Habitat Classifications in the Vicinity of the Marine Biodiversity Study Area (EMODnet, 2024).....	13
Figure 4-3: Grab Sample Locations and the Results of the Site-Specific Intertidal and Subtidal Surveys Conducted in 2017 for a similar works at the Stena Line Fishguard Terminal	15
Figure 4-4: Subtidal Biotores Recorded in a 2015 DDV Survey of Fishguard Harbour (Aquatic Environments (2015) cited in RPS (2018)).	16
Figure 4-5: Spawning and Nursery Grounds of Anglerfish, Cod, Plaice, and Sandeel (Ellis <i>et al.</i>, 2012)	23
Figure 4-6: Spawning and Nursery Grounds of Sole, Whiting, Thornback Ray, and Tope Shark (Ellis <i>et al.</i>, 2012)	24
Figure 4-7: Nursery Grounds of Spotted Ray(Ellis <i>et al.</i>, 2012)	25
Figure 4-8: Designated Sites with Fish and Shellfish Qualifying Features in the Surrounding Region	27
Figure 4-9: Celtic and Irish Seas MU for Harbour Porpoise in relation to the Planning Boundary	30
Figure 4-10: Bottlenose Dolphins MUs in relation to the Planning Boundary	31
Figure 4-11: Wales Seal MU in relation to the Planning Boundary	32
Figure 4-12: Modelled Densities of Harbour Porpoise per quarter (measures as the mean density per cell across months within each season) (Evans and Waggitt, 2023) (location of Fishguard Harbour Denoted with a star).	34
Figure 4-13: Modelled Densities of Bottlenose Dolphin per quarter (measures as the mean density per cell across months within each season) (Evans and Waggitt, 2023) (location of Fishguard Harbour Denoted with a star).....	36
Figure 4-14: Distributions and Estimated Pup Production of the main Grey Seal Breeding Colonies in the UK (light blue circles indicate sporadically monitored areas, while dark blue indicate regularly monitored, approximate location of Fishguard Harbour marked with a red arrow) (SCOS, 2023)	38
Figure 4-15: Grey Seal Density at Sea in the vicinity of the Planning Boundary (Carter <i>et al.</i>, 2022)	39
Figure 4-16: Designated Sites with Marine Mammal Qualifying Features in the Surrounding Region	41
Figure 6-1: Tidal excursion ellipses (ABPmer, Marine Atlas, available at: https://www.renewables-atlas.info/explore-the-atlas/)	63
Figure 6-2: EIA Scoping Area	64
Figure 6-3: General features within the EIA Scoping Area.....	65
Figure 6-4: WAVEWATCHIII and CFSR wave/wind point.....	66
Figure 6-5: Wave rose for point 52.05°N, 4.95°W taken from the WAVEWATCH III North-West Shelf model 2010 - 2021.....	67
Figure 6-6: Wind rose for point 52.05°N, 4.95°W taken from the CFSR model 2010 - 2021	67
Figure 6-7: Marine sediments along the Offshore Cable Corridor (Contains British Geological Survey materials @UKRI 2024).....	69

Figure 6-8: Distribution of average annual non-algal suspended particulate matter (SPM)	
CEFAS	70
Figure 6-9: Relevant designated marine areas within or near the EIA Scoping Area	71
Figure 7-1: WFD Waterbodies	81
Figure 7-2: WFD Protected Areas	85
Figure 10-1 Traffic Density from AIS Data, showing the annual mean traffic per 0.08km. Data from marinetraffic.com	110
Figure 10-2. Band levels summary for all noise sources. Note that “Total noise” can be hard to see as it nearly equals the loudest bands where sources have different levels, but clearly seen e.g. 250-1,000 Hz.	111
Figure 10-3. Band levels for likely worst-case for 1.2-2.0 m diameter vibro-piling.	112
Figure 10-4. Band levels for a representative dredging vessel or support vessel for a barge of 20 m length.	112
Figure 10-5. Band levels for socket drilling assuming a 2 m diameter drill.	113
Figure 10-6. Band levels for impact drilling or rock breaking.	113
Figure 11-1: Key Ambient Air Pollutant Trends in Wales 1990-2022	118
Figure 11-2: Automatic Monitoring Location	121
Figure 11-3: Narberth Monitoring Location Ambient Concentrations of Pollutants Recorded over the Previous 90 Days	121
Figure 11-4: Non-Automatic Monitoring Locations	123
Figure 11-5: Climate change projections for Wales	125

Glossary of Terms and Acronyms

AADT	Average Annual Daily Traffic
ADDs	Acoustic Deterrent Devices
ALC	Agricultural Land Classification
AQMA	Air Quality Management Area
BGS	British Geological Survey
CEMP	construction environmental management plan
CFSR	Climate Forecast System Reanalysis
CIEEM)	Chartered Institute for Ecology and Environmental Management
CIfA	Chartered Institute for Archaeologists for the preparation of desk-based assessments
CMS	Construction Method Statement
CoCP	Code of Construction Practice
CRAPW	Central Registry of Aerial Photographs for Wales
DDV	Drop-Down Video Survey
EA	Environment Agency
EcIA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EQSD	Environmental Quality Standards Directive
EMODnet)	European Marine Observation and Data Network
EMP	Environmental Management Plan
FCA	Flood Consequence Assessment

GHGs	greenhouse gases
GES	Good Environmental Status
HSE	Health and Safety Executive
HMWB	Heavily Modified Water Bodies
HER	Historic Environment Record
IEFs	Important Ecological Features
IUCN	Conservation of Nature
INNS	Invasive Non-Native Species
IAMMWG	Interagency Marine Mammal Working Group
ICES	the International Council for the Exploration of the Seas
IMO	International Maritime Organisation
INNS	Invasive non-native species
JNCC	Joint Nature Conservation Committee
LULUCF	Land Use, Land-Use Change and Forestry
LCRM	Land Contamination Risk Management'
MHWS	mean high water spring tide
MCZ	Marine Conservation Zones
(MMO)	Marine Management Organisation
MUs	Marine mammal Management Units
MPCP.	Marine Pollution Contingency Plan
MARPOL	International Convention for the Prevention of Pollution from Ships
MarESA	Marine Evidence Based Sensitivity Assessment
MMMP	Marine Mammal Mitigation Plan
MSY	maximum sustainable yield
MPAs	Marine Protected Areas
MCZs	Marine Conservation Zones
NCEI	National Centre for Environmental Information
NBN	National Biodiversity Network
NRW	Natural Resource Wales
NSP	Navigation Safety Plan (
NOX	Nitrogen Oxides
OSPAR	Oslo Paris Convention
PDE	Project Design Envelope
PTS	Permanent Threshold Shift
POMs	Programme of Measures
PRA	Preliminary Risk Assessment
RNLI	Royal National Lifeboat Institution
RCAHMW	Royal Commission on the Ancient and Historical Monuments of Wales
RIGS	Regionally Important Geological Sites
RBMP	River Basin Management Plan

SACs	Special Areas of Conservation
SSSI	Sites of Special Scientific Interest
SCOS	Special Committee on Seals
SSCs	Suspended Sediment Concentrations
SPM	Suspended Particulate Matter
SLVIA	Seascape, Landscape & Visual Impact Assessment
SPLs	Significant Pollutant Linkages
TTS	Temporary Threshold Shift
TAN	Technical Advice Note
VMP	Vessel Management Plan
VOCs	volatile organic compounds
WFD	Water Frameworks Directive
WWBIC	West Wales Biodiversity Information Centre
WWRBD	Western Wales River Basin District

1 INTRODUCTION

1.1 Context

RPS have prepared this Scoping Report in respect of the *Proposed Development* for a replacement linkspan at Fishguard Harbour on behalf of our client Stena Line Ports Ltd 'Stena Line'.

1.2 Objectives of this document

In the event that the Proposed Development is determined to be Environmental Impact Assessment (EIA) development, this Scoping Report serves to set out the baseline scenario; potentially significant effects from construction and operation; inclusion or exclusion from EIA; assessment methodology; preliminary mitigation measures from construction and operation; interactions and a summary of scoping exercise for each of the topic specific sections. This report provides a roadmap for the preparation of an EIA report to inform marine consenting, detailing those topics which identify potentially significant effects and those that can be scoped out of further assessment.

1.3 Legislative and Regulatory Requirements

1.3.1 Marine Licence Context

Under the Marine and Coastal Access Act (MCAA) 2009, it is a licensable marine activity to undertake a range of activities as defined by Section 66 of the Act, including:

- Deposition of any substance or object, in the sea or on or under the sea bed, from:
 - Any vehicle, vessel, aircraft or marine structure
 - Any container floating in the sea
 - Any structure on land constructed or adapted wholly or mainly for the purpose of depositing solids in the sea
- Construction, alteration or improvement works either in or over the sea or on or under the sea bed
- Use of a vehicle, vessel, aircraft, marine structure or floating container to remove any substance or object from the sea bed
- Carrying out any form of dredging, whether or not involving the removal of any material from the sea or sea bed

The MCAA defines 'the sea' as:

Any area submerged at mean high water spring tide. This includes waters in any area that is closed, whether permanently or intermittently, by a lock or other artificial means against the regular action of the tide, but:

- Into which seawater is caused or permitted to flow, whether continuously or from time to time, and:

- From which seawater is caused or permitted to flow, whether continuously or from time to time
- The waters of every estuary, river or channel, as far as the tide flows at mean high water spring tide (MHWS).

In consideration of the above requirements outlined in the MCAA, the Proposed Development is considered to constitute a licensable activity and as such, requires a marine licence prior to commencement of works.

1.3.2 Environmental Impact Assessment - Context

EIA is a key instrument of European Union environmental policy and a procedure required under the terms of European Union Directive 2014/52/EU on assessment of the effects of certain public and private projects on the environment. Article 2 of the Directive requires, inter alia, that “Member States shall adopt all measures necessary to ensure that, before consent is given, projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects.” Article 8 requires that “The results of consultations and information gathered pursuant to [the EIA process] must be taken into consideration in the development consent procedure”.

The Marine Works (EIA) Regulations 2007 (as amended) incorporate the European Environmental Impact Assessment (EIA) Directive into UK law. The Directive aims to ensure that the authority giving the consent for projects is aware of any likely significant environmental effects before making its decision.

1.3.3 Screening Opinion

In preparation of the marine licence application, a formal screening opinion is sought from Natural Resource Wales (NRW) on the need for an EIA in respect of the proposed development, in accordance with Part 2, Regulation 11 of the Marine Works (EIA) Regulations 2007 (as amended).

1.3.4 Scoping Opinion

On the assumption that the Proposed Development will be determined by NRW as constituting EIA development, in accordance with Part 3, Regulation 13 of the Marine Works (EIA) Regulations 2007 (as amended) a Scoping Opinion is also sought.

In accordance with Schedule 4, Regulation 13(2) of the Marine Works (EIA) Regulations 2007 (as amended), this request for a scoping opinion is accompanied by the following information: -

- (a) a chart, plan or map sufficient to identify the location of the regulated activity and of other activities to be carried out in the course of the project;*
- (b) a brief description of the nature and purpose of the project and the regulated activity and their possible effects on the environment; and*
- (c) such other information or representations as the applicant may wish to provide or make.*

The Scoping Opinion is sought in order to NRW as the appropriate consenting authority to reach a scoping opinion as per Regulation 13, Part 3 of the EIA Regulations.

1.4 Structure of the Scoping Report

This scoping report sets out the topics for consideration and a summary of their relevance to the Proposed Development

Table 1 Structure of Scoping Report

Topic	Chapter	Author
Introduction	Chapter 1	RPS
Project Description	Chapter 2	RPS
Population & Human Health	Chapter 3	RPS
Biodiversity Marine	Chapter 4	RPS
Biodiversity – Terrestrial and Birds	Chapter 5	RPS
Coastal Processes	Chapter 6	RPS
Water Resources & WFD	Chapter 7	RPS
Flood Risk	Chapter 8	RPS
Noise & Vibration	Chapter 9	RPS
Underwear Acoustics	Chapter 10	RPS
Air Quality & Climate	Chapter 11	RPS
Archaeology, Architectural & Cultural Heritage	Chapter 12	RPS
Soils, Geology and Geohydrology	Chapter 13	RPS
Land Use and Material Assets	Chapter 14	RPS
Transport	Chapter 15	RPS
Seascape, Landscape & Visual	Chapter 16	RPS
Waste	Chapter 17	RPS
Risk of Major Accidents & Disasters	Chapter 18	RPS
Conclusion	Chapter 19	RPS

2 PROJECT DESCRIPTION

2.1 Background

Stena Line wish to replace their existing temporary arrangement of a linkspan and jack up barge and provide a replacement pontoon to allow safe berthing of the ferry at Fishguard in the long term.

Stena Line own a floating pontoon which they wish to relocate to Fishguard. Civils works will be required to enable access and utilisation of the pontoon for the ferry traffic, to include land reclamation and rock armour revetment construction. Landside works will be required to adjust traffic and pedestrian routes to service the new floating pontoon. Dredging works are also proposed, these cover maintenance dredging of the berth, capital dredge of the navigation channel and beneath the pontoon to allow sufficient depth, and soft material removal to allow construction of the reclaimed area.

The project involves several key activities aimed at enhancing the infrastructure and operational capabilities of the harbour.

Firstly, the construction of a new reclamation area will be undertaken. This area will feature an asphalt surface and will be built on reclaimed land, which will be retained using a rock armour revetment. To facilitate the construction of this reclaimed land, dredging of soft material behind the new berth will be necessary. Additionally, dredging to a depth of -9mCD beneath the pontoon will be carried out to ensure sufficient depth for operations. Maintenance dredging of the harbour will also be conducted to maintain depths of -7.3mCD and -5.5mCD.

A reinforced concrete bank seat structure will be constructed to support the pontoon at the edge of the reclamation. This structure is expected to be a piled bank seat, likely using rotary installed steel tubular piles filled with concrete. The installation of the pontoon and its supporting guide pile will follow, with the pile being rotary bored and partially filled with concrete. The installation of the guide pile will require two steel piles to be installed temporarily. These will be approximately 1.22m in diameter.

The project will also involve the removal of the existing temporary jack-up barge, which will be floated away without the need for demolition. One of the existing 'buffer dolphin' tower structures and the operations room will be demolished, along with the removal of the steel access bridge and the demolition of the existing suspended concrete deck structure. It is not a piled structure; the columns are placed directly on the seabed (rock). The existing disused RNLI jetty will be demolished to enable the reclamation works. The area beneath existing RNLI slipway will be enveloped into the reclamation. The landside in this area around the slipway consists of concrete or block retaining walls, rock rubble revetment or exposed bedrock,

On the landside, changes will be made to road markings, car parking, and the movement of passenger access and footways. No works are planned for the railway station or rail line.

In terms of services, the pontoon will be equipped with electricity. Drainage provision will be made for the new surfacing, and ducting will be installed for communications and future provisions.

2.1.1 Site Location

The application site is located within Goodwick/Fishguard, Pembrokeshire (central grid reference 195171.227: 238812.970).

The site is a parcel of land spanning an area of approximately 36 hectares of the harbour, to include the existing linkspan, hinterland and within the bayforeshore.

The port was created in the 1910s by reclaiming land at the base of the headland. The site is indicated on the Site Location Plan Figure 2-1 Site Location as shown below and appended to this report.



Figure 2-1 Site Location

The site lies within the northern fringes of Goodwick which is a coastal town immediately west of its twin town of Fishguard, within Fishguard Bay. It is bound by steep cliff faces and the Fishguard Train Station to the western extents; a breakwater to the north and RNLI Lifeboat Station. Residential properties of Harbour Village lie to the west elevated above Fishguard Bay. The site is accessed from the A40/Station Hill to the south. The current Stena Line operation includes a twice daily ferry service to Rosslare, covering public ferry passengers and accompanied and unaccompanied freight. The berth is also infrequently used by cruise vessels and historic steamboats.

2.2 Project Need

The existing temporary linkspan and jack up barge does not provide a long-term safe solution for the ferry at the berth and Stena Line wish to remedy this by providing a replacement pontoon.

This Proposed Development will provide ongoing conventional ferry service to and from Fishguard in Wales and Rosslare in Ireland, Stena Line is the sole ferry operator at Fishguard Harbour providing two daily ferry crossings all year round on the Stena Nordica.

3 POPULATION & HUMAN HEALTH

3.1 Baseline Scenario

3.1.1 Study Area

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development on population and human health.

The approach to scoping, including setting a geographic scope of human health study areas, follows the Institute of Environmental Management and Assessment (IEMA) 2022 guidance 'Effective Scoping of Human Health in Environmental Impact Assessment' (Pyper et al., 2022a).

In EIA the human health assessment explains the public health implications of the conclusion of other relevant EIA assessments. Consequently, the human health assessment is informed by the study areas, zones of influence and receptors impacted or potentially impacted by other EIA chapters. This enables the effects on population health to be understood. However, the study areas for these topics do not necessarily define the boundaries of potential population health effects. As such, the human health assessment also defines human health study areas in order to characterise the representative population groups. As the relevant population varies depending on the determinant of health discussed, a range of health study areas are used:

- Site-specific health study area: Goodwick and Fishguard Northeast Wards
- Local health study area: Pembrokeshire local authority district (LAD)
- National health study area: Wales

The wider determinants of health and health inequalities are key considerations when undertaking an assessment of human health as part of EIA. The following population groups are present and would be considered:

- The 'general population' including residents, workers, service providers, and service users; and
- The 'vulnerable group population' including potential vulnerability due to: young age, older age, low income, poor health status, social disadvantage, restricted access or geographic proximity to the Project's activities.

3.1.2 Data Sources

The following information has been considered during the scoping process and additional detail and analysis would be set out within the Environmental Statement (ES) for the relevant determinants of health scoped into the EIA process.

Data on health-related statistics would be sought to highlight key sensitivities at the local authority level and for representative wards. The health baseline would be used to characterise the sensitivity of the relevant populations rather than to delineate the extent of particular effects. This is appropriate given that, for example, mental health effects may extend well beyond the actual area of environmental change or socio-economic benefit.

Key data sources for the ES health assessment are set out below:

- Welsh Government Catalogue (Welsh Government, 2024)
- Public Health Outcomes Framework for Wales reporting tool (Public Health Wales, 2024a)
- Data (Public Health Wales) (Public Health Wales, 2024b)

- WIMD Maps from 2019 (Welsh Government, 2019)
- Google Earth Pro aerial and street level photography review

3.1.3 Baseline data

The following section discusses baseline data set out **Error! Reference source not found..** The data is from the Office for Health Improvement and Disparities (OHID) Fingertips Local Health data tool and the Office for National Statistics accessed on 22nd November 2024. At this stage, baseline indicators have been selected to provide a general coverage of the wider determinants of health. The ES will report on further data.

Table 2.1 General Health

Indicators	Site specific		Local	National
	Fishguard: Northeast Ward	Goodwick Ward	Pembrokeshire	Wales
General Health				
Very good or good health %	76.7	78.7	80.4	78.6
Fair health %	16.3	14.2	13.6	14.5
Very bad or bad health %	7.0	7.1	6.0	7.0
Life Expectancy				
Healthy Life expectancy at birth for males (year)	Not available	Not available	61.8	61.1
Healthy Life expectancy at birth for females (year)	Not available	Not available	65.8	60.3
Healthy lifestyles				
Adults meeting physical activity guidelines %	Not available	Not available	55.5	55.4
Deprivation				
Overall deprivation (WIMD)	50% least deprived	50% most deprived	Not applicable	Not applicable

Considering general health in the site-specific study area, the majority of the population reported to be in very good or good health, consistent with the national averages. 76.7% of people in Fishguard northeast Ward reported to be in good to very good health, which is slightly lower than the national average of 78.6%. In Goodwick Ward 78.7% reported to be in good to very good health, which is similar to the national average. 16.3% of the population in Fishguard northeast and 14.2% in Goodwick reported to be in fair health. 7% of the population in Fishguard northeast Ward and 7.1% in Goodwick Ward reported to be in bad or very bad health which are both similar to the national average of 7.0%.

Similarly, in the local study area, the majority of the population reported to be in very good or good health with less than 10% reporting to be in bad to very bad health. 80.4% of people in Pembrokeshire reported to be in good to very good health, which is higher than the national average of 78.6%. Pembrokeshire has a proportion of 13.6% of people who reported to be in fair health which is slightly lower than the national average of 14.5%.

Only 6% of the population reported to be in bad to very bad health in the district which is slightly lower than the national average of 7%.

Health life expectancy at birth, i.e. the average number of years a person can be expected to live in full health in Pembrokeshire is similar for males (61.8 years) and higher for females (65.8 years) compared to the national averages (61.1 years for males and 60.3 years for females).

The levels of physical activity in the local authority area are similar to those nationally. The percentage of adults meeting physical activity guidelines in Pembrokeshire (55.5%) is similar to the national average (55.4%).

Using deprivation as a health resilience indicator, Deprivation Mapping shows pockets of deprivation within the study area. Goodwick falls within the 50% most deprived nationally. On the other hand, Fishguard Northeast falls within the 50% least deprived nationally.

3.1.3.1 Vulnerable groups including social disadvantage equality considerations.

Relevant protected characteristics are listed in **Table 3.1** to consider the potential for any disproportionate effects that may arise due to the distribution of such characteristics within the population. Protected characteristics not shown in **Table 3.1** have been reviewed and are not considered to have relevant links to health outcomes that may be influenced by this Project.

Table 3.1: Relevant Protected Characteristics

Indicators	Site specific		Local	National
	Fishguard: Northeast Ward	Goodwick Ward	Pembrokeshire	Wales
Sex				
Male %	52.0	51.1	51.3	51.1
Female %	48.0	48.9	48.7	48.9
Age				
% age 0 to 15	15.4	16.9	16.9	17.7
% age 16 to 64	49.7	58.7	56.9	61.0
% aged 65 and over	34.9	24.3	26.2	21.4
Disability				
Disabled under the Equality Act	23.5	21.7	20.3	21.6
Not disabled under the Equality Act	76.5	78.3	79.7	78.4
Language Barriers				
Population who cannot speak English well or at all (%)	0.2	0.5	0.3	0.7
Ethnicity				
Asian, Asian British or Asian Welsh %	0.7	0.7	0.9	2.9
Black, Black British, Black Welsh, Caribbean or African %	0.3	0.2	0.2	0.9
Mixed or Multiple Ethnic groups %	0.4	0.7	0.9	1.6
White %	97.9	98.2	97.6	93.8
Other ethnic group %	0.7	0.1	0.3	0.9

Source: Office for National Statistics (ONS, 2024)

In terms of population age profile, compared to the national average, there are fewer young people and working age people and more older people in the site specific study area compared to the national average. Fishguard northeast has a proportion of 15.4% and Goodwick, a proportion of 16.9% of children and young people aged 0-15 years which are both lower than the national average of 17.7%. For the working age population, Fishguard northeast has a proportion of 49.7%, and Goodwick, a proportion of 58.7% which are both lower than the national average of 61.0%. An opposite trend is observed in the elderly population; Fishguard northeast has a proportion of 34.9% of people who are aged 65 and over which is notably higher than the national average of 21.4%. Similarly, Goodwick ward has a proportion of 24.3% of the elderly population which is slightly higher than the national average.

Considering disability and limiting conditions, 23.5% of people in Fishguard northeast have a disability under the Equality Act which is higher than the national average of 21.6% and 21.7% of people in Goodwick have a disability under the Equality Act which is similar to the national average. The majority of the population across the study area have no disability or limiting condition. Fishguard northeast has a proportion of 76.5% which is slightly lower than the national average of 78.4% and Goodwick has a proportion of 78.3% of people with no disability or limiting condition which is similar to the national average.

Considering language proficiency, relevant to communicating findings and mitigations, Fishguard northeast has a proportion of 0.2% and Goodwick, 0.5% of the population who cannot speak English well or at all which is lower (better) than the national average of 0.7%.

In terms of ethnicity, the majority of the site-specific study area population identify as white, consistent with the national averages (Fishguard northeast has a proportion of 97.9% and Goodwick, a proportion of 98.2%, which are higher than the national average of 93.8%). The proportion of people who identify as Asian in Fishguard northeast and Goodwick is 0.7% which is lower than the national average of 2.9%. Fishguard northeast has 0.3% and Goodwick 0.2% of people who identify as black which are both lower than the national average of 0.9%.

The groups listed in **Table 3.1** will be considered in the assessment including the potential for social disadvantage.

3.2 Legislative and Policy Context

The following key legislation and policy documents relevant to human health will be considered within the assessment:

- Pembrokeshire Adopted Local Development Plan (Pembrokeshire County Council, 2013) -sets out the development strategy and policies to guide the development and use of land in Pembrokeshire
- Planning Policy Wales (PPW) (Welsh Government, 2024)
- Technical Advice Notes (TAN) (Welsh Government, 2017)
- Wellbeing of Future Generations (Wales) Act (Welsh Government, 2015)
- Future Wales - The National Plan 2040 (Welsh Government, 2021)
- Health and Safety at Work Act 1974 (HM Government, 1974).
- International Convention for the Prevention of Pollution from Ships (MARPOL) 1973 (International Maritime Organisation, 1973).
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

3.3 Potentially Significant Effects

3.3.1 Construction and Operation Phase

Health and wellbeing are influenced by a range of factors, termed the ‘wider determinants of health’. Determinants of health span environmental, social, behavioural, economic and institutional factors. Determinants therefore reflect a mix of influences from society and environment on population and individual health.

The Human Health chapter aims to be proportionate and would consider only those determinants of health with the potential for likely and significant population health effects.

A change in a determinant of health affects does not equate directly to a change in population health. Rather the change in a determinant alters risk factors for certain health outcomes. The assessment considers the degree and distribution of change in these pathways. The analysis of health pathways focuses on the risk factors and health outcomes that are most relevant to the determinants of health affected by the Project. As there are both complex and wide-ranging links between determinants of health, risk factors and health outcomes, it would not be proportionate or informative for an assessment to consider every interaction.

The IEMA 2022 guidance ‘Effective Scoping of Human Health in Environmental Impact Assessment’ (Pyper et al., 2022a) Table 3.1 sets out a list of 21 determinants of health to consider during scoping. These form the basis for the scoping undertaken in Section 3.4 below.

3.4 Inclusion or Exclusion from EIA

The impacts that have been scoped into the Project assessment are outlined in **Table 3**.

At this stage, the potential impacts to population health that have been scoped out of the assessment are described in **Table 3.4**.

Table 3.3: Issues scoped into the EIA

Categories	Wider determinant s of health	Project Phase (tick is scoped in)		Justification (including consideration of embedded mitigation measures)
		C	O	
Social environment	Transport modes, access and connections	✓	✓	Construction: Onshore vehicle transport relates to the movement of goods, materials, people and plant to and from the port. Consideration will be given to the road infrastructure (A40, Quay Road). Consideration will be given to the potential for significant population health effects due to changes in: routine or emergency health related journey travel times; access to health promoting goods and services; community severance; and road safety. Any temporary disruptions to the Royal National Lifeboat Institution (RNLI) services during construction will also be considered in the health assessment. There is potential for construction to affect recreational sea users at Lower Fishguard Harbour including sea kayakers and sail boats used for leisure boating. This issue is scoped in for further assessment. Operation: The operational transport benefits of the Project are scoped in. The Project will improve safety of the Fishguard berth, providing long-term safe berthing for the Stena line ferry service linking Fishguard to Rosslare, Ireland. The assessment will consider the benefits of continued transport links between Fishguard and Rosslare including the economic impact on the local communities. The benefit of improved mobility access to the ferry for passengers is also noted and scoped in for further assessment.
Bio-physical environment	Air quality	✓		Construction: Air quality, including dust are scoped in. Project activities include demolition of the existing buffer dolphin tower structures, operations room, and concrete deck structure and construction of the Project infrastructure. These have the potential to emit dust. The health chapter will be informed by the air quality risk assessment undertaken for the project. Statutory limits, i.e. health protection standards for other air pollutants, will be used as a benchmark as appropriate. The potential for non-threshold health effects of some air pollutants will be discussed as appropriate and taken into account.
	Noise and vibration	✓		Construction: Noise effects during construction including demolitions, are scoped in. This reflects that the activities at the port and vehicle movements along the highway network would generate noise, the scale, timing or character of this should be investigated to determine the potential for adverse effects on population health and wellbeing. The health chapter will be informed by the noise and vibration assessment of changes to daytime and night-time noise on receptors including users of the Goodwick beach, nearby residential areas in Fishguard and Goodwick, users of the Ocean Lab Aquarium, Goodwick Sands Plan Area, Goodwick Scout Group and Phoenix Community Centre and Park. Consideration will also be given for effects along the Pantycelyn and Marine Walk across the bay. Consideration will be given to population health effects, for example related to annoyance and sleep disturbance.
	Water Quality	✓		Project works during construction, could create or mobilise pollutants through water pathways leading to potential toxin exposures through dermal contact or

Categories	Wider determinant s of health	Project Phase (tick is scoped in)	Justification (including consideration of embedded mitigation measures)
		C O	
			ingestion. Dredging works are proposed, including capital dredge beneath the pontoon to allow sufficient depth and soft material removal to allow construction of the reclamation area. Works may mobilise pollutants from historic contamination. New pollution risk and mobilisation of historic contaminants are both scoped in to consider the potential for impact on human health, including at Harbour Beach and Goodwick Beach.

Table 3.4: Issues Scoped Out of the EIA

Categories	Wider determinants of health	Project Phase (tick is scoped out)	Justification (including consideration of embedded mitigation measures)
		C O	
Health related behaviours	Physical activity	✓ ✓	Construction and Operation: Construction, and operational workforce health promotion will be considered as a good practice enhancement measure but is otherwise scoped out. Community physical activity is discussed under the Open space, leisure play health determinant. To avoid duplication this issue is scoped out.
	Risk taking behaviour	✓ ✓	Construction and Operation: Issues of community health behaviours being detrimentally affected by the presence of the construction, and operational workforces are scoped out. It is assumed that the majority of the workforce lives in the local/regional area, and interactions with the public would be minimal. The workforce is unlikely to be sufficiently large in number to affect local markets, e.g. for alcohol, cigarettes or gambling, to an extent which could significantly affect community health. Healthy workforce behaviour would be encouraged through health and safety management systems with reference to the Health and Safety at Work Act, 1974 (HM Government, 1974). There is not considered to be the potential for a likely significant population health effect associated with risk taking behaviour by the workforces; this issue is scoped out. There is not considered to be the potential for a likely significant population health effect associated with risk taking behaviour by the workforces, this issue is scoped out. The issue of communicable illness is noted but scoped out. The project will operate appropriate measures to safeguard the project workforce and the public in line with Government guidance of the day, including in relation to vessel crews. Risks are similar to other routine construction and shipping activities.

Categories	Wider determinants of health	Project Phase (tick is scoped out)	Justification (including consideration of embedded mitigation measures)
		C O	
	Diet and nutrition	✓ ✓	Construction and Operation: Project activities are neither expected to require agricultural land take, nor disrupt food related production or transport. Effects on diet due to impacts to commercial fisheries have been considered. The changes are not considered likely to affect availability or price of food to a degree that could affect population health.
Social environment	Open space, leisure and play	✓ ✓	Construction: The construction phase of the Project may lead to temporary disruption, as well as accesses to, or use of (due to e.g. construction noise), public open spaces, and recreational space along the Goodwick beach. This will be discussed under the 'Noise and Vibration' determinant scoped in in Table 3 . Onshore works will be required to adjust pedestrian routes to service the new floating pontoon for the Project. However, the predominant use of pedestrian and cycle routes within the Project boundary relate shipping service access rather than recreation. Disruption to the beach in terms of recreational access is therefore unlikely. Temporary construction disruption of accesses to green and blue open space is scoped out. There are no changes to green and blue open spaces including leisure and play anticipated during operations. This issue is scoped out at this stage.
	Housing	✓ ✓	Construction and Operation: Housing related issues are scoped out. No new housing is proposed. The construction workforces will have housing requirements, but it is expected that a high proportion will be resident in the local or regional area. The project workforce numbers have yet to be confirmed. Any temporary accommodation requirements would be met through usual capacity within the region. There is not considered to be the potential for a likely significant population health effect associated with changes in the availability of housing. Health effects associated with housing are therefore scope out on the basis of the anticipated capacity in the local housing market.
	Relocation	✓ ✓	Construction and Operation: Construction and operation works would not involve compulsory land purchases of homes or community facilities. This issue is scoped out.
	Transport modes, access and connections	✓	Operation Onshore: The Project infrastructure is expected to have minimal implications for road transport, with activity limited to checks and maintenance. It is unlikely that there would be the potential for significant population health effects due to changes in: routine or emergency health related journey travel times; access to health promoting goods and services; community severance; or road safety. This issue is scoped out.
	Community safety	✓ ✓	Construction and Operation: The project workforce requires skilled technical roles. There are not anticipated to be community safety or security issues associated with worker behaviour in the port or communities. The project and its contractors would operate appropriate safeguarding and modern slavery policies. Workforce behaviour and policies would be outlined in a workforce

Categories	Wider determinants of health	Project Phase (tick is scoped out)	Justification (including consideration of embedded mitigation measures)
		C O	
			management plan. The potential for widespread actual or perceived crime that could affect population health is unlikely. This issue is scoped out. Where demolitions or excavations are undertaken these would be within controlled work areas, including use of appropriate fencing, exclusion zones and notifications as required. Best practice measures would be secured through suitable management plans. The risk to the public from accidental injury, e.g. falls or drowning is scoped out. Electrical risks to the public would be avoided through the design, including fencing of above ground electrical infrastructure. These issues are scoped out. The potential for disruption and the safety of leisure users of the harbour area will be assessed under the 'Transport modes, access and connections' determinant scoped in in Table 4. To avoid duplication, this issue is scoped out here.
	Community identity, culture, resilience and influence	✓ ✓	Construction and Operation: Visual impacts of activities at the harbour, including construction and operational lighting, are unlikely to be on a scale that could affect population health. Temporary lighting and temporary changes in views during construction, are not expected to influence community identity or disrupt community gatherings to an extent that could affect population health. This issue is scoped out.
	Social participation, interaction and support	✓ ✓	Construction and Operation: The project will not directly affect land used for community interaction (e.g. meeting places, village greens, community centres etc that promote community voluntary, social, cultural or spiritual participation). This issue is scoped out. Any indirect impacts on access to such spaces is addressed under the "Transport modes, access and connection" health determinant.
Economic environment	Education and training	✓ ✓	Construction and Operation: A large influx for workers, including those bringing families, is not expected, so changes to educational capacity or quality are unlikely and are scoped out.
	Employment and income	✓ ✓	Construction and Operation: The project would operate appropriate employment equality policies but is not expected to influence how employment affects family structures and relationships in local populations. Occupational working conditions include particular risks, which are appropriately managed through health and safety policies and practices. Project activities are not expected to differ from industry norms. These issues are scoped out. The Project may generate opportunities for temporary construction employment. However, these are not at a scale with significant population health effect. This issue is scoped out. Any international supply chain would be expected to operate appropriate policies that safeguard against significant population challenges to equality, health and safety, for both workers and, as appropriate, the public. These issues are scoped out

Categories	Wider determinants of health	Project Phase (tick is scoped out)	Justification (including consideration of embedded mitigation measures)
		C O	
Bio-physical environment	Climate change and adaptation	✓ ✓	Construction and Operation: Embodied carbon and climate altering pollutant emissions during construction, and operation are not of a scale to have the potential for population level effects associated with climate change. This issue is scoped out.
	Air Quality	✓	During operation, the Project is not expected to change air quality emissions, even accounting for non-threshold effects, that could affect onshore populations to a degree that there could be potentially significant effects. This issue is therefore scoped out.
	Noise and Vibration	✓	During operation, port activities would generate noise but this is not expected to be of a scale, timing or character that differs from existing operational port levels to a degree that there could be potentially significant for population health. This issue is therefore scoped out.
	Water quality or availability	✓	Operational works are not anticipated to raise any new issues with regards to changes to pollution risk of water quality to a degree that there could be potentially significant for population health. This issue is therefore scoped out during operations.
	Land quality	✓ ✓	Construction and Operation: Dredging activities are expected during construction which pose the potential for historic contamination. Whilst these offer potential risks, particularly during construction, mobilisation of pollutants would likely be through water and air pathways. Impacts on any new or historic contamination that may be mobilised by Project activities will be discussed under the Water Quality and Air Quality determinants scoped in in Table 3. The Project would also include standard best practice contamination avoidance and response measures to accidental or historic contamination secured through management plans. This includes mitigating against dust and aerosol exposure pathways directly to people. To avoid duplication, pollution risk issues through historic contamination are scoped out.
	Radiation	✓ ✓	Construction and Operation: Non-ionising electro-magnetic field (EMF) effects are scoped out on the basis that the Project does not include major electrical infrastructure such as powerlines and substations and would not generate electrical energy for re-use. Public understanding of risk in relation to operational EMF is also scoped out on this basis.
Institutional and environment	Health and built social care services	✓ ✓	Construction and Operation: Effects on health and social care are scoped out. The project workforce is assumed to include specialists as well as subcontractors who are resident in the regional area. It is assumed that all persons entitled to NHS treatment through nationality or residence will receive NHS care as required and all other personnel will be covered by health insurance provided by their employer. The expectation is that the great majority of healthcare needs of the construction workforce will be met by their usual healthcare provider. The project program and workforce assumptions that will

Categories	Wider determinants of health	Project Phase (tick is scoped out)	Justification (including consideration of embedded mitigation measures)
		C O	
			be set out in the EIA would support routine healthcare service planning. The project will operate appropriate occupation health services. It is not expected that a high proportion of workers would move to the area with dependants requiring social care. Health protection measures such as screening and immunisations are expected to continue from the workers' usual place of residence. Similarly routine dental appointments are assumed to be with the worker's dental practice close to their usual place of residence. Other health services are not expected to be affected as no largescale in-migration is expected and the workforce of skilled technical roles would return to their usual places of residence.
	Built environment	✓ ✓	Construction and Operation: utilities disruption is unlikely and any crossing of existing power or communications cables would be managed to avoid interruption. Appropriate waste management practices would be used, including regard to the MARPOL regulations on waste at sea. Significant population health implications are not anticipated and are scoped out. Operational activities are not considered to have waste management, land use or infrastructure use implications on a scale that could affect population health. These issues are scoped out.
	Wider societal infrastructure and resources	✓ ✓	Construction and Operation: The project would not generate further public health benefits through wider infrastructure that warrants assessment. This issue is scoped out.

3.5 EIA Assessment Methodology

The wider determinants of health and health inequalities are key considerations when undertaking an assessment of human health as part of EIA.

A population health approach will be taken, informed by discussion of receptors within other EIA chapters. For each determinant of health, the human health chapter will identify relevant inequalities through consideration of disproportionate or differential effects between the 'general population' of the study area and effects to the 'vulnerable population group' of that study area.

The methodology will use best practice as published by IEMA (Pyper et al., 2022b), supported by relevant health impact assessment (HIA) and health in EIA guidance, listed in Table 3.3.

Table 3.3 Relevant guidance for human health assessment

1 Guidance	2 Relevance
3 IEMA 2022 guidance on health in EIA series, effective scoping (Pyper et al., 2022a) and determining significance (Pyper et al., 2022b).	4 Practitioner guidance on the coverage of human health in EIA for England, Wales, Scotland, Northern Ireland and the Republic of Ireland. This includes methods for determining population health sensitivity, magnitude and significance. This is the key methods citation.
5 Wales Health Impact Assessment Unit (WHIASU) Health Impact Assessment practical guide (2021)	6 Practitioner guidance on HIA practice in Wales.
7 International Association for Impact Assessment (IAIA) and European Public Health Association (EUPHA). A reference paper on addressing Human Health in EIA (Cave et al., 2020).	8 This international consensus piece informed the IPH 2021 guidance. The publication explains EIA for public health stakeholders and sets out transparent assessment approaches adopted by the IPH.
9 IAIA Health Impact Assessment International Best Practice Principles, 2021 (Winkler et al, 2021).	10 Confirms the relationship between HIA and EIA. Confirms the application of HIA principles when undertaking health in EIA.
11 WHIASU Quality Assurance Review Framework for HIA (WHIASU, 2017)	12 A toolkit that can be used to review the quality of HIA reports.

The methods use the World Health Organization (WHO) definition of health, which states that health is a *"state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity"* (World Health Organization, 2020).

The methods use the WHO definition for mental health, which is a *"a state of mental well-being that enables people to cope with the stresses of life, to realize their abilities, to learn well and work well, and to contribute to their communities"* (World Health Organization, 2022)

A range of data sources will be collated and analysed in line with good practice guidance. Scientific evidence, baseline data and local health priorities will be referenced. Policy analysis, regulatory standards and consultation themes will also inform the significance conclusions. Magnitude and sensitivity considerations will be reported for each determinant of health, including for the general population and vulnerable groups. A qualitative analysis setting out reasoned conclusions will provide an evidence-based narrative for each determinant of health.

Where significant adverse population health effects are identified, including for vulnerable groups, then mitigation will be proposed to avoid or reduce the effects. Mitigation will be secured as part of the Project's design or development consent. In line with good practice, a proportionate approach will be taken for identifying opportunities to enhance beneficial population health effects, including for vulnerable groups.

Where proportionate, monitoring will be proposed and governance described, for example, in relation to any residual significant adverse effects or instances where there is high uncertainty on the efficacy of secured mitigation.

3.6 Preliminary Mitigation Measures

3.6.1 Construction Phase

The human health assessment will take as its input the residual effect conclusions of the inter-related EIA technical disciplines. In this regard the health assessment relies on the measures set out in those chapters including Water Resources in Section 7, Noise and Vibration in Section 9, Air Quality in Section 11, and Transport in Section 15. To avoid duplication, these are repeated here.

3.6.2 Operation Phase

The human health assessment will take as its input the residual effect conclusions of the inter-related EIA technical disciplines. In this regard the health assessment relies on the measures set out in those sections including Water Resources in Section 7, Noise and Vibration in Section 9, Air Quality in Section 11, and Transport in Section 15 of this EIA Scoping Report. To avoid duplication, these are repeated here.

3.7 Interactions

The inter-related effects between determinants of health will be considered, including how these are distributed geographically and in terms of vulnerable population groups.

3.8 Summary of Scoping Exercise

A proportionate and evidence-based approach to the EIA health chapter scoping has been undertaken. Scoping has followed the IEMA 2022 list of determinants of health and population groups (Pyper et al., 2022a). The following issues have been scoped in for further assessment at ES stage:

- Transport modes, access and connections
- Air quality
- Noise and vibration
- Water quality

Effects which are not considered to have the potential for 'likely significant population health effects' have been scoped out of the assessment. This is in line with a proportionate assessment as set out in guidance (Pyper et al., 2022a). Issues scoped out of the EIA Health Chapter are detailed in **Table** , including:

- Physical activity
- Risk taking behaviour
- Diet and nutrition
- Open space, leisure and play
- Housing
- Relocation
- Community Safety
- Community identity, culture, resilience and influence

- Social participation, interaction and support
- Education and training
- Employment and income
- Climate change and adaptation
- Land quality
- Radiation
- Health and social care services
- Wider infrastructure and resources
- Built environment

3.9 References

HM Government, 1974. Health and Safety at Work.

ONS, 2024. Official census and labour market statistics [WWW Document]. URL <https://www.nomisweb.co.uk/> (accessed 7.6.23).

Pembrokeshire County Council, 2013. Pembrokeshire Adopted Local Development Plan.

Public Health Wales, 2024a. Public Health Outcomes Framework for Wales reporting tool.

Public Health Wales, 2024b. Data.

Pyper, R., Lamming, M., Beard, C., Buroni, A., Douglas, M., Turton, P., Hardy, K., Netherton, A., McClenaghan, R., Barratt, T., Bhatt, A., Cave, B., Gibson, G., 2022a. IEMA Guide: Effective Scoping of Human Health in Environmental Impact Assessment. England: Institute of Environmental Management and Assessment.

Pyper, R., Waples, H., Barratt, T., Hardy, K., Turton, P., Netherton, A., McDonald, J., Buroni, A., Bhatt, A., 2022b. IEMA Guide: Determining Significance for Human Health in Environmental Impact Assessment. Institute of Environmental Management and Assessment.

Welsh Government, 2024. StatsWales: Detailed official data on Wales [WWW Document]. URL <https://statswales.gov.wales/Catalogue>

Welsh Government, 2024. Planning Policy Wales.

Welsh Government, 2021. Future Wales The National Plan 2040. Welsh Government.

Welsh Government, 2019. Welsh Index of Multiple Deprivation (WIMD) 2019 [WWW Document]. URL <https://wimd.gov.wales/>

Welsh Government, 2017. Technical advice notes.

Welsh Government, 2015. Well-being of Future Generations (Wales) Act 2015.

WHIASU, 2017. Quality Assurance Review Framework for Health Impact Assessment.

4 BIODIVERSITY – MARINE

4.1 Baseline Scenario

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development on marine biodiversity.

The marine biodiversity chapter covers the following receptors:

- Benthic subtidal and intertidal ecology (section 4.1.1);
- Fish and shellfish ecology (section 4.1.2); and
- Marine mammals (section 4.1.3).

For all three receptor groups, the Marine Biodiversity Study Area has been defined as Fishguard Harbour (**Figure 4-1**). This is due to the high levels of anthropogenic activity and man-made structures already present within the vicinity of the Planning Boundary (i.e. Fishguard Harbour), which represent an altered baseline environment, in comparison to the surrounding areas of the Pembrokeshire coast and offshore Welsh waters. Therefore, it is assumed that the marine biodiversity assemblage within the Fishguard Harbour is established and adapted to the anthropogenic activities associated with it, and it would not be comparable to areas along the nearby coast. Further, due to the nature and limited extent of the activities associated with the Proposed Development, a small study area is deemed to be appropriate, even for mobile receptors, such as fish and marine mammals. This study area encompasses the Planning Boundary, wherein all construction and operation activities will take place (**Figure 4-1**).

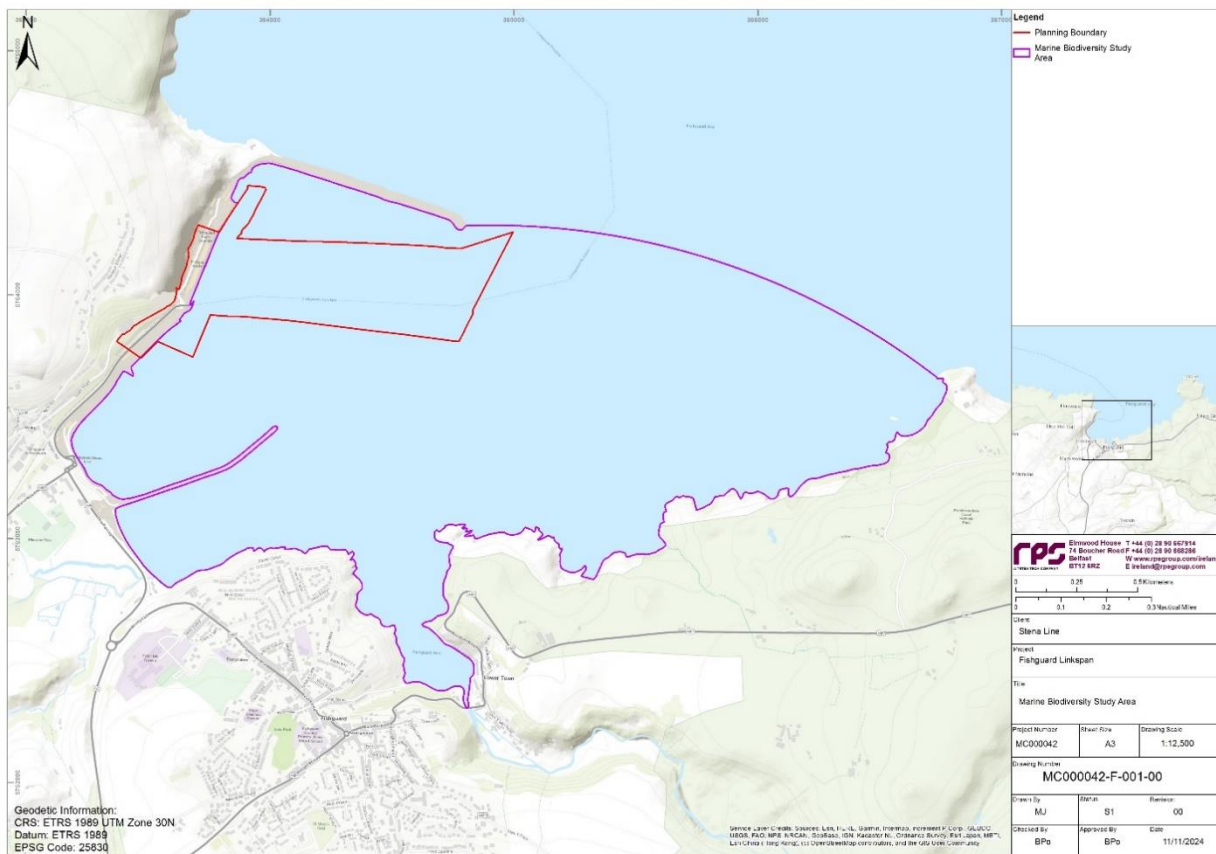


Figure 4-1: Marine Biodiversity Study Area

4.1.1 Benthic Subtidal and Intertidal Ecology

4.1.1.1 Data Sources

The primary data sources for the benthic subtidal and intertidal ecology baseline are the results of site-specific surveys conducted for previous works at the Fishguard Stena Line terminal:

- Fishguard Ferry Port Marine Ecology Surveys: site-specific subtidal and intertidal surveys for replacement linkspan works undertaken in June 2017 (ABPmer, 2018);
- Fishguard Drop-Down Video (DDV) Survey: DDV survey of predominantly subtidal habitats in Fishguard Harbour undertaken in October 2015 (Aquatic Environments (2015) cited in RPS (2018)); and
- Fishguard Harbour Littoral Biotope Mapping Survey: Phase 1 intertidal habitat survey undertaken at Goodwick Beach in 2011 (Aquatic Environments (2011) cited in RPS (2018)).

Within the EIA Report, further data sources will be used to expand upon the baseline presented here. These data sources will likely include some of the 'marine ecology datasets for marine developments' compiled on the NRW website (NRW, 2024a). Additional datasets recommended by stakeholders during the Scoping Opinion process and other consultation will also be considered.

In addition, a Phase 1 intertidal habitat survey may be undertaken within the Planning Boundary in spring 2025. If conducted, the results of this will also be used to inform the baseline within the EIA Report, and to update the now somewhat dated, previous intertidal survey which was conducted in 2017.

4.1.1.2 Brief Baseline Overview

Fishguard Harbour contains a wide variety of benthic habitats, with the seabed consisting of mud, fine sands and gravel, and patches of boulders, cobbles, and bedrock (RPS, 2018). The benthic environment within Fishguard Harbour is described in the following sections for the subtidal (section 4.1.1.2.1) and intertidal zones (section 4.1.1.2.2).

The EUSeaMap data (European Marine Observation and Data Network (EMODnet, 2024)) presents broad-scale sediment classifications in European waters. Although these EUSeaMap data do not fully extend into the Marine Biodiversity Study Area, they illustrate that the following seabed sediment classifications are present in some areas:

- circalittoral sandy mud;
- infralittoral sandy mud;
- moderate energy circalittoral seabed;
- moderate energy infralittoral seabed; and
- infralittoral rock and other hard substrata (Figure 4-2; (EMODnet, 2024)).

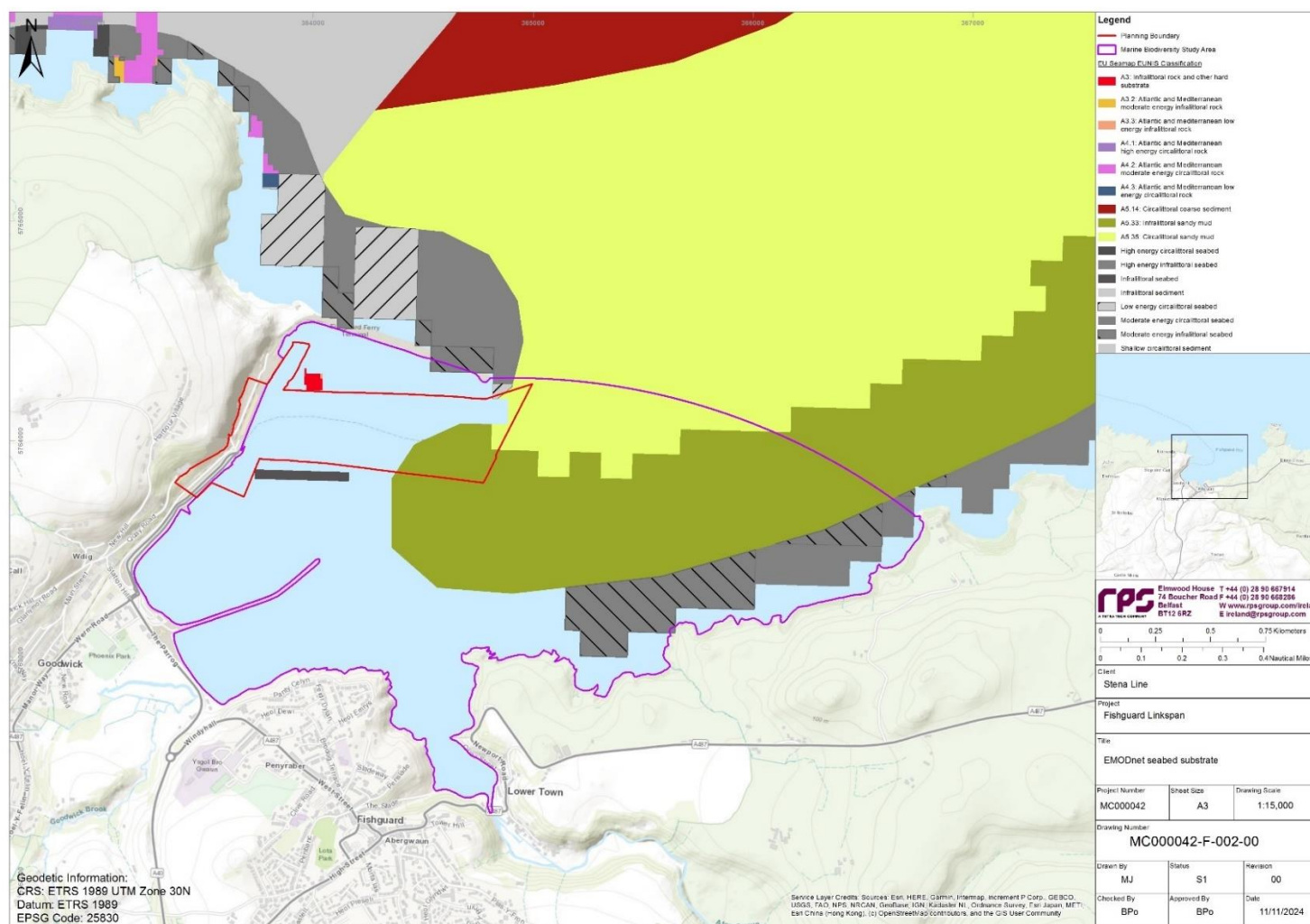


Figure 4-2: EUSaMap Habitat Classifications in the Vicinity of the Marine Biodiversity Study Area (EMODnet, 2024)

4.1.1.2.1 Subtidal Ecology

As detailed in section 4.1.1.1, the most recent subtidal (and infralittoral) survey was undertaken in the vicinity of the Planning Boundary in 2017 for a replacement linkspan at the Stena Line ferry terminal (ABPmer, 2018). Although the surveyed area was smaller than the Planning Boundary, the results are still relevant to characterise part of the baseline subtidal environment in Fishguard Harbour.

The sublittoral fringe below the quayside and rock armouring of the ferry terminal consisted of large boulders and other hard substrata with fronds of sugar kelp *Saccharina latissima* and oarweed *Laminaria digitata*. This was assigned the biotope 'Saccharina latissima and Laminaria digitata on sheltered sublittoral fringe rock' (IR.LIR.K.Slat.Ldig; Joint Nature Conservation Committee (JNCC), 2022 Classification) (ABPmer, 2018). Other flora recorded included dead man's rope *Chorda filum* and sea lettuce *Ulva lactuca*. In terms of fauna, the light bulb sea squirt *Clavelina lepadiformis* was present on boulders. There were some patches of sugar kelp recorded on sand, which was assigned the biotope 'Saccharina latissima and filamentous red algae on infralittoral sand' (SS.SMp.KSwSS.SlatR.Sa; JNCC 2022 Classification) (ABPmer, 2018).

In the subtidal zone, there were six grab sampling stations investigated, which ranged from 'slightly gravelly sand' to 'slightly gravelly muddy sand'. The total biomass ranged from 16 to 185 g per m², with the bivalve *Abra alba* contributing most to the total biomass (ABPmer, 2018). Key characterising species recorded in the grab samples included:

- polychaetes (*Aphelocheata marioni*, *Chaetozone gibber*, *Mediomastus fragilis*, and *Euclymene oerstedii*);
- bivalves (*A. alba*, *Varicorbula gibba*, *Kurtiella bidentata*, *Nucula hanleyi*, and *Thyasira flexuosa*); and
- brittlestars (*Amphiura filiformis* and Ophiuroidea) (ABPmer, 2018).

There were also a range of crustaceans recorded in low abundances, including brown shrimp *Crangon crangon* and amphipods, such as *Harpinia antennaria*.

The subtidal seabed sediment habitat was assigned the biotope 'Circalittoral muddy sand' (SS.SSa.CMuSa), which is illustrated in **Figure 4-3**, alongside the patches of 'Saccharina latissima and filamentous red algae on infralittoral sand' (SS.SMp.KSwSS.SlatR.Sa; JNCC 2022 Classification) (note that the Latin name for sugar kelp has since been updated to *Saccharina latissima* as opposed to *Laminaria saccharina*, as presented in **Figure 4-3**).

EIA SCOPING REPORT



Figure 4-3: Grab Sample Locations and the Results of the Site-Specific Intertidal and Subtidal Surveys Conducted in 2017 for a similar works at the Stena Line Fishguard Terminal

In 2015, DDV surveys were undertaken in Fishguard Harbour for another project. Most of the area surveyed in this study was assigned the biotope 'Arenicola marina in infralittoral fine sand or muddy sand' (SS.SSA.IMuSa.AreISa; JNCC 2022 Classification) (Aquatic Environments (2015) cited in RPS (2018)) (Figure 4-4). Patches of gutweed were also present on the seabed, which was assigned the biotope 'Filamentous green seaweeds on low salinity infralittoral mixed sediment or rock' (SS.SMp.KSwSS.FiIG; JNCC 2022 Classification) (Aquatic Environments (2015) cited in RPS (2018)) (Figure 4-4). There were two other biotopes recorded at one site each:

- 'Dense foliose red seaweeds on moderately exposed, silted, stable infralittoral rock' (IR.MIR.KR.XFoR; JNCC 2022 Classification); and
- '*Fucus serratus* and red seaweeds on moderately exposed lower eulittoral rock' (LR.MLR.BF.Fser.R; JNCC 2022 Classification) (Aquatic Environments (2015) cited in RPS (2018)) (Figure 4-4).

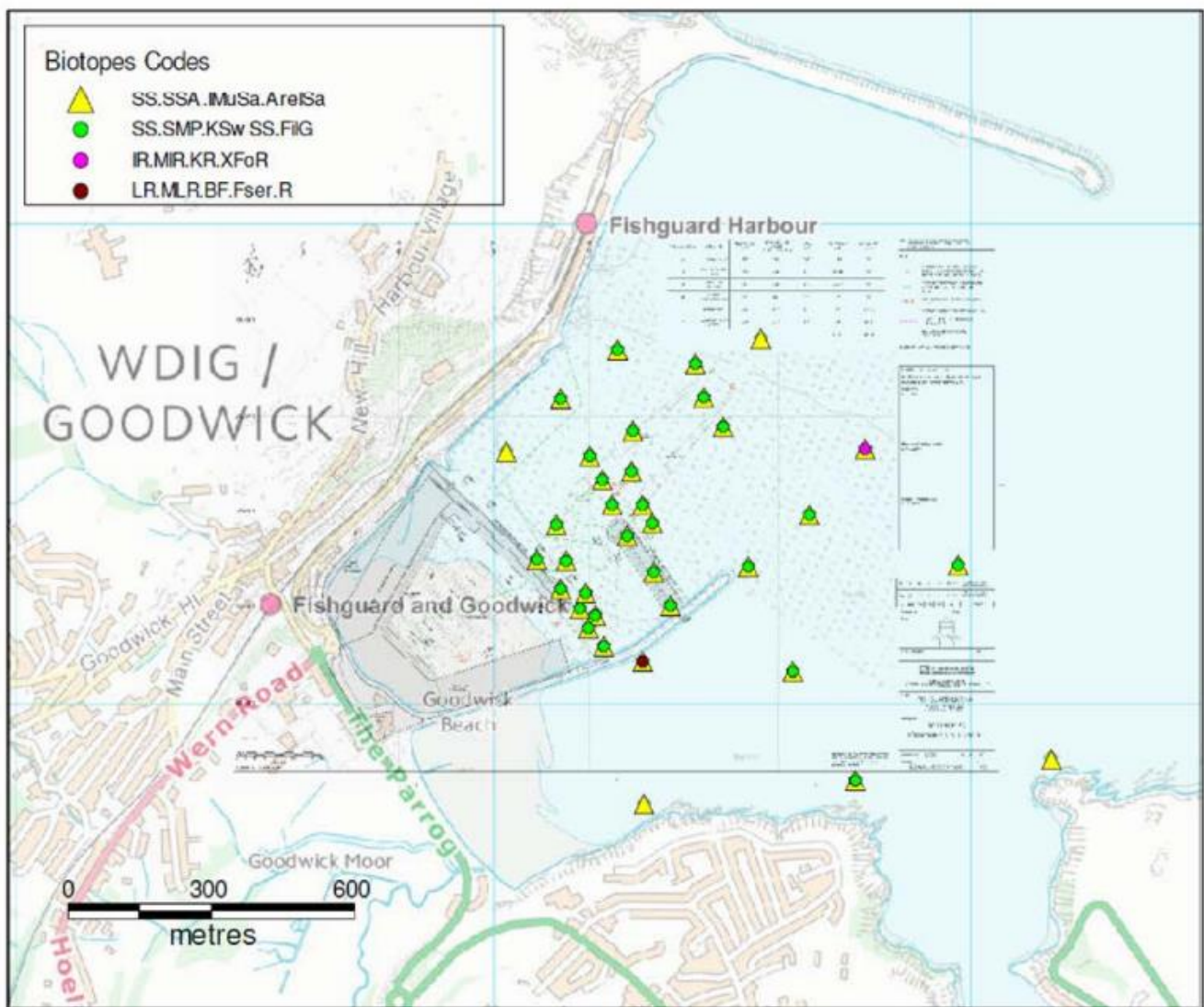


Figure 4-4: Subtidal Biotopes Recorded in a 2015 DDV Survey of Fishguard Harbour (Aquatic Environments (2015) cited in RPS (2018)).

4.1.1.2.2 Intertidal Ecology

As detailed in section 4.1.1.1, the most recent intertidal survey was undertaken in the vicinity of the Planning Boundary in 2017 for a replacement linkspan at the Stena Line ferry terminal (ABPmer, 2018). Although the surveyed area was smaller than the Planning Boundary, the results are still relevant to characterise part of the baseline intertidal environment in Fishguard Harbour. As per standard procedure, the results of the intertidal zone were presented for the lower, mid, and upper shore zones.

The lower shore was characterised by the following flora: fronds of oarweed, red seaweeds (such as Irish moss *Chondrus crispus*), and sea lettuce. The substrate was comprised of large boulders and cobbles (ABPmer, 2018). Underneath the boulders, the following fauna were recorded: broad-clawed porcelain crab *Porcellana platycheles*, barnacles *Semibalanus* spp., star ascidian *Botryllus schlosseri*, sea squirts *Aplidium nordmanni*, and polychaete worms *Spirobranchus* spp. Sponge species, such as *Hymeniacidon perlevis* were also recorded attached to boulders and anthropogenic concrete pillars in the lower shore (ABPmer, 2018). The lower shore was assigned the biotope 'Laminaria digitata and under-boulder fauna on sublittoral fringe borders' (IR.MIR.KR.Ldig.Bo; JNCC 2022 Classification). There were also patches of serrated wrack *Fucus serratus* on the lower shore, which were assigned the biotope 'Fucus serratus and red seaweeds on moderately exposed lower eulittoral rock' (LR.MLR.BF.Fser.R; JNCC 2022 Classification) (ABPmer, 2018). The under-boulder species assemblage was characteristic of the UK Biodiversity Action Plan (BAP) Priority Habitat 'Intertidal under boulder communities' (BRIG, 2011) and is also listed as a Habitat of Principal Importance in Wales (Welsh Government, 2016).

The lower to mid shore was characterised by a zone of knotted wrack *Ascophyllum nodosum* covering boulders and anthropogenic structures. This was assigned the biotope 'Ascophyllum nodosum on very sheltered mid eulittoral rock' (LR.LLR.F.Asc; JNCC 2022 Classification) (ABPmer, 2018). Moving up the mid shore, spiralled wrack *Fucus spiralis* was present, and the habitat transitioned into the biotope 'Fucus spiralis on sheltered upper eulittoral rock' (LR.LLR.F.Fspi; JNCC 2022 Classification). Fauna recorded in the mid shore included barnacles, limpet *Patella vulgate*, top shell *Steromphala umbilicalis*, and periwinkles *Littorina littorea* and *Littorina obtusata* (ABPmer, 2018).

The channelled wrack *Pelvetia canaliculata* began to occur at the upper shore zone, alongside barnacles. This was assigned the biotope 'Pelvetia canaliculata and barnacles on moderately exposed littoral fringe rock' (LR.MLR.BF.PeIB; JNCC 2022 Classification). Above this, green algae and lichens were present, assigned the biotope 'Lichens or small green algae on supralittoral and littoral fringe rock' (LR.FLR.Lic; JNCC 2022 Classification) (ABPmer, 2018).

The distribution of the intertidal biotopes identified in the 2017 survey are presented in **Figure 4-3**.

Although somewhat dated, there was a Phase 1 intertidal survey undertaken at Goodwick Beach in 2011 for a marina development project (Aquatic Environments (2011) cited in RPS (2018)). Although outside the Planning Boundary, the results are briefly discussed here for additional context into the intertidal zone within Fishguard Harbour. This 2011 survey recorded 16 distinct biotopes across the rocky areas and two biotopes in the sandy bay area (Aquatic Environments (2011) cited in RPS (2018)). There were a range of typical rocky

shore species recorded, such as furoid algae, limpets, mussels, and barnacles, and a range of under boulder communities. Within the sandy bay area, characteristic species such as polychaetes (*A. marina*, *Scoloplos armiger*, and *Pygospio elegans*), bivalves (such as *Macoma balthica*), sand burrowing brittlestar *Acrocnida brachiata*, brown shrimp, and sand slug *Philine aperta* (Aquatic Environments (2011) cited in RPS (2018)).

4.1.1.3 Designated Sites

There are no designated sites with relevant benthic features within Fishguard Harbour or within several kilometres. This includes Special Areas of Conservation (SACs), Marine Conservation Zones (MCZs), or Sites of Special Scientific Interest (SSSIs). The closest designated site with benthic qualifying features is the Cardigan Bay/Bae Ceredigion SAC, which sits 14.9 km from the Planning Boundary. This site is designated for the following Annex I habitat features:

- Reefs;
- Sandbanks which are slightly covered by seawater all the time; and
- Submerged or partially submerged sea caves.

However, given the distance of this SAC from the Planning Boundary, and that these benthic features are not mobile, this site is not proposed to be considered further for benthic subtidal and intertidal ecology. This is because there is considered to be no pathway for direct or indirect impacts associated with the Proposed Development.

4.1.2 Fish and Shellfish Ecology

4.1.2.1 Data Sources

The key data sources used to characterise the fish and shellfish ecology baseline are comprised of the following:

- NRW Marine Fish Survey Database (NRW, 2024b);
- UK Sea Fisheries Annual Statistics Report 2022: Fisheries Landing Data from 2018 to 2022 (Marine Management Organisation (MMO, 2023));
- Spawning and Nursery Grounds of Forage Fish in Welsh and Surrounding Waters (Campanella and van der Kooij, 2021);
- UK Basking Shark Sightings from 1987 to 2016 (Marine Conservation Society, 2020);
- NRW Diadromous Fish Electro-fishing Monitoring Data from the River Gwaun (data from 2005, 2007, and 2011 were cited in RPS (2018), more recent data from NRW has since been requested and will be assessed within the EIA Report);
- Fishguard Ferry Port Marine Ecology Surveys: site-specific baseline surveys for replacement linkspan works undertaken in June 2017 (ABPmer, 2018);

- Fishguard DDV Survey: DDV survey of predominantly subtidal habitats in Goodwick Bay and the wider Fishguard area undertaken in October 2015 (Aquatic Environments (2015) cited in RPS (2018));
- Spawning and Nursery Grounds of Selected Fish Species in UK Waters (Ellis *et al.*, 2012); and
- Fisheries Sensitivity Maps in British Waters (Coull *et al.*, 1998).

Within the EIA Report, further data sources will be used to expand upon the baseline presented here. These data sources will likely include some of the 'marine ecology datasets for marine developments' compiled on the NRW website (NRW, 2024a). Additional datasets recommended by stakeholders during the Scoping Opinion process and other consultation will also be considered.

4.1.2.2 Brief Baseline Overview

The fish and shellfish assemblage at Fishguard Harbour is likely to be representative of the Irish Sea, featuring a range of marine fish (e.g. teleost fish (bony fish) and elasmobranchs (sharks, skates, and rays)), diadromous fish (i.e. those which migrate between freshwater and seawater), and shellfish (e.g. commercial crustaceans and molluscs). Although other crustacean and mollusc species are technically shellfish, these are a non-commercial species. Non-commercial shellfish species have therefore been considered under benthic subtidal and intertidal ecology (section 4.1.1).

4.1.2.2.1 Marine Fish

The teleost fish species within Fishguard Harbour and the Irish Sea include both demersal and pelagic species. Typical Irish Sea demersal teleost fish species recorded near and/or within Fishguard Harbour include:

- Gadoids (e.g. cod *Gadus morhua*, European hake *Merluccius merluccius*, pollock *Pollachius pollachius*, poor cod *Trisopterus minutus*, and whiting *Merlangius merlangus*);
- Flatfish (e.g. flounder *Platichthys flesus*, lemon sole *Microstomus kitt*, plaice *Pleuronectes platessa*, and sole *Solea solea*);
- Sandeel (e.g. lesser sandeel *Ammodytes tobianus* and Raitt's sandeel *Ammodytes marinus*);
- Sea bass *Dicentrarchus labrax*; and
- Other demersal species, such as anglerfish *Lophius piscatorius*, gobies (family: Gobiidae), and gurnards (family: Triglidae) (Campanella and van der Kooij, 2021, Coull *et al.*, 1998, Ellis *et al.*, 2012, MMO, 2023, NRW, 2024b).

There were no site-specific fish and shellfish ecology studies conducted for the Proposed Development or for previous linkspan replacement works at the Stena Line ferry terminal, however, data from seine netting and beam trawls conducted within Fishguard Harbour are provided by NRW (2024b). A range of demersal and pelagic teleost fish species were recorded during these trawls, such as flounder, lesser pipefish *Syngnathus rostellatus*, lesser sandeel, plaice, pollock, sand goby *Pomatoschistus minutus*, sand smelt *Atherina presbyter*, sea bass, sprat, thinlip mullet *Chelon ramada*, and transparent goby *Aphia minuta* (NRW, 2024b).

Pelagic teleost species (i.e. those which live within the mid-section of the water column in the open ocean) recorded in the Irish Sea near Fishguard Harbour include European anchovy *Engraulis encrasicolus*, horse mackerel *Trachurus trachurus*, mackerel *Scomber scombus*, and sprat *Sprattus sprattus* (Campanella and van der Kooij, 2021, Coull *et al.*, 1998, Ellis *et al.*, 2012, MMO, 2023, NRW, 2024b). While herring *Clupea harengus* are a key pelagic fish species for marine food webs; recent modelling indicates low juvenile and adult abundance around Fishguard Harbour its surrounding waters, with hotspots of activity concentrated further north in the Irish Sea (around the Isle of Man and Northern Ireland) and further south towards the Celtic Sea (Campanella and van der Kooij, 2021). Further, there were no herring landed in the International Council for the Exploration of the Seas (ICES) rectangles that overlap with Fishguard Harbour and its surrounding waters between 2018 to 2022 (most recently available data) (MMO, 2023).

Elasmobranchs that may be present within the vicinity of Fishguard Harbour include blonde ray *Raja brachyura*, cuckoo ray *Leucoraja naevus*, small-spotted catshark *Scyliorhinus canicula*, spotted ray *R. montagui*, thornback ray *R. clavata*, and tope shark *Galeorhinus galeus* (Coull *et al.*, 1998, Ellis *et al.*, 2012, MMO, 2023), among others. The basking shark *Cetorhinus maximus* may also be present within the offshore waters around Fishguard Harbour, with a low number (i.e. tens) of individuals recorded along the Pembrokeshire coast in the UK basking shark database from 1987 to 2016 (Marine Conservation Society, 2020).

4.1.2.2.2 Diadromous Fish

Diadromous fish have complex life histories and migrate between freshwater and seawater to complete their life cycles. The River Gwaun is a tributary which enters into Fishguard Harbour. Diadromous fish species recorded in this river include Atlantic salmon *Salmo salar*, sea trout *Salmo trutta*, and European eel *Anguilla anguilla* (RPS, 2018). In addition, rivers designated as SACs along the coast of Pembrokeshire and Cardigan Bay, such as the River Teifi and River Cleddau, support the brook lamprey *Lampetra planeri*, river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus*, however these do not flow into the Marine Biodiversity Study Area. There are few records of either the allis shad *Alosa alosa* or twaite shad *Alosa fallax* species in Pembrokeshire, with the current status of these species in the area uncertain (RPS, 2018). The freshwater pearl mussel *Pinctada margaritifera* (formerly *Margaritifera margaritifera*) shares a complex parasitic life history with salmonids, such as Atlantic salmon and sea trout (Taeubert and Geist, 2017). Therefore, although this species is freshwater-resident, populations may be impacted if Atlantic salmon or sea trout populations are affected by the Proposed Development. Data from more recent electro-fishing counts of diadromous fish in the River Gwaun have been requested from NRW and will be assessed within the EIA Report to provide more contemporary data on diadromous fish which may pass through Fishguard Harbour during their migrations.

4.1.2.2.3 Shellfish

There were no site-specific fish and shellfish ecology studies conducted for the Proposed Development or for previous linkspan replacement works at the Stena Line ferry terminal, however the common cockle *Cerastoderma edule* was recorded during grab sampling for benthic ecology in 2017 (ABPmer, 2018). Large

spider crabs *Maja brachydactyla* were also recorded in the infralittoral zone (ABPmer, 2018). Similarly, the DDV survey conducted in Fishguard Harbour in 2015 recorded various shellfish, such as the harbour crab *Polybius depurator*, common shore crab *Carcinus maenas*, European lobster *Homarus gammarus*, and spider crabs (Aquatic Environments (2015) cited in RPS (2018)).

Information on shellfish distribution in UK waters is largely derived from commercial fishing and landings data. These data can be used to determine the likely shellfish species within Fishguard Harbour. Landings are reported annually by the Government and have been used to help characterise the shellfish baseline. Fishguard Harbour sits wholly within ICES rectangle 33E5, with ICES rectangle 33E4 to the west. At the time of writing, the most recent landings data are available up until 2022, with those for 2023 due to be published in December 2024. Between 2018 to 2022, there were 7,832 tonnes of shellfish caught from ICES rectangles 33E4 and 33E5, of which 4,367 tonnes were landed at Fishguard Harbour itself (MMO, 2023). The total 7,832 tonnes of shellfish from these ICES rectangles were largely comprised of common whelk *Buccinum undatum* (4,637 tonnes), king scallop *Pecten maximus* (2,307 tonnes), edible crab *Cancer pagurus* (348 tonnes), spider crab *Maja squinado* (322 tonnes), and European lobster (153 tonnes) (MMO, 2023). Shellfish species landed in lower quantities (<100 tonnes over 2018 to 2022) included common prawn *Palaemon serratus*, velvet swimming crab *Necora puber*, and Norway lobster *Nephrops norvegicus* (MMO, 2023).

4.1.2.2.4 Spawning and Nursery Grounds

Legacy datasets by Coull *et al.* (1998) and Ellis *et al.* (2012) have been used to determine the locations of spawning and nursery grounds in relation to Fishguard Harbour. While somewhat dated, more recent work by Campanella and van der Kooij (2021) corroborates the spawning and nursery grounds presented by Coull *et al.* (1998) and Ellis *et al.* (2012), emphasising their current relevance. Species with spawning and/or nursery grounds within the Marine Biodiversity Study Area and overlap with the Planning Boundary are presented in **Table 4.1** and in **Figure 4-5** to **Figure 4-7**.

Table 4.1: Species with Spawning and Nursery Grounds overlapping with the Planning Boundary (Coull *et al.*, 1998, Ellis *et al.*, 2012) (N/A = Not Applicable).

Species	Spawning Grounds	Spawning Intensity	Nursery Grounds	Nursery Intensity
Teleost Fish				
Anglerfish	x	N/A	✓	Low
Cod	✓	Low	x	N/A
Plaice	✓	Low	✓	Low
Sandeel	✓	Low	x	N/A
Sole	✓	High	x	N/A
Whiting	✓	Low	✓	Low
Elasmobranchs				
Thornback ray	x	N/A	✓	Low
Tope shark	x	N/A	✓ ¹	Low
Spotted ray	x	N/A	✓	Low

¹ Low intensity nursery grounds for tope shark identified within the Marine Biodiversity Study Area, but not overlapping with the Planning Boundary, see **Figure 4-6**.

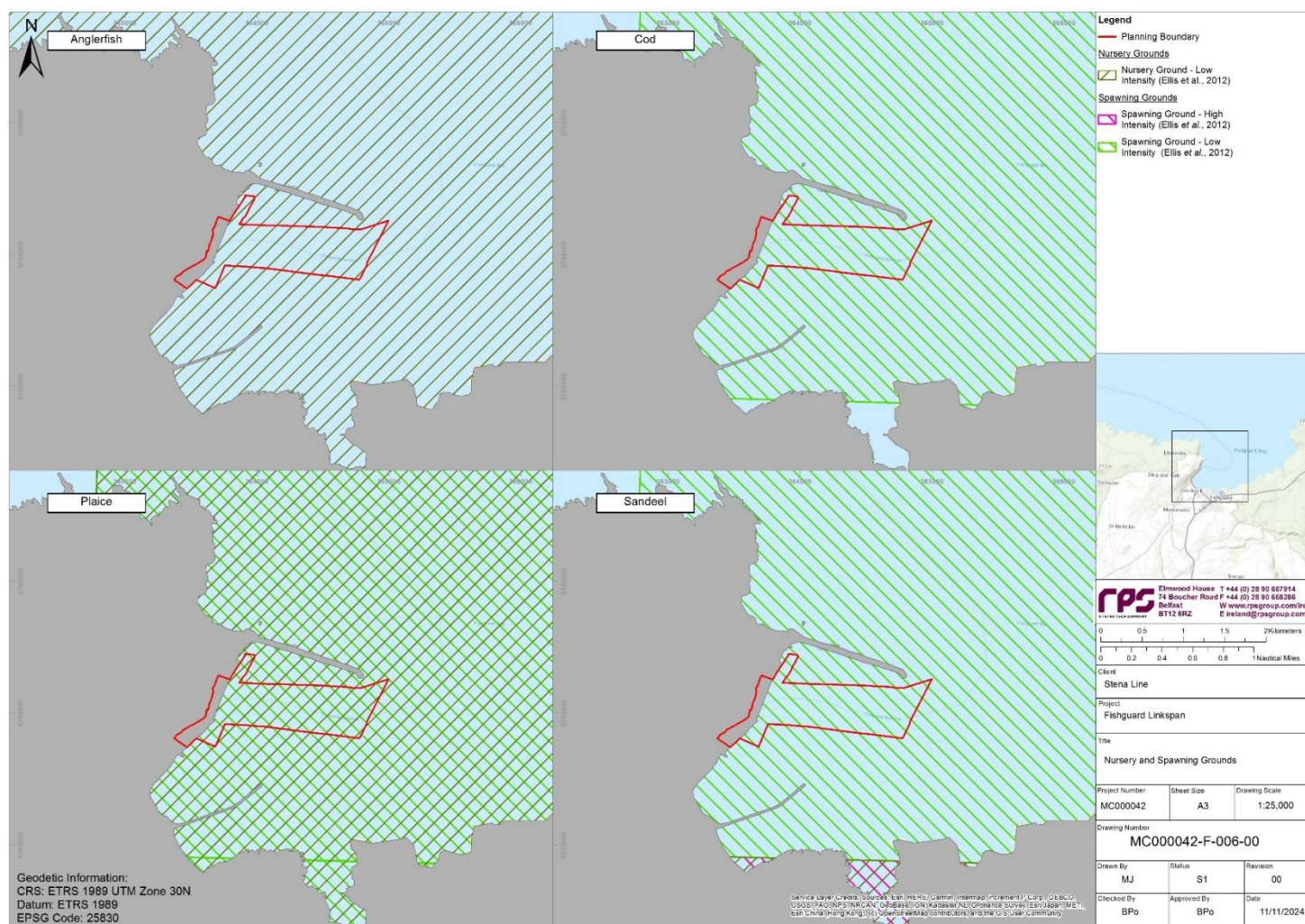


Figure 4-5: Spawning and Nursery Grounds of Anglerfish, Cod, Plaice, and Sandeel (Ellis et al., 2012)

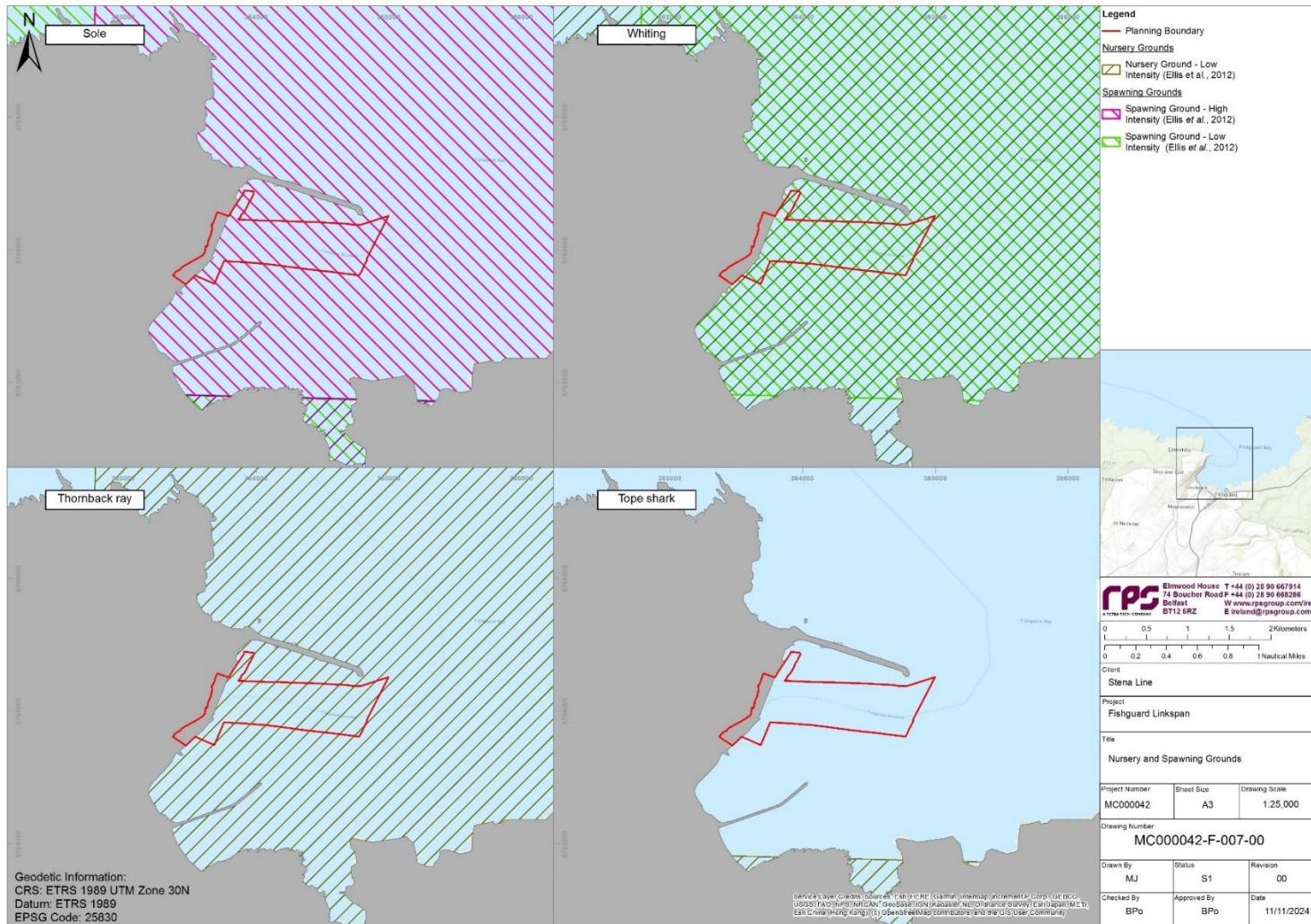


Figure 4-6: Spawning and Nursery Grounds of Sole, Whiting, Thornback Ray, and Tope Shark (Ellis et al., 2012)

POR-00886 | Fishguard | EIA Scoping Report | D01 | November 2024

rpsgroup.com

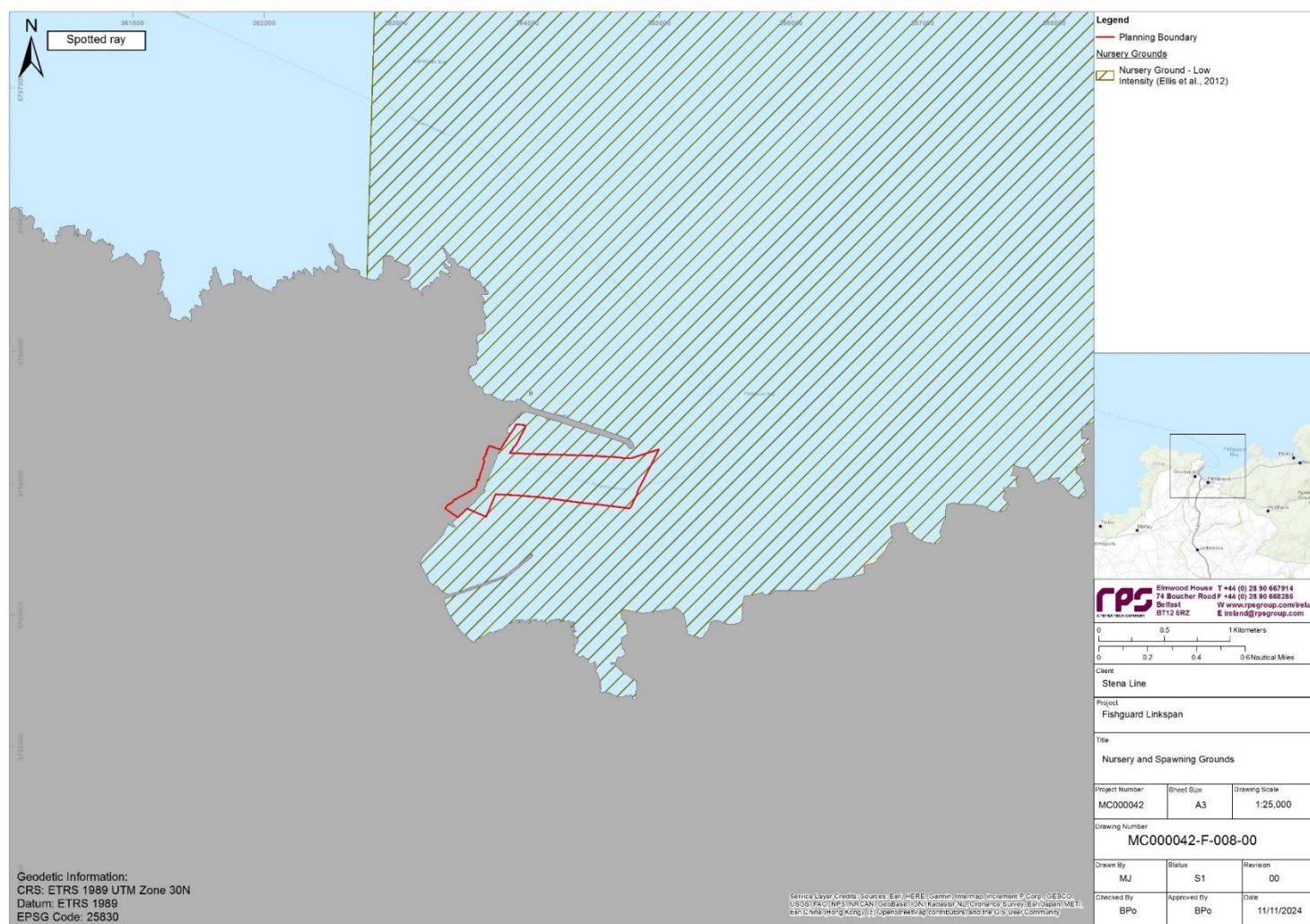


Figure 4-7: Nursery Grounds of Spotted Ray(Ellis et al., 2012)

Campanella and van der Kooij (2021) built upon the spawning and nursery grounds presented in Coull *et al.* (1998) and Ellis *et al.* (2012) for forage fish species in Welsh waters. The term ‘forage fish’ refers to small to medium fish species which are a key prey resource for a range of higher predators, such as larger fish, marine mammals, and seabirds. This study focussed on eleven forage fish species: herring, sprat, European sardine *Sardina pilchardus*, European anchovy, sandeel, horse mackerel, mackerel and garfish *Belone belone*, as well as the gadoid species: cod, poor cod, and whiting. Heatmaps of juvenile and adult abundance were produced, which were extrapolated to represent areas important for nurseries and spawning, respectively (Campanella and van der Kooij, 2021). From this, medium to high numbers of adults and/or juveniles of the following species may be present around the vicinity of Fishguard Harbour: cod, European anchovy, garfish, horse mackerel, mackerel, poor cod, sandeel species, sprat, and whiting (Campanella and van der Kooij, 2021). However, given the high anthropogenic activity and alterations to the seabed, it is unlikely that Fishguard Harbour itself represents key spawning or nursery habitat for any species, or if it does, these species are adapted to these conditions.

4.1.2.3 Designated Sites

The Planning Boundary does not overlap with any designated sites for fish and shellfish species, however there are some designated sites with fish and shellfish features in the vicinity of Fishguard Harbour, which are presented in **Table 4.2** and in Figure 4-8. Given that the qualifying fish features of these SACs are mobile species, they could potentially occur within Fishguard Harbour and/or within the Zone of Impact (ZoI) from noise producing activities associated with the Proposed Development. However, given the estuarine nature of the brook lamprey and river lamprey, these two species are considered less likely to interact with the Planning Boundary as their designated rivers do not flow into Fishguard Harbour (**Figure 4-8**).

Table 4.2: Designated Sites with Fish and Shellfish Features

Site Name	Minimum Distance from Planning Boundary (km)	Relevant Qualifying Feature
Cardigan Bay/Bae Ceredigion SAC	14.9	Sea lamprey River lamprey
Pembrokeshire Marine/Sir Benfro Forol SAC	21.5	Sea lamprey River lamprey Allis shad Twaite shad
River Teifi/Afon Teifi SAC	22.8	Brook lamprey River lamprey Atlantic salmon Sea lamprey
Cleddau Rivers/Afonydd Cleddau SAC	93.6	Brook lamprey River lamprey Sea lamprey
Carmarthen Bay and Estuaries/Bae Caerfyrddin ac Aberoedd SAC	95.2	River lamprey Sea lamprey Allis shad Twaite shad

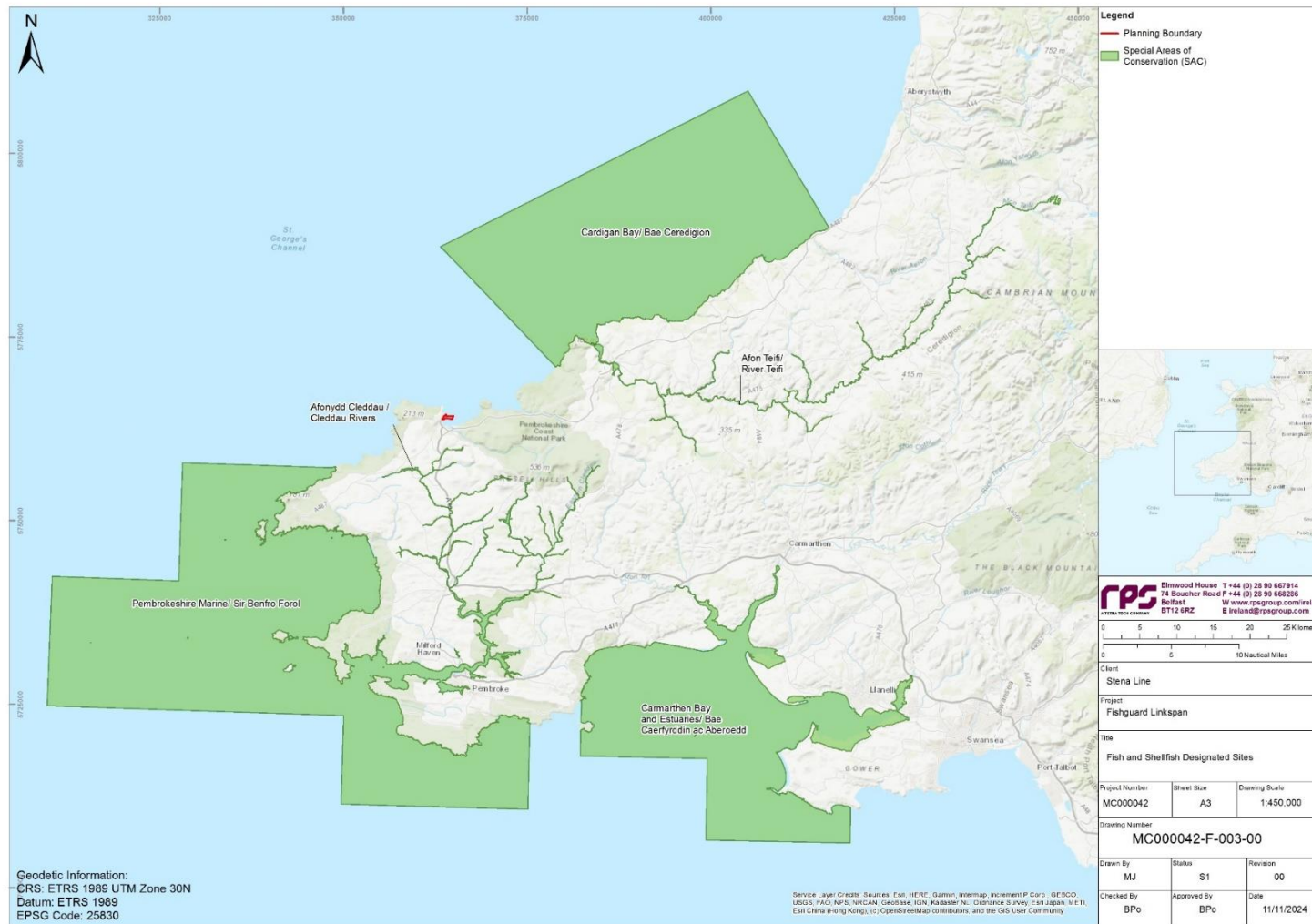


Figure 4-8: Designated Sites with Fish and Shellfish Qualifying Features in the Surrounding Region

4.1.3 Marine Mammals

4.1.3.1 Data Sources

Given the nature and scale of the Proposed Development and previous works conducted at the Stena Line ferry terminal, no site-specific marine mammal baseline surveys were undertaken. The key data sources used to characterise the marine mammal baseline are therefore comprised of the following:

- Modelled Distribution and Abundance of Cetaceans and Seabirds in Wales and Surrounding Waters (Evans and Waggitt, 2023);
- Small Cetaceans in European Atlantic waters and the North Sea (SCANS) surveys (Gilles *et al.*, 2023, Hammond *et al.*, 2021);
- Special Committee on Seals (SCOS) Reports (SCOS, 2023);
- Sympatric Seals, Satellite Tracking and Protected Areas: Habitat-Based Distribution Estimates for Conservation and Management (Carter *et al.*, 2022);
- Bottlenose Dolphin *Tursiops truncatus* Monitoring in Cardigan Bay 2014 – 2016 (Lohrengel *et al.*, 2018);
- The Identification of Discrete and Persistent Areas of Relatively High Harbour Porpoise *Phocoena phocoena* Density in the Wider UK Marine Area (Heinänen and Skov, 2015);
- Analysis of Long-Term Effort-Related Land-Based Observations to Identify whether Coastal Areas of Harbour Porpoise and Bottlenose Dolphin have Persistent High Occurrence and Abundance (Evans *et al.*, 2015);
- Bottlenose Dolphin and Harbour Porpoise Monitoring in Cardigan Bay and Pen Llŷn a'r Sarnau 2011 – 2013 (Feingold and Evans, 2014); and
- Atlas of the Marine Mammals of Wales (Baines and Evans, 2012).

Within the EIA Report, further data sources will be used to expand upon the baseline presented here. These data sources will likely include some of the 'marine ecology datasets for marine developments' compiled on the NRW website (NRW, 2024a). Additional datasets recommended by stakeholders during the Scoping Opinion process and other consultation will also be considered.

4.1.3.2 Brief Baseline Overview

Across the literature, there are a range of marine mammal species that have been recorded in Welsh waters:

- harbour porpoise;
- bottlenose dolphin;
- common dolphin *Delphinus delphis*;
- Risso's dolphin *Grampus griseus*;

- striped dolphin *Stenella coeruleoalba*;
- white-beaked dolphin *Lagenorhynchus albirostris*;
- white-sided dolphin *L. acutus*;
- fin whale *Balaenoptera physalus*;
- humpback whale *Megaptera novaeangliae*;
- killer whale *Orcinus orca*;
- long-finned pilot whale *Globicephala melas*;
- minke whale *Balaenoptera acutorostrata*;
- grey seal *Halichoerus grypus*; and
- harbour seal *Phoca vitulina* (Baines and Evans, 2012, Carter *et al.*, 2022, Evans and Waggitt, 2023, Gilles *et al.*, 2023, Hammond *et al.*, 2021, Hammond *et al.*, 2013).

While a wide range of marine mammals have been recorded in Welsh waters, including those around Pembrokeshire and Fishguard Harbour, some of these species occur in very low numbers and are regarded as 'occasional visitors' to the area. Therefore, as per the approach taken in the recent EIA for the linkspan replacement at the Fishguard Stena Line Terminal (RPS, 2018), only the commonly occurring marine mammal species are proposed to be considered further in the assessment. These are harbour porpoise, bottlenose dolphin, and grey seal. This proposed approach is supported by the highly localised nature and extent of the impacts associated with the Proposed Development, and the proportionate EIA philosophy.

4.1.3.2.1 Management Units

Marine mammal Management Units (MUs) have been defined by the Interagency Marine Mammal Working Group (IAMMWG) for cetaceans and by SCOS for seals (IAMMWG, 2022, IAMMWG, 2023, SCOS, 2023). The Planning Boundary sits within the following MUs:

- Celtic and Irish Seas MU for harbour porpoise (**Figure 4-9**);
- Irish Sea MU for bottlenose dolphin, and close to the Offshore Channel, Celtic Sea and South West England MU (**Figure 4-10**); and
- Wales MU for grey seal (**Figure 4-11**).

Within the EIA Report, population size estimates for these MUs will be used to determine the number of individuals potentially impacted by piling works. Densities of the three marine mammal species will be defined as the EIA progresses, as there are various different sources available (such as SCOS (2023), Evans and Waggitt (2023), Gilles *et al.* (2023), or Hammond *et al.* (2021), among others). Consultation with stakeholders will aid in the decision of the densities that will be used for each species in the EIA Report.

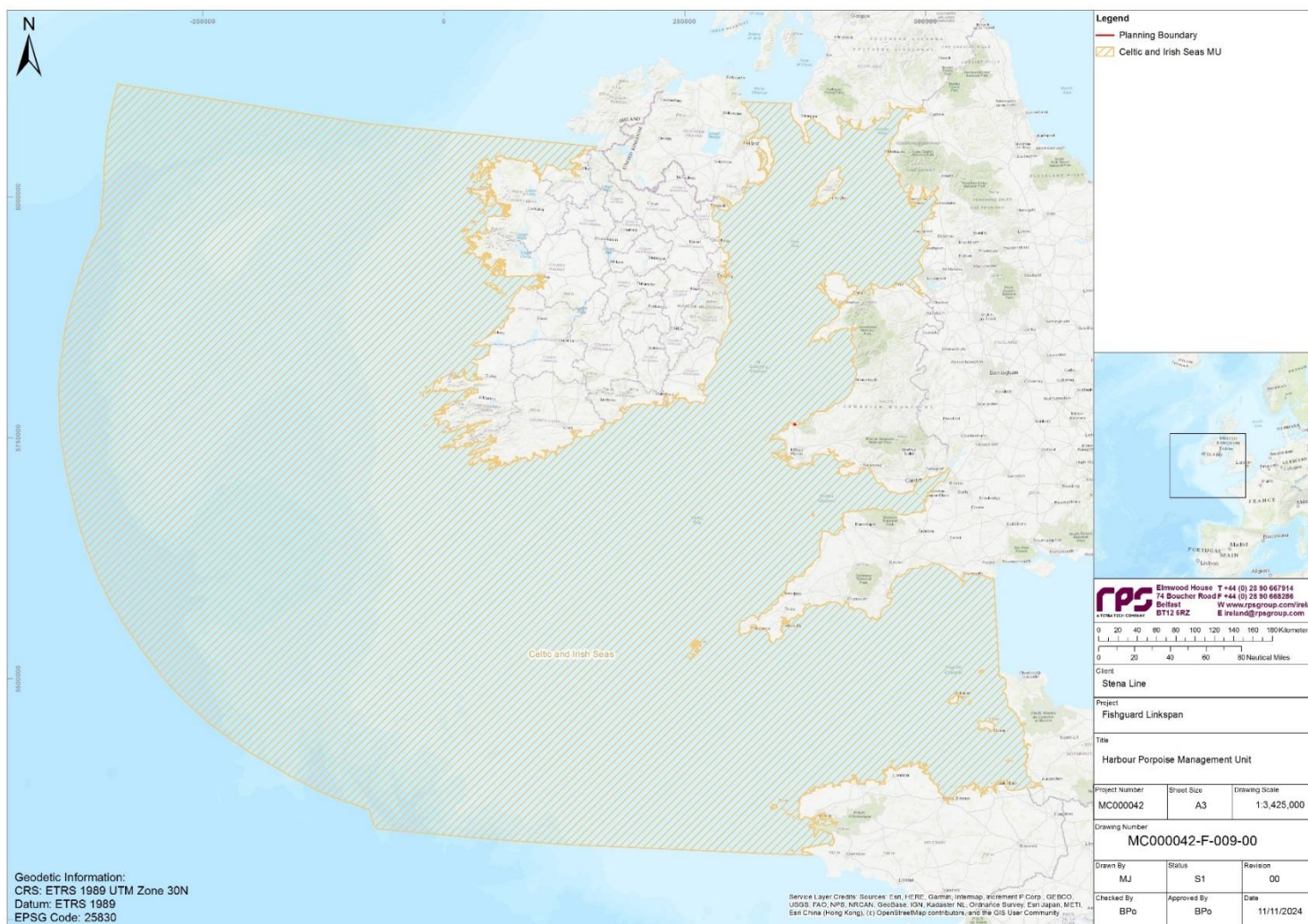


Figure 4-9: Celtic and Irish Seas MU for Harbour Porpoise in relation to the Planning Boundary

POR-00886 | Fishguard | EIA Scoping Report | D01 | November 2024

rpsgroup.com

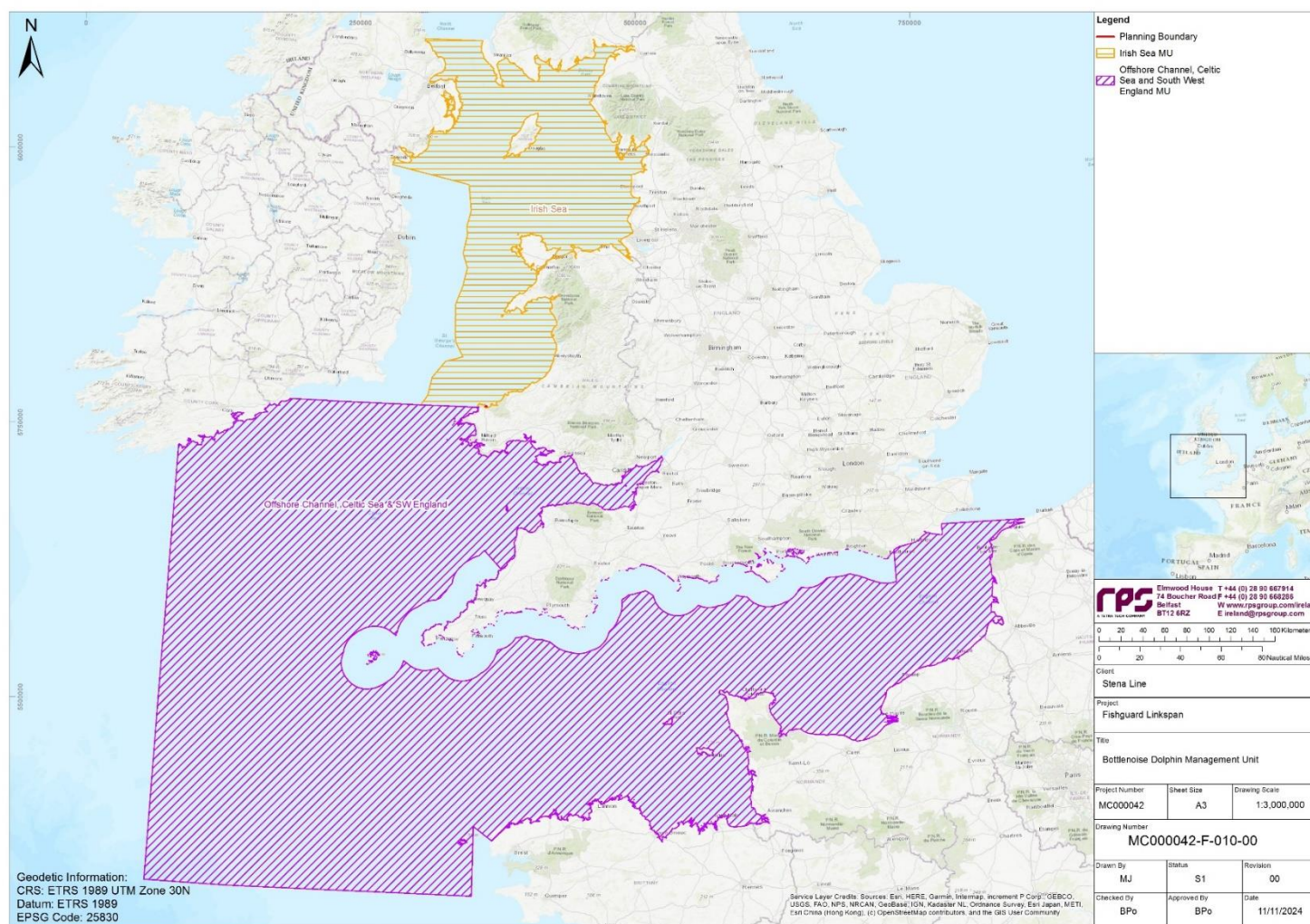


Figure 4-10: Bottlenose Dolphins MUs in relation to the Planning Boundary

EIA SCOPING REPORT

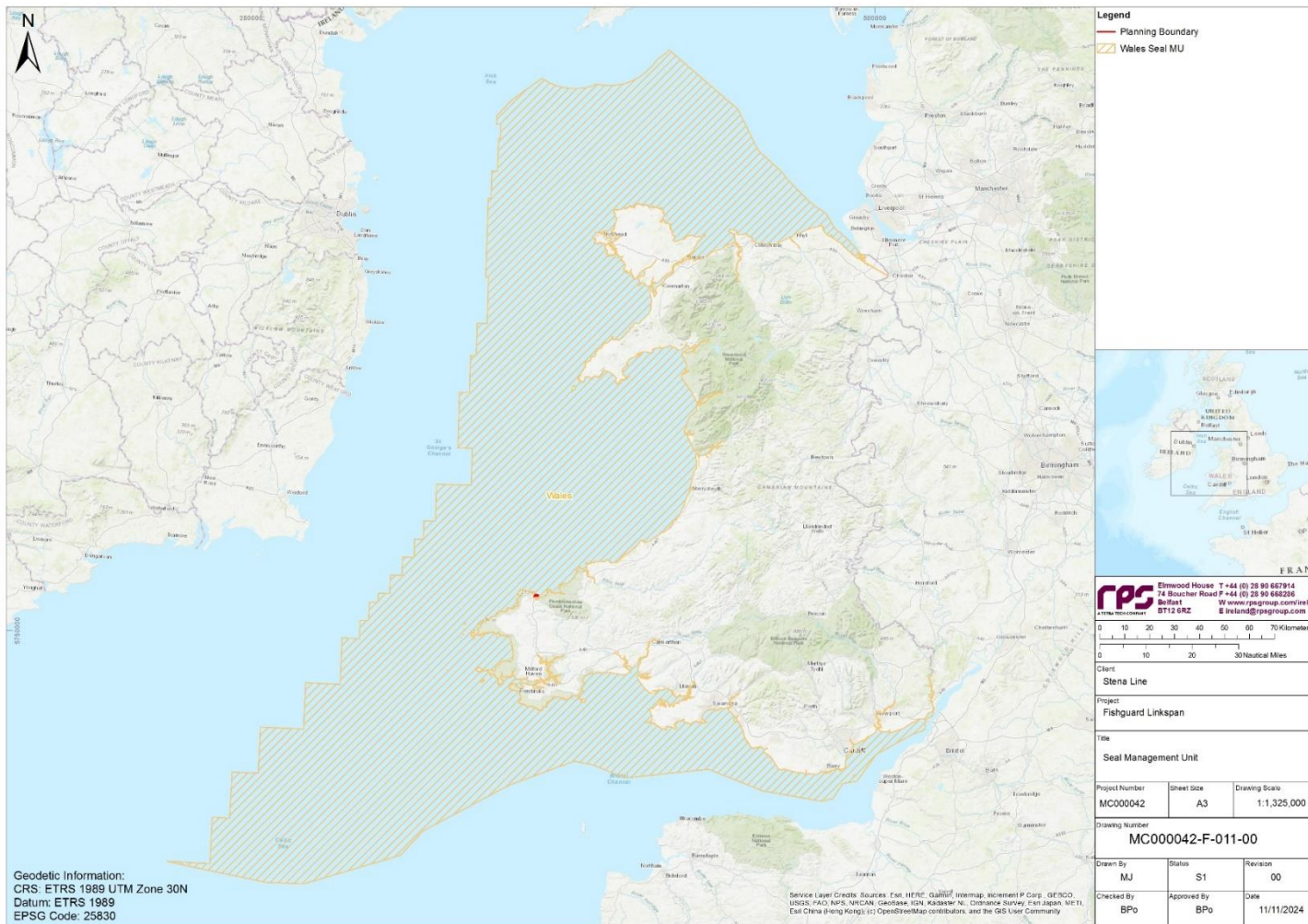


Figure 4-11: Wales Seal MU in relation to the Planning Boundary

4.1.3.2.2 Harbour Porpoise

Harbour porpoise are the most abundant cetacean species in the UK, with persistent presence in Welsh waters, including in the vicinity of Fishguard Harbour (Baines and Evans, 2012, Evans *et al.*, 2015, Evans and Waggitt, 2023, Gilles *et al.*, 2023, Heinänen and Skov, 2015). They are also one of the smallest marine mammals in the UK, and therefore have a high body surface area to volume ratio (Kastelein *et al.*, 2019). Due to this, harbour porpoise has a high metabolic rate and must feed often to maintain a stable body temperature (Kastelein *et al.*, 1997, Rojano-Doñate *et al.*, 2018). This high metabolic rate means that this species is particularly sensitive to any disruption of foraging and is susceptible to starvation (Wisniewska *et al.*, 2016).

The harbour porpoise is protected under a range of international and national designations, such as under Annex II of the Habitats Directive¹. This species is therefore a qualifying feature of various SACs around the UK, including the West Wales Marine/Gorllewin Cymru Forol SAC, which overlaps with Fishguard Harbour (see section 4.1.3.3 for further information). Therefore, the Pembrokeshire coast represents an internationally important area for harbour porpoise, with persistent high densities modelled in both summer and winter (Heinänen and Skov, 2015), and this area is regarded as a population hotspot (Evans *et al.*, 2015). Recent modelling from Evans and Waggitt (2023) illustrates the high densities of harbour porpoise in Welsh waters, particularly around Pembrokeshire (**Figure 4-12**).

Fishguard Harbour is situated within SCANS survey blocks CS-D in the 2022 survey and block E in the 2016 survey (these are largely the same area, just with different names) (Gilles *et al.*, 2023, Hammond *et al.*, 2021). In the 2022 survey, there were an estimated 9,773 harbour porpoise within this block (95% Confidence Interval (CI): 4,764 – 18,125 animals), with an estimated density of 0.316 animals per km² (Gilles *et al.*, 2023). In the 2016 survey, there were an estimated 8,302 harbour porpoise within this block (95% CI: 4,643 – 14,354), with an estimated density of 0.239 animals per km² (Hammond *et al.*, 2021).

As presented in Figure 4-9, Fishguard Harbour is located within the Celtic and Irish Seas MU for harbour porpoise. The most recent abundance estimate for this MU is 62,517 animals (95% CI: 48,324 – 80,877 animals) (IAMMWG (2023), based on data from Hammond *et al.* (2021) and Rogan *et al.* (2018)).

¹ Council Directive 94/43/EEC

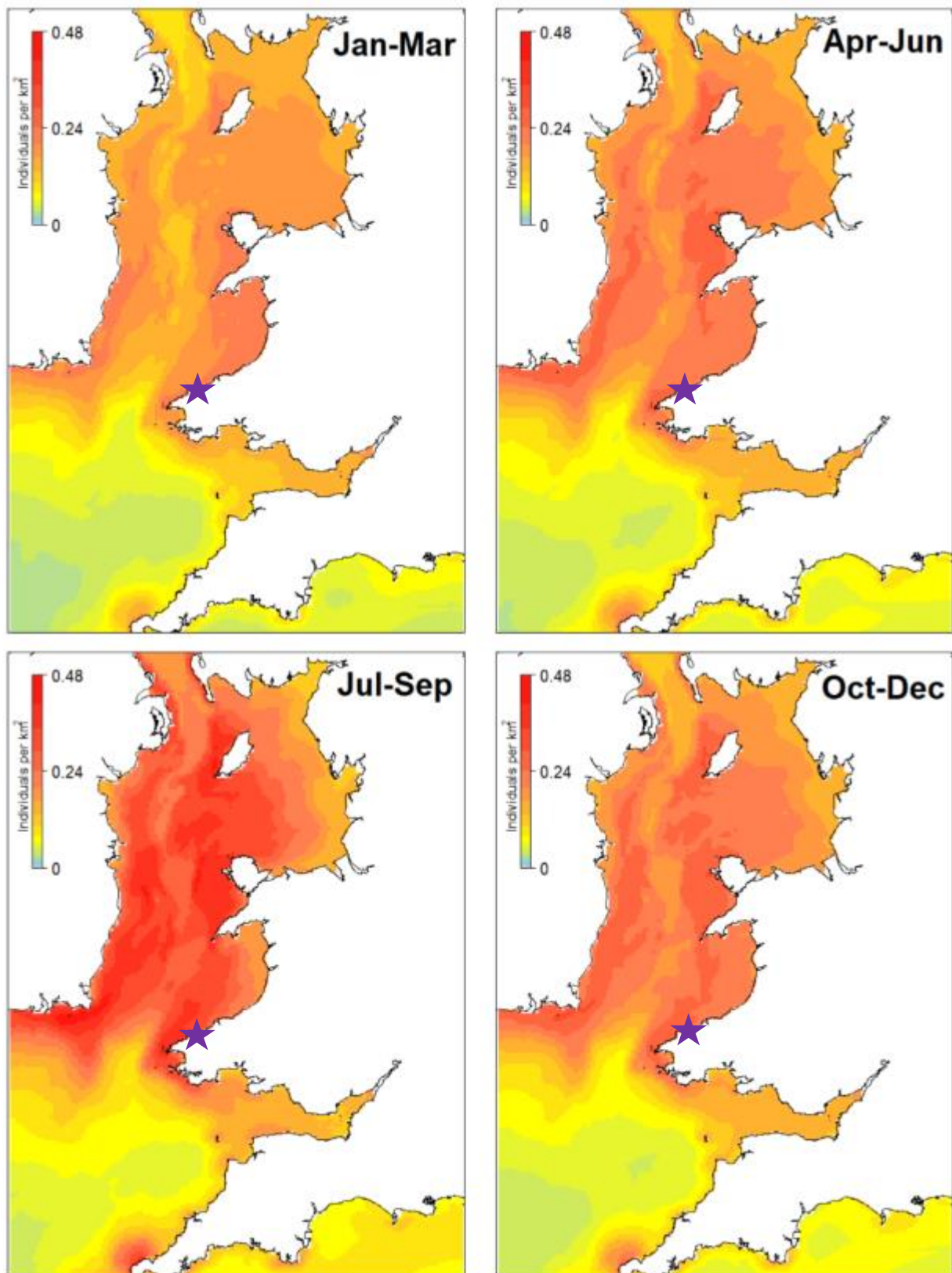


Figure 4-12: Modelled Densities of Harbour Porpoise per quarter (measures as the mean density per cell across months within each season) (Evans and Waggitt, 2023) (location of Fishguard Harbour Denoted with a star).

4.1.3.2.3 Bottlenose Dolphin

Bottlenose dolphins are large odontocetes (i.e. toothed whales) which are distributed worldwide in temperate and tropical waters. They have a high flexibility in foraging behaviour and habitat use (Fernandez-Betelu *et al.*, 2019, Genov *et al.*, 2019) and typically prey upon fish. As above for harbour porpoise, the bottlenose dolphin is protected under a range of international and national designations, such as under Annex II of the Habitats Directive. This species is therefore a qualifying feature of various SACs around the UK, with the Cardigan Bay/Bae Ceredigion SAC the closest to the Planning Boundary (see section 4.1.3.3 for further information). Cardigan Bay is one of only two semi-residential bottlenose dolphin populations in the UK, with the other being in the Moray Firth, in northern Scotland (Evans *et al.*, 2015, Feingold and Evans, 2014). This SAC, which is located 14.9 km from the Planning Boundary, is therefore an important area for bottlenose dolphin, providing justification for the proposed inclusion of this species in the EIA. The wider Cardigan Bay area has been surveyed annually since 2005, with estimates in recent years some of the lowest recorded (Evans and Waggitt, 2023). Robust models indicate that there may have been some permanent emigration from Cardigan Bay (Lohrengel *et al.*, 2018). Modelling from Evans and Waggitt (2023) illustrates the hotspot of bottlenose dolphin density within Cardigan Bay, showing the persistent high densities in the vicinity of Fishguard Harbour (**Figure 4-13**).

Fishguard Harbour is situated within SCANS survey blocks CS-D in the 2022 survey and block E in the 2016 survey (these blocks are largely the same area, however were updated between the two years) (Gilles *et al.*, 2023, Hammond *et al.*, 2021). In the 2022 survey, there were an estimated 8,199 bottlenose dolphin within this block (95% CI: 3,595 – 15,158 animals), with an estimated density of 0.235 animals per km² (Gilles *et al.*, 2023). In the 2016 survey, there were an estimated 288 bottlenose dolphin within this block (95% CI: 0 - 664), with an estimated density of 0.0082 animals per km² (Hammond *et al.*, 2021). The difference in estimated abundance and density of bottlenose dolphin between these two SCANS surveys should be highlighted. Further clarification was sought from the authors of SCANS, who highlighted that the particular survey block contains both coastal and offshore ecotypes of bottlenose dolphin (the coastal ecotype here is referring to the semi-resident population within Cardigan Bay) (A. Gilles, *pers. comm.*). Appropriate densities to be used within the assessment will be agreed upon with stakeholders during consultation. Densities could be derived from SCANS, Evans and Waggitt (2023), or specific monitoring studies of the Cardigan Bay population itself.

As presented in **Figure 4-10**, Fishguard Harbour is located within the Irish Sea MU for bottlenose dolphin, and close to the Offshore Channel, Celtic Sea and South West England MU. The most recent abundance estimate for the Irish Sea MU is 293 animals (95% CI: 108 – 793 animals) (IAMMWG (2023), based on data from Hammond *et al.* (2021) and Rogan *et al.* (2018)). The most recent abundance estimate for the Offshore Channel, Celtic Sea and South West England MU is 10,653 animals (95% CI: 6,533 – 17,372 animals) (IAMMWG (2023), based on data from Hammond *et al.* (2021) and Rogan *et al.* (2018)).

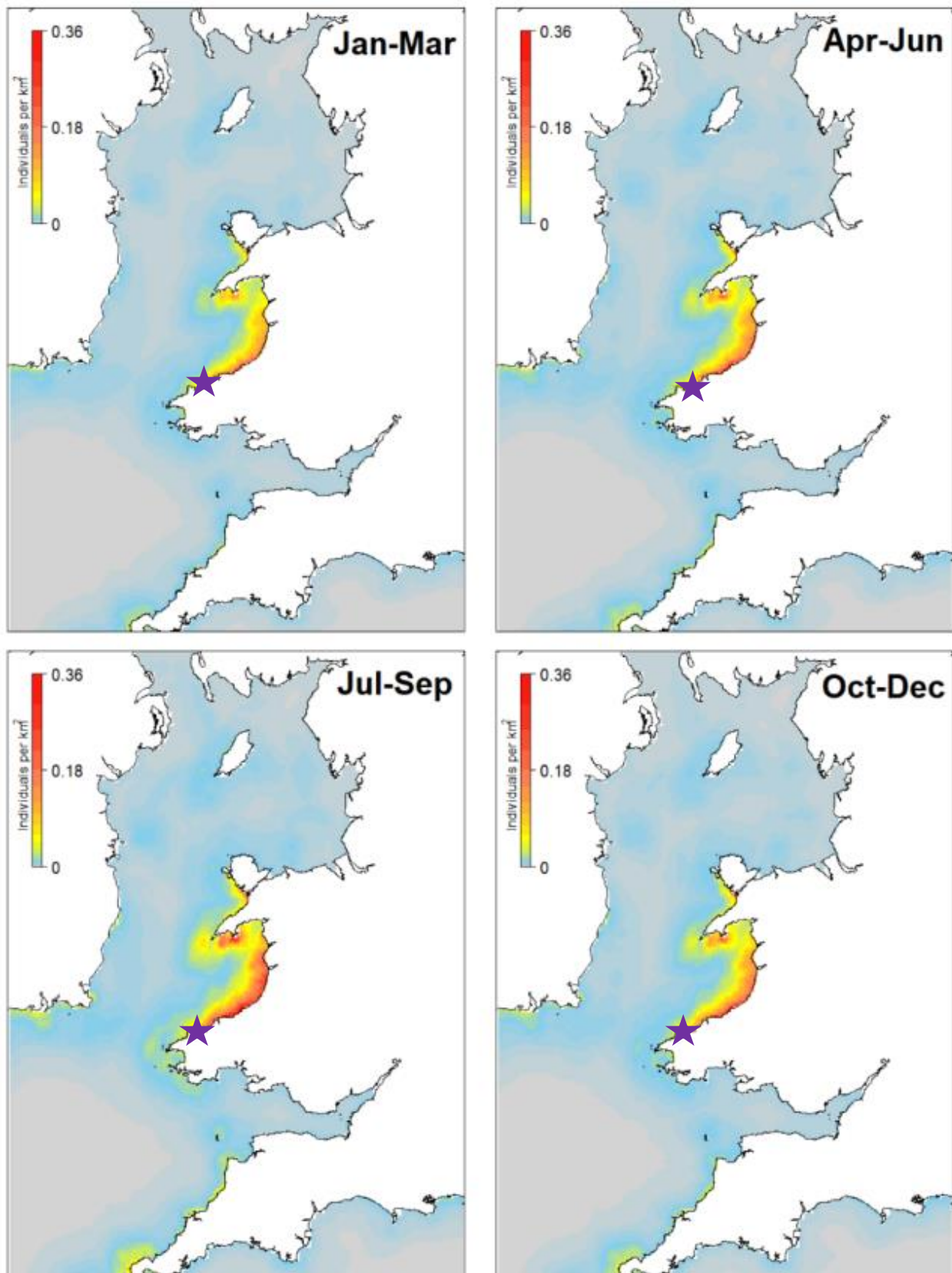


Figure 4-13: Modelled Densities of Bottlenose Dolphin per quarter (measures as the mean density per cell across months within each season) (Evans and Waggitt, 2023) (location of Fishguard Harbour Denoted with a star).

4.1.3.2.4 Grey Seal

Grey seals are one of the two pinniped species that live and breed within the UK, with the other being harbour seal (which is not considered further in this assessment). Grey seal are distributed across the North Atlantic Ocean, North Sea, Barents Sea, and Baltic Sea, with their main concentrations in North-West Europe and the east coasts of Canada and the United States of America (SCOS, 2023). They are larger than harbour seal, with males reaching over 300 kg (SCOS, 2023). They forage in open waters and regularly return to land to haul out, rest, moult, and breed (SCOS, 2023). They can travel over 100 km from haul out sites to forage, with trips lasting for up to 30 days at a time (Jones *et al.*, 2015). Their prey species include gadoids, flatfish, and sandeel and vary spatially and seasonally. As above for harbour porpoise and bottlenose dolphin, the grey seal is protected under a range of international and national designations, such as under Annex II of the Habitats Directive. This species is therefore a qualifying feature of various SACs around the UK, with the Cardigan Bay SAC the closest to the Planning Boundary (14.9 km) (see section 4.1.3.3 for further information).

As presented in Figure 4-11, Fishguard Harbour is located within the Wales Seal MU for grey seal. The annual SCOS reports present counts of grey seals at haul-out sites around the UK which are undertaken in August (with frequency varying across MUs). August haul-out counts of grey seal within the Wales MU have increased from an estimated 750 animals in the 2000 – 2006 survey period to an estimated 900 animals in 2021, the most recently available survey period (SCOS, 2023). These estimates were compiled by counts undertaken by organisations other than SCOS (see full list compiled in SCOS (2023)) and it should be noted that the apparent increase may partly be due to increased reporting. Within Wales, the most recent pup production estimate was 2,250 pups in 2019, from which a 2022 population estimate of 5,400 animals was derived (SCOS, 2023). As illustrated in **Figure 4-14**, the grey seal colonies around Pembrokeshire are not regularly monitored and have lower pup production than other areas of the UK, such as Orkney, the Hebrides, and the east coast of Scotland and England.

Carter *et al.* (2022) present at-sea distribution for grey seal around the UK from high resolution tracking data. The grey seal at-sea density is presented in Figure 4-15, with up to one animal per 25 km² within Fishguard Harbour.

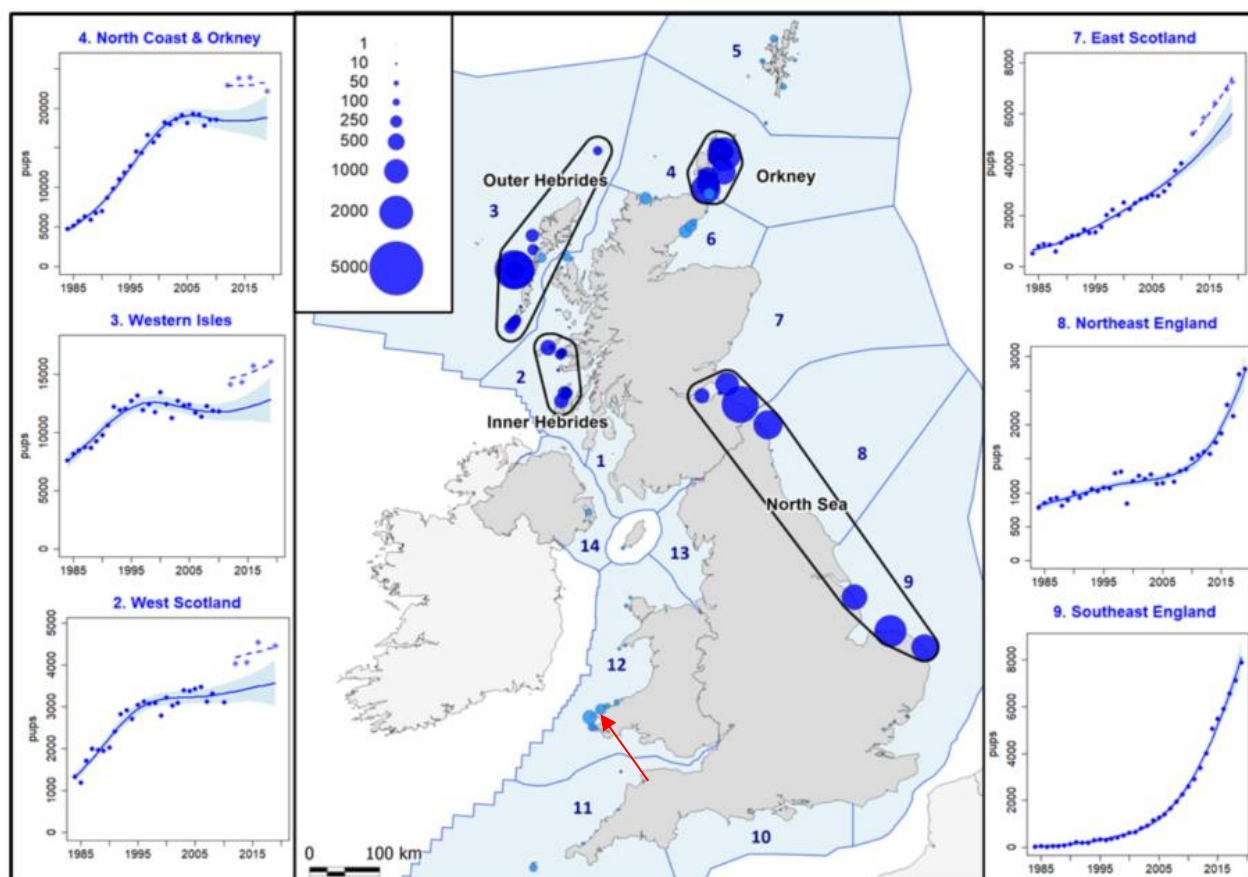


Figure 4-14: Distributions and Estimated Pup Production of the main Grey Seal Breeding Colonies in the UK (light blue circles indicate sporadically monitored areas, while dark blue indicate regularly monitored, approximate location of Fishguard Harbour marked with a red arrow) (SCOS, 2023)

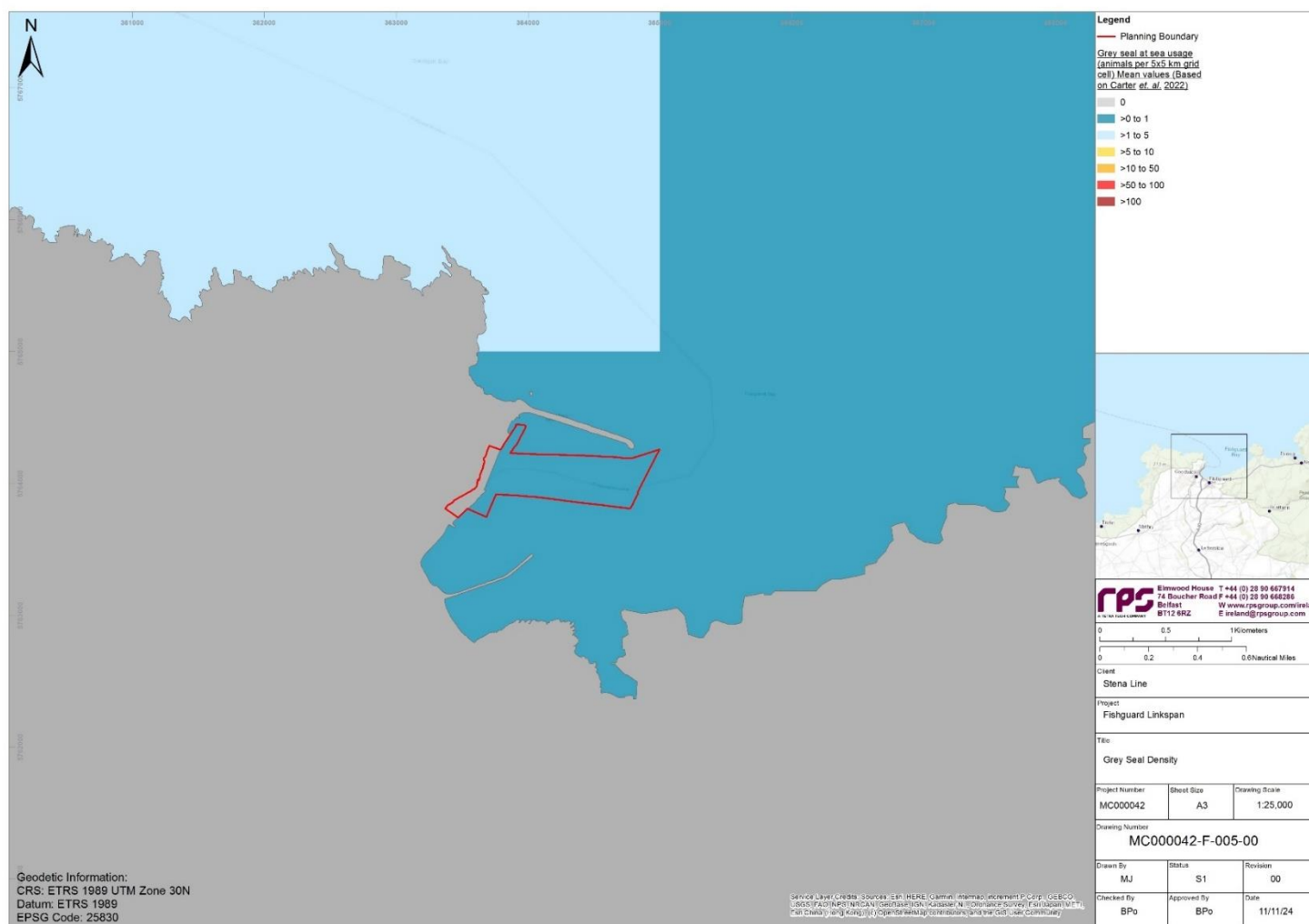


Figure 4-15: Grey Seal Density at Sea in the vicinity of the Planning Boundary (Carter *et al.*, 2022)

4.1.3.3 Designated Sites

The Planning Boundary is situated within the West Wales Marine/Gorllewin Cymru Forol SAC for harbour porpoise. There are several other designated sites with marine mammal features in the vicinity of Fishguard Harbour, which are presented in Table 4.3 and in Figure 4-16. Given that the qualifying marine mammal features of these SACs are mobile species, they could potentially occur within Fishguard Harbour and/or within the ZOI from noise producing activities associated with the Proposed Development.

Table 4.3: Designated Sites with Marine Mammal Features

Site Name	Minimum Distance from Planning Boundary (km)	Relevant Qualifying Feature
West Wales Marine/Gorllewin Cymru Forol SAC	Overlaps	Harbour porpoise
Cardigan Bay/Bae Ceredigion SAC	14.9	Bottlenose dolphin Grey seal
Pembrokeshire Marine/Sir Benfro Forol SAC	21.5	Grey seal
Llyn Peninsula and the Sarnau/Pen Llyn a'r Sarnau SAC	66.5	Bottlenose dolphin Grey seal
Bristol Channel Approaches/Dynesfeydd Môr Hafren SAC	85.3	Harbour porpoise



4.2 Potentially Significant Effects

4.2.1 Construction Phase

For the various marine biodiversity receptors, the following impacts could occur due to the construction activities of the Proposed Development:

- Temporary loss and/or disturbance of seabed habitats;
- Long term loss and/or disturbance of seabed habitats;
- Increased Suspended Sediment Concentrations (SSCs) and associated deposition;
- Changes in water quality (including release of sediment bound contaminants);
- Accidental pollution to the surrounding environment;
- Increased risk of introduction and spread of Invasive Non-Native Species (INNS);
- Underwater noise from piling;
- Underwater noise from vessels; and
- Increased risk of collision with vessels.

Given the varying physiology and ecology of the marine biodiversity receptors, some impacts are only relevant to certain receptors (e.g. the increased risk of vessel collision is only relevant to marine mammals).

4.2.2 Operation Phase

For the marine biodiversity receptors, the following impacts could occur due to the operational activities of the Proposed Development:

- Long term loss and/or disturbance of seabed habitats;
- Accidental pollution to the surrounding environment;
- Increased risk of introduction and spread of INNS;
- Underwater noise from vessels; and
- Increased risk of collision with vessels.

As above for the construction phase, some impacts are only relevant to certain marine biodiversity receptors.

4.3 Inclusion or Exclusion from EIA

The impacts proposed to be scoped in and out are presented in **Table 4.4** to **Table 4.6**, with justification for the proposed inclusion or exclusion from the EIA.

Table 4.4: Impacts Proposed to be Scoped In and Out for Benthic Subtidal and Intertidal Ecology

Impact	Relevant Phase ²		Scoped In / Out	Justification
	C	O		
Temporary loss and/or disturbance of seabed habitats	✓	✓	In – both phases	Temporary habitat loss and/or disturbance may occur during dredging activities in the construction and operation phases. Although temporary, benthic species and habitats may be vulnerable to this impact. Therefore, it is proposed that this impact is scoped into the assessment for benthic subtidal and intertidal ecology.
Long term loss and/or disturbance of seabed habitats	✓	✓	In – both phases	The footprint of infrastructure associated with the Proposed Development will represent a change in seabed habitat type. Existing benthic species and habitats could be vulnerable to this impact. Therefore, it is proposed that this impact is scoped into the assessment for benthic subtidal and intertidal ecology.
Increased SSCs and associated deposition	✓	✓	In – both phases	There will be dredging undertaken in the construction and operation phases, which could result in increased SSCs and deposition. Given their low mobility, benthic habitats and species may be vulnerable to this impact, through smothering, increased turbidity, deposition, and siltation rate changes. Therefore, it is proposed that this impact is scoped into the assessment for benthic subtidal and intertidal ecology.
Changes in water quality (including release of sediment bound contaminants)	✓	✓	In – both phases	Dredging associated with construction activities and for maintenance will be undertaken at the Planning Boundary. This could result in changes in water quality, such as the release of sediment bound contaminants. Benthic species and habitats may be vulnerable to this impact, and it is therefore proposed to be scoped into the assessment.
Accidental pollution to the surrounding environment	✓	✓	Out – both phases	There is a risk of accidental pollution from vessels and equipment. However, this risk is mitigated by the implementation of measures set out in standard post-consent plans, such as an Environmental Management Plan (EMP), which will include a Marine Pollution Contingency Plan (MPCP). These plans will include planning for accidental spills, address all potential contaminants that could be released, and include key emergency contact details. They will also set out good industry practice and relevant guidelines for preventing pollution at sea (such as those from the Oslo Paris Convention (OSPAR), International Maritime Organisation (IMO), and the International Convention for the Prevention of Pollution from Ships (MARPOL)). Thus, it is unlikely that accidental pollution will occur. In the unlikely event that it did, the magnitude will be minimised through measures outlined in plans such as the MPCP.

² Phase of the Proposed Development wherein each impact is applicable. C = Construction, O = Operation.

EIA SCOPING REPORT

Impact	Relevant Phase ²		Scoped In / Out	Justification
	C	O		
				Therefore, it is proposed that this impact is scoped out of the assessment for benthic subtidal and intertidal ecology.
Increased risk of introduction and spread of INNS	✓	✓	In – both phases	There is potential for the increased risk of introduction and spread of INNS associated with the Proposed Development. This is due to vessel movement which may act as vectors facilitating the spread of INNS. In addition, the installation of artificial hard structures (such as a pontoon and/or decking) may represent increased available habitat for INNS to colonise throughout the operation phase. While an INNS Management Plan will be produced as a mitigation measure, this impact is proposed to be scoped in for benthic subtidal and intertidal ecology. This is due to the lower ranges and limited mobility of benthic species and habitats (in comparison to fish, shellfish, and marine mammals). Therefore, this impact presents a larger risk to localised benthic communities, and is proposed to be scoped in .

Table 4.5: Impacts Proposed to be Scoped In and Out for Fish and Shellfish Ecology

Impact	Relevant Phase ³		Scoped In / Out	Justification
	C	O		
Temporary loss and/or disturbance of seabed habitats	✓	✓	Out – both phases	Temporary habitat loss and/or disturbance may occur during dredging activities in the construction and operation phases. The footprint of this impact, however, would only constitute a very small fraction of the known ranges of local fish and shellfish populations. Given that the works will be undertaken within an existing ferry terminal in Fishguard Harbour, the area does not represent pristine habitat, and any fish and shellfish populations within the harbour are likely to be habituated to this. The Fishguard Harbour is not considered to represent an important habitat for fish and shellfish species, in the context of the wider Pembrokeshire coast. Temporary loss and/or disturbance to important fish and shellfish feeding, nursery and spawning habitats is therefore unlikely. Therefore, it is proposed that this impact is scoped out of the assessment for fish and shellfish ecology.
Long term loss and/or disturbance of seabed habitats	✓	✓	Out – both phases	The footprint of infrastructure associated with the Proposed Development will cover a localised area which would only constitute a very small fraction of the known ranges of local fish and shellfish populations. Given that the works will be undertaken within an existing ferry terminal within a harbour, the area does not represent pristine habitat, and any fish and shellfish populations within the harbour are likely to be habituated to this. The Fishguard Harbour is not considered to represent an important habitat for fish and shellfish species, in the context of the wider Pembrokeshire coast. Long term habitat loss important fish and shellfish feeding, nursery and spawning habitats is therefore unlikely. Therefore, it is proposed that this impact is scoped out of the assessment for fish and shellfish ecology.
Increased SSCs and associated deposition	✓	✓	In – both phases	There will be dredging undertaken in the construction and operation phase, which could result in increased SSCs and deposition. Fish and shellfish species may be vulnerable to this impact, through smothering, increased turbidity, deposition, and siltation rate changes. Therefore, it is proposed that this impact is scoped into the assessment for fish and shellfish ecology.
Changes in water quality (including release of sediment bound contaminants)	✓	✓	In – both phases	Dredging associated with construction activities and for maintenance will be undertaken at the Planning Boundary. This could result in changes in water quality, such as the release of sediment bound contaminants. Fish and shellfish species may be vulnerable to this impact, and it is therefore proposed to be scoped into the assessment.

³ Phase of the Proposed Development wherein each impact is applicable. C = Construction, O = Operation.

EIA SCOPING REPORT

Impact	Relevant Phase ³		Scoped In / Out	Justification
	C	O		
Accidental pollution to the surrounding environment	✓	✓	Out – both phases	Proposed to be scoped out , applying the justification as for benthic subtidal and intertidal ecology (Table 4.4).
Increased risk of introduction and spread of INNS	✓	✓	Out – both phases	There is potential for the increased risk of introduction and spread of INNS associated with the Proposed Development. This is due to vessel movement which may act as vectors facilitating the spread of INNS. In addition, the installation of artificial hard structures (such as a pontoon and/or decking) may represent increased available habitat for INNS to colonise throughout the operation phase. This impact has been scoped in for benthic subtidal and intertidal ecology (see Table 4.4). However, given the wider ranging nature and habitat use of fish and shellfish species in comparison to benthic species, this impact is not likely to represent significant impact to fish and shellfish ecology. This, in combination with the embedded mitigation of an INNS Management Plan has been deemed sufficiently rational to scope out this impact for fish and shellfish ecology.
Underwater noise from piling	✓	×	In – construction N/A – operation	Piling of steel piles during the construction phase has the potential to cause auditory injury (Permanent Threshold Shift (PTS) or Temporary Threshold Shift (TTS)) and/or behavioural disturbance in fish and shellfish species. This impact is therefore proposed to be scoped in for further consideration within the EIA Report for fish and shellfish ecology.
Underwater noise from vessels	✓	✓	Out – both phases	The presence of vessels associated with construction activities and maintenance dredging are not likely to represent a significant change from the baseline vessel traffic already present within Fishguard Harbour. Therefore, it is proposed that this impact is scoped out of the assessment for fish and shellfish ecology.

Table 4.6: Impacts Proposed to be Scoped In and Out for Marine Mammals

Impact	Relevant Phase ⁴		Scoped In / Out	Justification
	C	O		
Temporary loss and/or disturbance of seabed habitats	✓	✓	Out – both phases	Temporary and long term seabed habitat loss and/or disturbance could result in a loss of marine mammal foraging habitat. However, this loss and/or disturbance will only represent a very small fraction of the known foraging ranges of these highly mobile species. In addition, as the works associated with the Proposed Development will take place within an active harbour, it is unlikely that this area represented regular foraging habitat for the marine mammal baseline. Therefore, it is proposed that these impacts will be scoped out of the assessment for marine mammals.
Long term loss and/or disturbance of seabed habitats	✓	✓	Out – both phases	
Increased SSCs and associated deposition	✓	×	Out – construction N/A – operation	Increases in SSCs and associated deposition could have both direct and indirect impacts on marine mammals. Direct impacts to marine mammals include the reduced visibility and, thus, potentially reduced foraging ability. However, marine mammals are well known to forage in tidal areas where water conditions are turbid and visibility conditions poor. The species scoped into the assessment (bottlenose dolphin, harbour porpoise, grey seal) commonly frequent coastal areas, so would likely be tolerant of turbid and silty water. Harbour seal and harbour porpoise have been documented foraging in areas with high tidal flows (Hastie <i>et al.</i>, 2016, Pierpoint, 2008), therefore, low light levels and turbid waters associated with SSCs are unlikely to impair foraging success. Furthermore, marine mammals can navigate and forage using other mechanisms than just eyesight. For example, seals can detect water movements and hydrodynamic trails with their mystacial vibrissae (i.e. whiskers); while odontocetes primarily use echolocation to navigate and find food in darkness (Grant <i>et al.</i>, 2013, Marriott <i>et al.</i>, 2013, Schulte-Pelkum <i>et al.</i>, 2007). Although increased SSCs may arise during activities within the Planning Boundary, the maximum impact range is expected to be highly localised, and sediments will rapidly dissipate over one tidal excursion. In addition to the large natural variability in SSCs within the Fishguard Harbour and the adaptations of marine mammals to silty, turbid water, it is proposed that this impact will be scoped out of the assessment for marine mammals.
Changes in water quality (including release of sediment bound contaminants)	✓	×	Out – construction N/A – operation	Changes in water quality could arise from dredging activities during the construction phase. This includes the potential for the release of sediment bound contaminants. The extent of sediment dispersal is not expected to cause significant elevations in water

⁴ Phase of the Proposed Development wherein each impact is applicable. C = Construction, O = Operation.

EIA SCOPING REPORT

Impact	Relevant Phase ⁴		Scoped In / Out	Justification
	C	O		
				column contamination. In addition, the temporary and localised changes in water column contamination levels are considered unlikely to produce lethal and sub-lethal effects in these highly mobile species (the concentrations required to produce these effects are generally acquired through long-term, chronic exposure to prey species in which contaminants have bioaccumulated). The potential for water quality impacts to marine mammal during construction is proposed to be scoped out of the assessment.
Accidental pollution to the surrounding environment	✓	✓	Out – both phases	Proposed to be scoped out , applying the same justification as for benthic subtidal and intertidal ecology (Table 4.4).
Underwater noise from piling	✓	×	In – construction N/A – operation	Piling of steel piles during the construction phase has the potential to cause auditory injury (PTS or TTS) and/or behavioural disturbance (including barrier effects) in marine mammals. This impact is therefore proposed to be scoped in for further consideration within the EIA Report for marine mammals.
Underwater noise from vessels	✓	✓	Out – both phases	Proposed to be scoped out , applying the same justification as above for fish and shellfish ecology (Table 4.5).
Increased risk of collision with vessels	✓	✓	Out – both phases	Vessels associated with construction activities and maintenance dredging are unlikely to represent additional disturbance which is discernible above the already high levels of anthropogenic activity in Fishguard Harbour. Given the nature of harbours, vessels will also mainly be stationary or travelling at low speeds making the risk of collision very low. Furthermore, through regular exposure to vessel movements, marine mammals utilising Fishguard Harbour are also expected to be habituated to high levels of vessel presence. Therefore, this impact is proposed to be scoped out of the assessment for marine mammals.

4.4 EIA Methodology

The marine biodiversity assessment in the EIA Report will follow standard EIA procedure. Within the Marine Biodiversity EIA Report Chapter, the baselines presented in sections 4.1.1 to 4.1.3 will be expanded upon. From this, key marine biodiversity receptors will be designated as Important Ecological Features (IEFs) and assigned levels of importance and sensitivity. The level of importance, ranging from local to international, will be informed by a range of factors, such as conservation designations, International Union for the Conservation of Nature (IUCN) status, and the importance of Fishguard Harbour at the population scale, among others. The significance of effect of impacts associated with the Proposed Development will then be assessed for each marine biodiversity IEF.

Impacts proposed to be scoped in or out in this Scoping Report will be agreed upon with key stakeholders and regulatory bodies as part of the Scoping Opinion. All impacts agreed to be scoped in will then be assessed in terms of 'magnitude of impact' and 'sensitivity of the receptor' to produce an assessment of significance for all the marine biodiversity IEFs. The magnitude of impact will be derived from the Project Design Envelope (PDE) and will represent the worst-case scenario for each impact associated with the Proposed Development. The sensitivity of the receptor will be derived from the wider scientific literature and the Marine Evidence Based Sensitivity Assessment (MarESA) (where available). Where required, site-specific modelling will also inform this assessment, such as noise and sediment dispersal modelling.

The following guidance documents will also be considered when undertaking the EIA for marine biodiversity:

- 'Marine Evidence Based Sensitivity Assessment – A Guide' (Tyler-Walters *et al.*, 2023);
- 'Guidelines for Ecological Impact Assessment (EclA) in the UK and Ireland' (Chartered Institute for Ecology and Environmental Management (CIEEM), 2022);
- 'Consultation report: harbour porpoise SACs noise guidance' (JNCC, 2020a);
- 'Guidance on noise management in harbour porpoise SACs' (JNCC, 2020b);
- 'Marine mammal sound exposure criteria' (Southall *et al.*, 2019);
- 'Sound Exposure Guidelines for Fishes and Sea Turtles' (Popper *et al.*, 2014); and
- 'Guidelines for minimising the risk of injury to marine mammals from piling' (JNCC, 2010).

An assessment of the Proposed Development alone, and cumulatively with other plans and projects, will be undertaken using this approach. In addition, inter-related and transboundary impacts will be considered.

4.5 Preliminary Mitigation Measures

4.5.1 Construction Phase

There are a range of mitigation measures associated with the construction phase of the Proposed Development, which will evolve over time as the EIA develops:

- Piling will include a combination of a slow start, soft start, ramp up or Acoustic Deterrent Devices (ADDs), which will be finalised and detailed in the Piling Strategy.
- Adoption of JNCC guidelines for minimising the risk of injury to marine mammals from piling noise if and where required.
- Development of and adherence to a Vessel Management Plan (VMP) and Navigation Safety Plan (NSP).
- Development of, and adherence to a Construction Method Statement (CMS) along with a Code of Construction Practice (CoCP).
- Development of and adherence to an EMP, which will include a MPCP, Marine Mammal Mitigation Plan (MMMP), and an INNS Management Plan.
- All relevant Health and Safety Executive (HSE) procedures will be followed.

4.5.2 Operation Phase

There are a range of mitigation measures associated with the operation phase of the Proposed Development, which will evolve over time as the EIA develops:

- Development of and adherence to an EMP.
- Development of and adherence to a VMP and NSP.
- All relevant HSE procedures will be followed.

4.6 Interactions

The marine biodiversity section is relevant to, and should be read alongside, the following other sections:

- Section **Error! Reference source not found.** – Biodiversity: Terrestrial and Birds;
- Section **Error! Reference source not found.** – Coastal Processes;
- Section **Error! Reference source not found.** – Water Resources and Water Frameworks Directive (WFD); and
- Section **Error! Reference source not found.** – Underwater Acoustics.

4.7 Summary of Scoping Exercise

A brief overview of the marine biodiversity baseline has been presented for the relevant receptors: benthic subtidal and intertidal ecology, fish and shellfish ecology, and marine mammals (see sections 4.1.1 to 4.1.3, respectively). Based on the works associated with the Proposed Development, a range of impacts have been considered for further inclusion in the EIA Report. The following impacts are proposed to be scoped in for the marine biodiversity receptors:

- Benthic subtidal and intertidal ecology:

- Temporary loss and/or disturbance of seabed habitats in both phases;
- Long term loss and/or disturbance of seabed habitats in both phases;
- Increased SSCs and associated deposition in both phases;
- Changes in water quality (including release of sediment bound contaminants) in both phases; and
- Increased risk of introduction and spread of INNS in both phases;
- Fish and shellfish ecology:
 - Increased SSCs and associated deposition in both phases;
 - Changes in water quality (including release of sediment bound contaminants) in both phases; and
 - Underwater noise from piling in the construction phase;
- Marine mammals
 - Underwater noise from piling in the construction phase.

The impacts proposed to be scoped in and out are presented in full detail in Table 4.4 to Table 4.6, for each marine biodiversity receptor group, alongside justification for inclusion/exclusion.

The EIA methodology was detailed in section 4.4, followed by preliminary mitigation measures (section 4.5), and interactions with other sections of this Scoping Report (section 4.6).

4.8 References

- ABPmer. (2018). *Fishguard Ferry Port Marine Ecology Surveys, Baseline surveys for the proposed linkspan works*, ABPmer. Report No. R.2841. A report produced by ABPmer for RPS, January 2018. pp.29.
- Baines, M. E. and Evans, P. G. H. (2012). *Atlas of the Marine Mammals of Wales*. CCW Monitoring Report No. 68. 68. pp.129.
- BRIG. (2011). *Intertidal Underboulder Communities*. UK Biodiversity Action Plan Priority Habitat Descriptions. JNCC. Peterborough, England
- Campanella, F. and van der Kooij, J. (2021). *Spawning and nursery grounds of forage fish in Welsh and surrounding waters Distribution of adult and juvenile forage fish species during autumn and winter*. Cefas. Cefas Project Report for RSPB. pp.65.
- Carter, M. I. D., Boehme, L., Cronin, M. A., Duck, C. D., Grecian, W. J., Hastie, G. D., Jessopp, M., Matthiopoulos, J., McConnell, B. J., Miller, D. L., Morris, C. D., Moss, S. E. W., Thompson, D., Thompson, P. M. and Russell, D. J. F. (2022). *Sympatric Seals, Satellite Tracking and Protected Areas: Habitat-Based Distribution Estimates for Conservation and Management*. *Frontiers in Marine Science*, 9, pp.18. DOI:10.3389/fmars.2022.875869.
- CIEEM. (2022). *Guidelines for ecological impact assessment in the UK and Ireland. Terrestrial, freshwater, coastal and marine*. CIEEM. Version 1.2 - Updated April 2022. pp.44.
- Coull, K., Johnstone, R. and Rogers, S. (1998). *Fisheries sensitivity maps in British waters*. Published and distributed by UKOOA Ltd pp.63.
- Ellis, J., Milligan, S., Readdy, L., Taylor, N. and Brown, M. (2012). *Spawning and nursery grounds of selected fish species in UK waters*, *Centre for Environment Fisheries and Aquaculture Science (CEFAS)*. CEFAS Science Series Technical Report pp.56.
- EMODnet. (2024). *Biogenic Substrate in Europe* [Online]. Available at: <https://emodnet.ec.europa.eu/geonetwork/srv/eng/catalog.search#/metadata/2328d839-8024-47f3-aca6-32d788afe3dd>. Accessed on: October 2024.

- Evans, P. G. H., Pierce, G. J., Veneruso, G., Weir, C. R., Gibas, D., Anderwald, P. and Begoña Santos, M. (2015). *Analysis of long-term effort-related land-based observations to identify whether coastal areas of harbour porpoise and bottlenose dolphin have persistent high occurrence and abundance (revised June 2015)*. JNCC Report No. 543. Peterborough, UK
- Evans, P. G. H. and Waggitt, J. J. (2023). *Modelled Distribution and Abundance of Cetaceans and Seabirds in Wales and Surrounding Waters*. NRW Evidence Report, Report No: 646. Natural Resources Wales. Bangor. 646. pp.354.
- Feingold, D. and Evans, P. G. H. (2014). *Bottlenose Dolphin and Harbour Porpoise Monitoring in Cardigan Bay and Pen Llŷn a'r Sarnau Special Areas of Conservation 2011 - 2013*. NRW Evidence Report Series. Natural Resource Wales. Bangor pp.120.
- Fernandez-Betelu, O., Graham, I. M., Cornulier, T. and Thompson, P. M. (2019). *Fine scale spatial variability in the influence of environmental cycles on the occurrence of dolphins at coastal sites*. Scientific Reports, 9 (1), pp.1-12.
- Genov, T., Centrih, T., Kotnjek, P. and Hace, A. (2019). *Behavioural and temporal partitioning of dolphin social groups in the northern Adriatic Sea*. Marine Biology, 166 (1), pp.14. DOI:10.1007/s00227-018-3450-8.
- Gilles, A., Authier, M., Ramirez-Martinez, N. C., Araújo, H., Blanchard, A., Carlström, J., Eira, C., Dorémus, G., Fernández-Maldonado, C., Geelhoed, S. C. V., Kyhn, L., Laran, S., Nachtsheim, D., Panigada, S., Pigeault, R., Sequeira, M., Sveegaard, S., Taylor, N. L., Owen, K., Saavedra, C., Vázquez-Bonales, J. A., Unger, B. and Hammond, P. S. (2023). *Estimates of cetacean abundance in European Atlantic waters in summer 2022 from the SCANS-IV aerial and shipboard surveys*. Final report published 29 September 2023 pp.64.
- Grant, R., Wieskotten, S., Wengst, N., Prescott, T. and Dehnhardt, G. (2013). *Vibrissal touch sensing in the harbor seal (Phoca vitulina): how do seals judge size?* Journal of Comparative Physiology A, 199, pp.521-533.
- Hammond, P. S., C. Lacey, A. Gilles, S. Viquerat, P. Börjesson, H. Herr, K. Macleod, V. Ridoux, M. Santos, M. Scheidat, J. Teilmann, J. Vingada and N. Øien. (2021). *Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys. Revised June 2021*. pp.42.
- Hammond, P. S., Macleod, K., Berggren, P., Borchers, D. L., Burt, L., Cañadas, A., Desportes, G., Donovan, G. P., Gilles, A., Gillespie, D., Gordon, J., Hiby, L., Kuklik, I., Leaper, R., Lehnert, K., Leopold, M., Lovell, P., Øien, N., Paxton, C. G. M., Ridoux, V., Rogan, E., Samarra, F., Scheidat, M., Sequeira, M., Siebert, U., Skov, H., Swift, R., Tasker, M. L., Teilmann, J., Van Canneyt, O. and Vázquez, J. A. (2013). *Cetacean abundance and distribution in European Atlantic shelf waters to inform conservation and management*. Biological Conservation, 164, pp.107-122. DOI:<https://doi.org/10.1016/j.biocon.2013.04.010>.
- Hastie, G. D., Russell, D. J., Benjamins, S., Moss, S., Wilson, B. and Thompson, D. (2016). *Dynamic habitat corridors for marine predators; intensive use of a coastal channel by harbour seals is modulated by tidal currents*. Behavioral Ecology and Sociobiology, 70 (12), pp.2161-2174. DOI:10.1007/s00265-016-2219-7.
- Heinänen, S. and Skov, H. (2015). *The identification of discrete and persistent areas of relatively high harbour porpoise density in the wider UK marine area*. JNCC Report No: 544. Peterborough, UK pp.115.
- IAMMWG. (2022). *Updated abundance estimates for cetacean Management Units in UK waters*. JNCC Report No. 680 (Revised March 2022). JNCC. Peterborough. 0963-8091. pp.22.
- IAMMWG. (2023). *Review of Management Unit boundaries for cetaceans in UK waters*. JNCC. Peterborough, UK pp.23.
- JNCC. (2010). *Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise*. Joint Nature Conservation Committee. Aberdeen, Scotland pp.13.
- JNCC. (2020a). *Consultation Report: Harbour porpoise SACs noise guidance*. JNCC Report No. 652. Peterborough, UK pp.90.
- JNCC. (2020b). *Guidance on noise management in harbour porpoise SACs* [Online]. Available at: <https://hub.jncc.gov.uk/assets/2e60a9a0-4366-4971-9327-2bc409e09784>. Accessed on: July 2024.

- Jones, E. L., McConnell, B. J., Smout, S., Hammond, P. S., Duck, C. D., Morris, C. D., Thompson, D., Russell, D. J. F., Vincent, C., Cronin, M., Sharples, R. J. and Matthiopoulos, J. (2015). *Patterns of space use in sympatric marine colonial predators reveal scales of spatial partitioning*. Marine Ecology Progress Series, 534, pp.235-249. DOI:10.3354/meps11370.
- Kastelein, R., Hoek, L., Jennings, N., Kester, R. and Huisman, R. (2019). *Reduction in Body Mass and Blubber Thickness of Harbor Porpoises (Phocoena phocoena) Due to Near-Fasting for 24 Hours in Four Seasons*. Aquatic Mammals, 45, pp.37-47. DOI:10.1578/AM.45.1.2019.37.
- Kastelein, R. A., Hardeman, J. and Boer, H. (1997). *Food consumption and body weight of harbour porpoises (Phocoena phocoena)*. In: Read, A. J., Wiepkema, P. R. and Nachtigall, P. E. (eds.) *The Biology of the Harbour Porpoise*. The Netherlands: De Spil Publishers.
- Lohrengel, K., Evans, P. G. H., Lindenbaum, C. P., Morris, C. W. and Stringell, T. B. (2018). *Bottlenose Dolphin Monitoring in Cardigan Bay 2014 - 2016*. Natural Resources Wales. Bangor. NRW Evidence Report No: 191.
- Marine Conservation Society. (2020). *UK Basking Shark sightings from 1987 to 2016*. NBN Atlas.
- Marriott, S., Cowan, E., Cohen, J. and Hallock, R. M. (2013). *Somatosensation, echolocation, and underwater sniffing: adaptations allow mammals without traditional olfactory capabilities to forage for food underwater*. Zoological science, 30 (2), pp.69-75.
- MMO. (2023). *UK sea fisheries annual statistics report 2022*. Office of National Statistics.
- NRW. (2024a). *Marine ecology datasets for marine developments* [Online]. Available at: <https://naturalresources.wales/guidance-and-advice/business-sectors/marine/marine-ecology-datasets-for-marine-developments/?lang=en>. Accessed on: October 2024.
- NRW. (2024b). *NRW Marine Fish Surveys* [Online]. Available at: https://datamap.gov.wales/layergroups/geonode:nrw_marine_fish_surveys. Accessed on: October 2024.
- Pierpoint, C. (2008). *Harbour porpoise (Phocoena phocoena) foraging strategy at a high energy, near-shore site in south-west Wales, UK*. Journal of the Marine Biological Association of the United Kingdom, 88 (6), pp.1167-1173. DOI:10.1017/s0025315408000507.
- Popper, A., Hawkins, A., Fay, R., Mann, D., Bartol, S., Carlson, T., Coombs, S., Ellison, W., Gentry, R., Halvorsen, M., Løkkeborg, S., Rogers, P., Southall, B., Zeddies, D. and Tavalga, W. (2014). *Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI*. New York, Springer.
- Rogan, E., Breen, P., Mackey, M., Cañadas, A., Scheidat, M., Geelhoed, S. and Jessopp, M. (2018). *Aerial Surveys of Cetaceans and Seabirds in Irish waters: Occurrence, distribution and abundance in 2015-2017*.
- Rojano-Doñate, L., McDonald, B. I., Wisniewska, D. M., Johnson, M., Teilmann, J., Wahlberg, M., Højer-Kristensen, J. and Madsen, P. T. (2018). *High field metabolic rates of wild harbour porpoises*. Journal of Experimental Biology, 221 (Pt 23), pp.12. DOI:10.1242/jeb.185827.
- RPS. (2018). *Chapter 7.0: Marine Biodiversity*. Fishguard Port Replacement Linkspan Environmental Impact Assessment. Stena Line pp.62.
- Schulte-Pelkum, N., Wieskotten, S., Hanke, W., Dehnhardt, G. and Mauck, B. (2007). *Tracking of biogenic hydrodynamic trails in harbour seals (Phoca vitulina)*. Journal of Experimental Biology, 210 (5), pp.781-787. DOI:10.1242/jeb.02708.
- SCOS. (2023). *Scientific Advice on Matters Related to the Management of Seal Populations: 2022*. Natural Environment Research Council, Special Committee on Seals pp.206.
- Southall, B. L., Finneran, J. J., Reichmuth, C., Nachtigall, P. E., Ketten, D. R., Bowles, A. E., Ellison, W. T., Nowacek, D. P. and Tyack, P. L. (2019). *Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects*. Aquatic Mammals, 45 (2), pp.125-232. DOI:10.1578/am.45.2.2019.125.
- Taeubert, J.-E. and Geist, J. (2017). *The relationship between the freshwater pearl mussel (Margaritifera margaritifera) and its hosts*. Biology Bulletin, 44 (1), pp.67-73.

- Tyler-Walters, H., Tillin, H. M., d'Avack, E. A. S., Perry, F. and Stamp, T. (2023). *Marine Evidencebased Sensitivity Assessment (MarESA) – Guidance Manual*. Marine Life Information Network (MarLIN). Marine Biological Association of the UK. Plymouth, UK pp.170.
- Welsh Government. (2016). *Environment (Wales) Act 2016 – Section 7 Biodiversity Partnership Priority Habitats*. Welsh Government
- Wisniewska, D. M., Johnson, M., Teilmann, J., Rojano-Donate, L., Shearer, J., Sveegaard, S., Miller, L. A., Siebert, U. and Madsen, P. T. (2016). *Ultra-High Foraging Rates of Harbor Porpoises Make Them Vulnerable to Anthropogenic Disturbance*. *Current Biology*, 26 (11), pp.1441-6. DOI:10.1016/j.cub.2016.03.069.

5 BIODIVERSITY – TERRESTRIAL & BIRDS

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development on terrestrial and bird biodiversity.

At this stage in advance of the desk study, completion of site surveys and the evaluation of the results, a conservative approach has been taken in considering the elements of biodiversity that will be scoped into the assessment. The potential effects on habitats and species will be derived from targeted survey and assessment.

5.1 Baseline Scenario

The application site is 36ha in extent with the majority of the application site located within Fishguard Harbour. The terrestrial areas form 4.6ha of the application site. These terrestrial areas are approximately 600m long and between 65 and 80m wide and primarily comprise built development; ferry port infrastructure, roads, a railway line, the Fishguard Harbour railway station and a quay.

5.1.1 Designated Sites

Fishguard Harbour lies within West Wales Marine Special Area of Conservation (SAC) an international designated over 730,000ha in extent incorporating marine habitats between the Llyn Peninsula and the west coast of the Gower Peninsula. The SAC is designated for the protection of harbour porpoise *Phocoena Phocoena*.

There are no biological Sites of Special Scientific Interest (SSSIs) located within 2km of the application site. A Geological SSSI, Fishguard Cliffs, lies 1.1km south-east of the Proposed Development on the opposite side of the harbour.

St. David's SAC is located 4.6km west of the Proposed Development designated for vegetated sea cliffs, European dry heaths, and the plant species, floating water-plantain. Strumble Head – Llechdafad Cliffs SSSI is the only component of the SAC located within 10km of the Proposed Development which extending for approximately 12km along a west facing section of the Pembrokeshire coastline.

Two further SACs of international importance are located within 10km of the application site: Cleddau Rivers SAC 3.9km to the south at the closest point and North Pembrokeshire Woodlands SAC 5.5km to the south east at the closest point. Both the SACs comprise multiple component SSSIs, the closest being the Western Cleddau River SSSI and the Garn Wood, Kilkiffeth Wood & Dan-Deri_Cwm Felin Ban SSSI.

Other biological SSSIs located within 5km of the application site are Cwm Dewi SSSI, 3.87km to the east, and Esgyrn Bottom SSSI, 4.5km to the south-east.

5.1.2 Terrestrial Habitats

The baseline terrestrial environment at the Proposed Development is existing developed land. The western half of the Proposed Development is dominated by hard standing, currently used for storage and the movement of vehicles using the ferry services. A strip of bramble and butterfly bush lies alongside a section of the railway line in the southern section of the application site with no other areas of vegetated habitat. A small number of kiosk style buildings and temporary buildings are located within the ferry terminal. Larger one and half storey buildings are associated with the Fishguard Harbour railway station.

The southern section of the harbour is constructed from rock armour with an engineered vertical wall to the north. The breakwater forming on the northern boundary of the harbour lies over 300m to the north of the

closest terrestrial habitats. The end of the breakwater lies over 50m from the closest section of the open water harbour within the application site.

The application site is bounded to the north-west by a steep cliff, with many patches of low growing gorse scrub growing on the rock face. A strip of self-sown immature trees grow at the base, adjoining the site boundary. Broadleaved woodland, growing on steeply sloping ground, adjoins the south-western part of the application site, below the Fishguard Hotel.

Areas of coastal grassland, heathland and woodland occur above the cliff. Residential buildings within Harbour Village are located further to the west and larger urban residential areas lie 600m to the south-west.

5.1.3 Species

The extensive areas of hardstanding are subject to active operational use and has negligible value for legally protected and priority species.

Baseline surveys will be undertaken to assess the presence absence of legally protected species, and priority species comprising species of principal importance under Section 7 of the Environment Act 2016, and Birds of Conservation Concern in Wales.

The results of the survey will define if there are any potential ecology receptors (non-marine) that could be impacted by the development proposal.

Surveys will specifically assess the presence/absence of

- bat roosts,
- otter resting places/holts, and
- nesting birds.

A desk study will be prepared. Information on designated sites will be derived from the following sources; MAGIC: Nature on the Map; Natural Resources Wales (NRW): Designated Sites Search; and Natural Resources Wales Ancient Woodland Inventory. Past species records will be obtained from West Wales Biodiversity Information Centre (WWBIC) and the National Biodiversity Network (NBN).

A preliminary bat roost assessment will be undertaken for each of the buildings within the application site to assess their potential to be used by roosting bats. The operational use of the harbour as a ferry port and the presence of many artificial lighting units including floodlights will influence the species activity at the site.

Buildings located within the Proposed Development could have potential to support nesting birds and may have features with the potential to be used by roosting bats. Previous surveys in 2017 a small colony of house martins were nesting in buildings to the north of the Proposed Development adjacent to the railway station. A breeding bird survey will be undertaken over several site visits between March and June to define the species present and numbers of breeding pairs.

Requirements for other specific surveys will be directly informed by the habitat survey and desk study. The survey for otter will assess the presence/absence of features that could be used as resting places or holts in the rock armour or harbour wall.

Fishguard Harbour is not considered to support an assemblage of wintering and migratory wildfowl or waders due to the existing operational activity. Consequently, wintering birds are scoped out of the impact assessment, consistent with the Environmental Impact Assessment completed for the previous Replacement Linkspan completed in 2018.

5.1.4 Construction Phase

Landside Development Activities

On the landside, the construction activities will be limited to changes to road markings, car parking, and the movement of passenger access and footways. Drainage provision will be made for the new surfacing. Ducting will be installed for communications and future provisions. No works are planned for the railway station, associated buildings or rail line.

The development will result in a negligible loss of habitat. The rock face and broadleaved woodland located outside the site boundary would not be adversely affected from indirect effects associated with construction activities. No potentially significant phase construction impacts have been identified on any terrestrial habitats.

Harbour Development Activities

Parts of the harbour will be subject construction works and reclamation. The existing disused RNLI jetty will be demolished to enable the reclamation works and the existing slipway will be enveloped into the reclamation.

- Demolition of existing Linkspan support
- Dredging of the base of the harbour
- Construction of new rock armour revetment
- 'Reinforced concrete bank seat' to be constructed on the harbour wall with piled tubular steel supports
- Rotary piling

Otter will be resident in the local area and there assumed to regularly occur in Fishguard Harbour and the surrounding coastline. Any cavity features in the rock armour or engineered sections of the sea wall would have the potential to be used as a resting place by otter.

A pair of black guillemot have regularly nested in the sea wall alongside the railway station; and remain resident at the harbour in winter. The small number of birds in Fishguard Harbour represents the entire Pembrokeshire population of this species.

Potential construction phase impacts on species will be assessed in the context of the findings of the survey, detailed construction information.

5.1.5 Operation Phase

The operation phase of the Proposed Development is expected to have negligible impacts on designated sites, habitats and species. The Linkspan will replace an existing structure while the deepened harbour and adjoining engineering structures will not alter the context or nature of the environment for otter. It is anticipated that all potential operational effects on habitats and species will be scoped out.

5.2 Inclusion or Exclusion from EIA

Designated Sites

The Proposed Development is geographically separated from internationally designated sites and potential likely significant effects on the terrestrial and ornithological features have been screened out. The closest SSSIs are located over 3km from the development. The conservation status of habitats, features and species associated with these national designations will not be adversely affected by the Proposed Development.

Part of the application site lies within West Wales Marine SAC and impacts on the qualifying features of this designated site are addressed in the Marine section of the scoping report.

Designated sites have been scoped out of the terrestrial and ornithology ES chapter.

Habitats

There is no potential for any significant impacts on any terrestrial habitats including those listed under Section 7 of the Environment (Wales) Act 2016. All non-marine habitats have been scoped out of the terrestrial and ornithology ES chapter.

Faunal Species

These potential inclusions establish an overall precautionary framework for potential effects on species. The species surveys to be completed in spring/summer 2025 will confirm the presence/absence of roosting bats and nesting black guillemot. Where breeding black guillemot and/or bat roosts are present within or adjacent to the application site it is anticipated that the ES chapter would assess all potential effects on these species. Conversely where there is high confidence in the absence, these species would also be scoped out of the ES chapter.

The potential for significant impacts on all other legally protected or priority (non-marine) fauna species and has been scoped out of the ES chapter.

Following a precautionary approach to scoping changes in otter foraging behaviour in the locality of the harbour during construction activities. The potential for the temporary disturbance (or even permanent loss) of a resting place used by otter cannot be discounted at this stage. The potential for a significant impact to arise on otter during the construction phase will be reviewed during the evolution of the construction works including programme, working hours and extent of the harbour and immediate surroundings would be subject to elevated noise and the maximum duration of the effect.

The inclusion of otter as an important ecological receptor in a biodiversity - terrestrial ES chapter will continue to be reviewed through the detailed design stage in advance of the preparation of the ES as an iterative 're-scoping' exercise.

5.3 EIA Assessment Methodology

The Biodiversity - terrestrial and ornithology chapter of the ES will be prepared with reference to the methodology referred to in Guidelines for Ecological Impact Assessment - Third Edition' GLVIA3 (Chartered Institute of Ecology and Environmental Management (CIEEM), 2016) will consider all potentially significant effects on terrestrial ecology receptors.

The following legislation will be referenced in the assessment of effects within the biodiversity chapter:

- The Conservation of Habitats and Species Regulations 2017;
- The Environment (Wales) Act 2016;
- The Countryside and Rights of Way Act 2000;
- Wildlife and Countryside Act 1981 (as amended);
- The Natural Environment and Rural Communities (NERC) Act 2006; and
- The Well-being of Future Generations Act (Wales) 2015.

The following national and local planning policies and guidance documents will help inform the assessment where relevant to the proposed development,

- Planning Policy Wales 12;
- Technical Advice 5: Nature Conservation and Planning;
- Pembrokeshire County Council Adopted Local Development Plan 2016
- Pembrokeshire County Council Biodiversity Supplementary Planning Guidance 2021
- The Nature Recovery Plan for Wales 2020;

- Biodiversity Duty Plan 2017;
- Action Plan for Pollinators in Wales; and
- Future Wales – The National Plan 2040.
- The Nature Recovery Plan 2020 ;

Each relevant species will be assigned a sensitivity/value/importance with reference to its distribution and status (including a consideration of trends based on available historical records). The sensitivity of each important receptor will then be defined on a scale of high, medium, low and negligible. In line with CIEEM guidance the sensitivity of the receptor will be cross-referenced to a geographic scale, as follows:

- High – national context;
- Medium - district / county context;
- Low – local context; and
- Negligible – up to site context.

The assessment will identify and characterise impacts in order to assess potential adverse (and beneficial) effects and consider the construction stage and operational stages of the Proposed Scheme.

For each relevant ecological receptor, the impact magnitude will be derived from an assessment of the extent, scale, duration, reversibility and timing/frequency. Further consideration will be given to the fragility or stability of the habitats, sensitivity of the species and conservation status. The magnitude of the impact will be assigned on a scale of large, medium, small and negligible.

All effects will be classified as adverse, beneficial or no change and be defined on a scale of major, moderate, minor, and negligible and will be referenced to relevant geographic context of the effect.

The assessment of impacts will consider primary mitigation measures (i.e. those built into the Proposed Scheme) that help to avoid and reduce impacts and incorporate opportunities for ecological and biodiversity enhancement. Where necessary following assessment, additional mitigation measures will be defined. Furthermore, enhancement measures (delivering net biodiversity benefit) will be defined in addition to the mitigation and compensation measures. This assessment of effects will also reference extent, diversity, condition and connectivity in the final development and the overall net outcome for biodiversity.

The significance of effects will be determined following this through professional judgment. Under the CIEEM guidance on assessment, a 'significant effect' is an effect that either supports or undermines conservation objectives for 'important ecological features'.

5.4 Preliminary Mitigation Measures

5.4.1 Construction Phase

Primary mitigation will need to incorporate elements of biodiversity value in the Proposed Development to ensure that the proposals deliver a net benefit for biodiversity consistent with the requirements of PPW12 and the Environment (Wales) Act 2016. This could include the provision of artificial nest boxes and boxes in unlit locations, appropriate for a developed operational site without green spaces.

Environmental and species protection measures will be specified as additional mitigation measures that will be implemented during construction activities. The information will be presented in a Construction Environmental Management Plan (CEMP) prepared in conjunction lead site contractor team who will have ultimate responsibility for its full implementation. Environmental protection will address pollution avoidance and emergency responses, dust control and surface water management.

Requirements for species mitigation and compensation measures will be informed by surveys to be completed for the non-marine protected and priority species with the potential to occur within the application site. The results of the baseline species surveys will inform the species protection measures to be incorporated into the

enabling works, and construction working methods. Opportunities to avoid potential impacts would be adopted through detailed design wherever possible.

Unavoidable impacts on otter resting places or bat roosts would be subject to specific species protection and compensation measures. The works would need to be covered by a Natural Resources Wales (NRW) species mitigation licences. Licence applications would demonstrate that the impact cannot be avoided through alternative design, and that the proposed mitigation measures will protect the conservation status of the species at the site.

A precautionary approach will be taken to the use of the harbour by otter during the construction phase. It is anticipated that construction activities will overlap periods when otters are actively hunting and could enter the harbour to feed. Noise abatement will be adopted to reduce the zone of elevated noise levels through piling method, timing and duration of the activities that will generate the highest noise levels in the harbour. Mitigation should include programming activities outside periods when otters are most likely to be active.

The licence method statement will define the measures that will be implemented to close off all potential resting places within 50m of the sources of indirect disturbance prior to the commencement of the construction phase. Provision of alternative resting places would be brought forward where required to address the effects created by construction and changes to the harbour on completion of the construction phase.

The presence of a bat roost in buildings subject to demolition or directly adjoining construction activities would trigger the need for temporary or permanent loss of a roost under a NRW species mitigation licence. Species protection and alternative roost protection would be built into the work programme. The mitigation would be appropriate for the species affected and the conservation status of the existing roost.

Environmentally sensitive lighting design/strategy to avoid increasing the level of artificial lighting within the harbour. Site design will aim maintain the context of the adjoining habitats and their ability to function as wildlife corridors as part of the wider network of habitats.

Works affecting habitats with the potential to support nesting birds will be undertaken between October and mid-February wherever possible, typically outside of the breeding season. At all other times of year, inspections will be conducted for nesting birds and exclusion zones implementation around active nest sites.

5.4.2 Operation Phase

No additional mitigation or compensation proposals are anticipated during the operational phase.

5.5 Interactions

The otter is a semi-aquatic mammal utilising freshwater and marine habitats. Otters active along the coastline will be feeding on marine prey species covered in the marine chapter of the scoping report. Otters and the local population are solely covered under terrestrial biodiversity.

Terrestrial habitats within and adjoining the existing operational site will be influenced by hydrology/drainage, and site operation.

Biodiversity net benefits need to be provided by all developments. Integration of features into built development elements and/or areas of landscaping will be required for the Proposed Development for overall benefits to be realised in the terrestrial environment.

5.6 Summary of Scoping Exercise

There is no potential for any significant impacts on any non-marine designated nature conservation sites or terrestrial habitats including those listed under Section 7 of the Environment (Wales) Act 2016 and these elements have been scoped out of the ES.

Surveys for otter, black guillemot and bat roosts in spring and summer 2025 will confirm which faunal species, if any, will be included in a Biodiversity - terrestrial and ornithology ES chapter. An iterative 're-scoping' of potential species impacts will continue through the detailed design stage informed by survey data.

Given the continuation of the existing use of the harbour during the operational phase, all terrestrial habitats and species have been scoped out.

Any features of greater than local importance for biodiversity (otter resting places, bat roosts of higher than local conservation importance, breeding black guillemot) present in locations that could be affected by construction activities will be included in a Biodiversity - terrestrial and ornithology ES chapter.

5.7 References

CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. Chartered Institute of Ecology and Environmental Management, Winchester

Conservation of Habitats and Species Regulations 2017

Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

Wildlife and Countryside Act (1981)

ILE (2005) Guidance notes for the reduction of obtrusive light. The Institution of Lighting Engineers.

JNCC (2010). Handbook for Phase 1 Habitat survey: a technique for environmental audit (revised reprint). Joint Nature Conservation Committee, Peterborough

Natural Environment and Rural Communities Act (2006)

Natural Resources Wales (2021) Terrestrial and freshwater Resilient Ecological Networks: a guide for practitioners in Wales

Environment (Wales) Act (2016)

Welsh Government (2015). Well-being of Future Generations (Wales) Act 2015.

Welsh Government (2020) The Nature Recovery Action Plan for Wales 2020 – 21.

Welsh Assembly Government (2009). Technical Advice Note 5: Nature Conservation and Planning

Welsh Government (2013). The Action Plan for Pollinators in Wales

Welsh Government (2021) Future Wales - The National Plan 2040

6 COASTAL PROCESSES

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development on coastal processes.

with the parameters listed below being collectively referred to as 'coastal processes' throughout the remainder of this Chapter:

- Bathymetry.
- Waves.
- Tidal elevations and currents.
- Seabed geology.
- Seabed substrate.
- Suspended sediments.
- Sediment transport.

This Chapter identifies the receptors relevant to the assessment of coastal processes and considers the potential impacts from the construction, operation, and maintenance phases of the Proposed Development on the same.

6.1 Baseline Scenario

6.1.1 EIA Scoping Area

By assessing tidal ellipses within Fishguard Harbour and the adjacent coastline, as illustrated in **Figure 6-1**, it will be seen that the maximum tidal excursion from the Fishguard Linkspan Proposed Development extends c. 7 km from the Northern Breakwater. This was then used to establish the EIA Scoping Area for coastal processes (referred to as the EIA Scoping Area throughout this chapter), with a tidal excursion indicating the maximum distance suspended sediments would travel in one spring tidal cycle. The Fishguard Linkspan Project EIA Scoping Area resides solely within the Welsh inshore marine area as demonstrated in **Figure 6-2**. This area represents a typical extent within which coastal processes should be considered for this scoping and any further assessment.

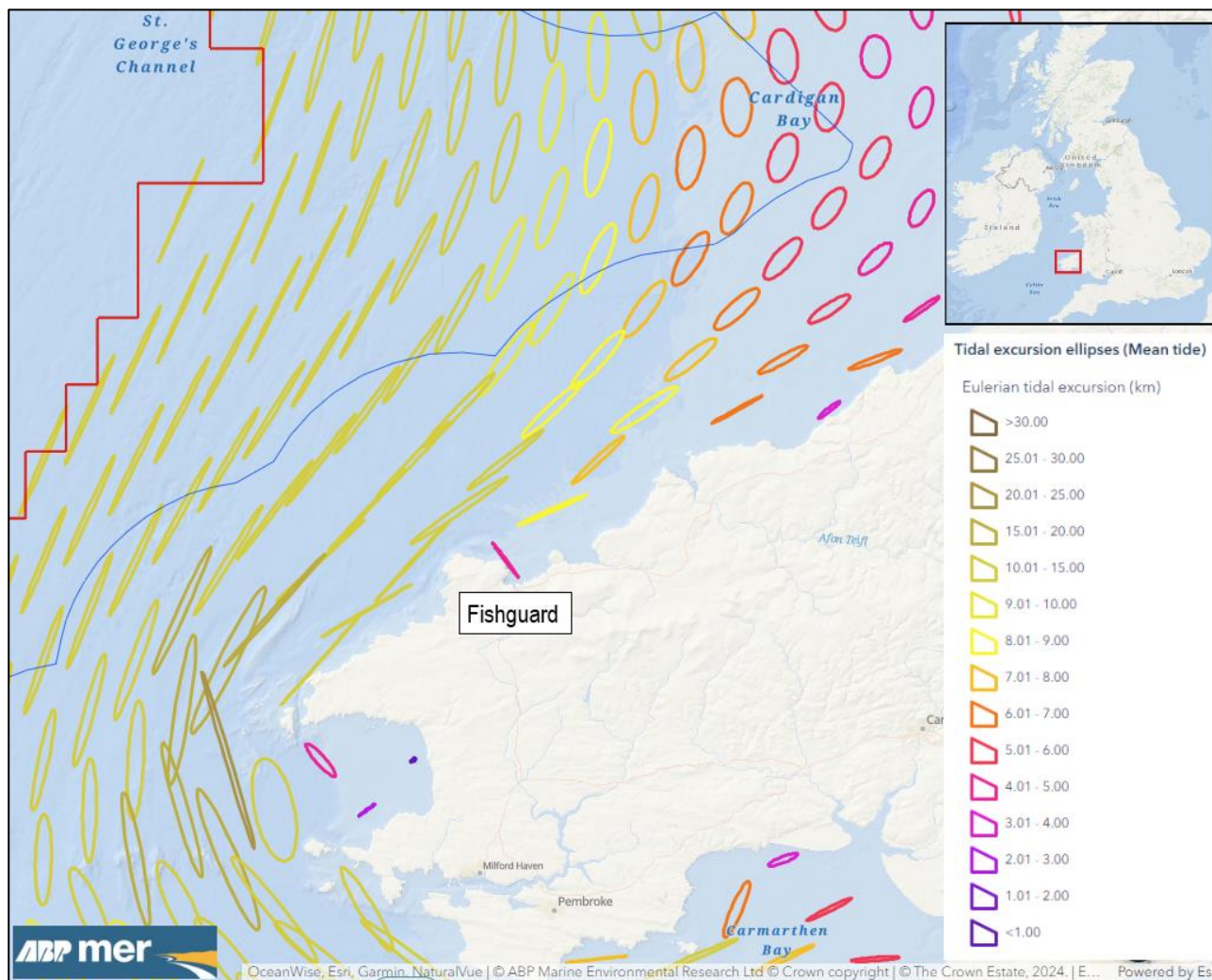


Figure 6-1: Tidal excursion ellipses (ABPmer, Marine Atlas, available at: <https://www.renewables-atlas.info/explore-the-atlas/>)

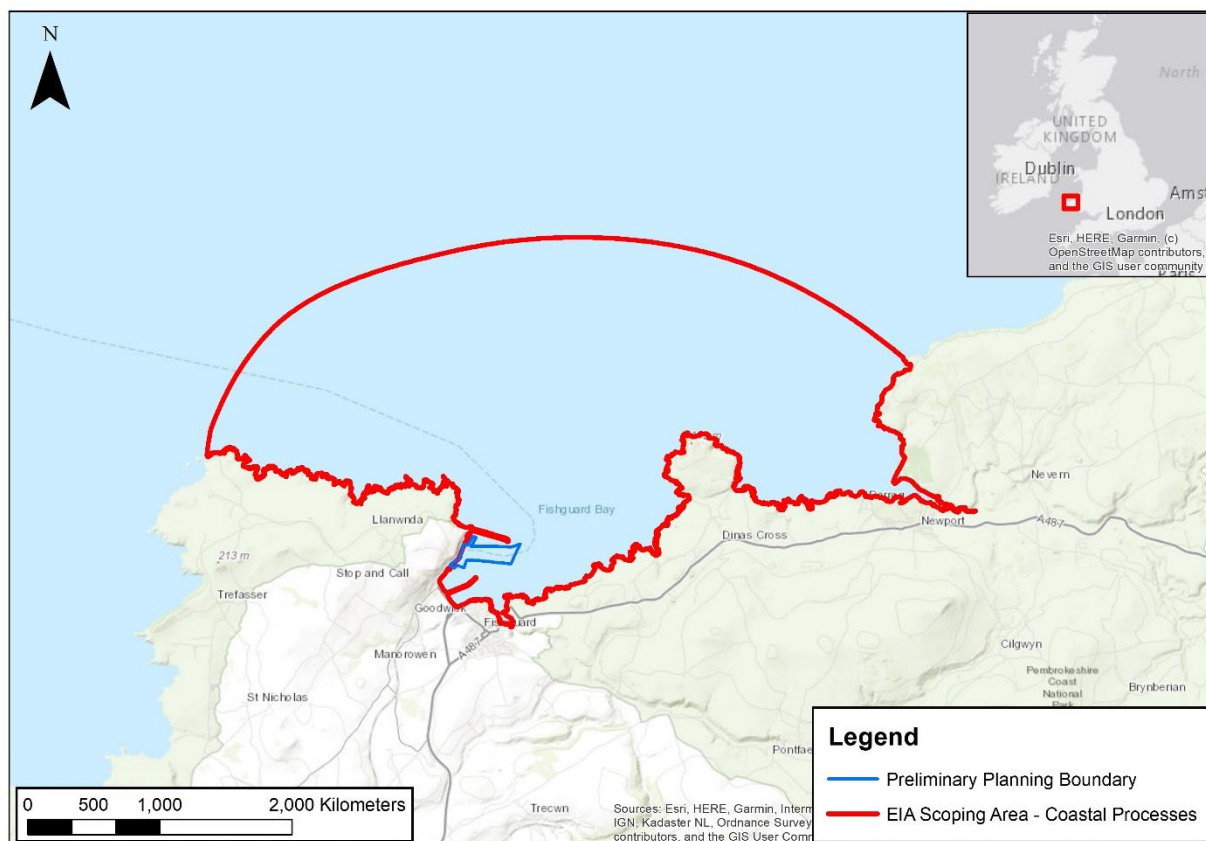


Figure 6-2: EIA Scoping Area

6.1.2 Baseline Data Sources

An initial desk-based review of literature and data sources to support the scoping assessment has identified and utilised several baseline datasets as summarised in **Table 6.1**.

Table 6.1: Summary of key reports and datasets

Source	Coverage	Data Provision
Marine Environmental Data Information Network (MEDIN)	UK Waters	Bathymetry data.
European Centre for Medium-range Weather Forecast (ECMWF)	European Waters	Historic and contemporary pressure, wind speed and wave datasets.
European Marine Observation and Data Network (EMODnet)	European Waters	Bathymetry, geology; and seabed substrate and classifications.
British Geological Survey (BGS)	UK Waters	Geology and seabed substrate.
CEFAS Offshore observation data	UK Waters	Salinity, seawater temperature and turbidity.
CEFAS Climatology Report (Cefas, 2016)	UK Waters	Suspended sediment concentrations (SSC).
British Oceanographic Data Centre (BODC) UK tide gauge network. Database of current observation	UK Waters	Tidal levels, current speed and current direction.

EIA SCOPING REPORT

United Kingdom Hydrographic Office (UKHO) - Published Charts and Tide tables	UK Waters	Charts such as 1409/7 1:200000 and 210 1:75000 include tidal diamonds with current stream data.
JNCC mapping data (https://jncc.gov.uk/mpa-mapper/)	UK Waters	Spatial data for marine protected areas incl. SPA, SSSI and conservation zones.
UK Renewables Atlas (https://www.renewables-atlas.info/explore-the-atlas/)	UK Waters	Wave, wind and tidal information.

6.1.3 Baseline Environment

The following Sections of this chapter present a high-level overview of the baseline coastal processes within the EIA Scoping Area.

6.1.3.1 Bathymetry

As illustrated in **Figure 6-3**, the EIA Scoping Area encompasses Fishguard Harbour and its adjacent coastal waters, with the bay itself orientated facing north, defined by Dinas Head to the east and Crincoed Point to the west. Water depths within the Harbour slope from the coastline to a depth of c. 14 m to the east of the Northern Breakwater, descending to depths of c. 25 m at the Harbour entrance. The adjacent Newport Bay which has been included within the EIA Scoping Boundary due to its proximity features similar slopes and shallow bathymetry (<10 m).

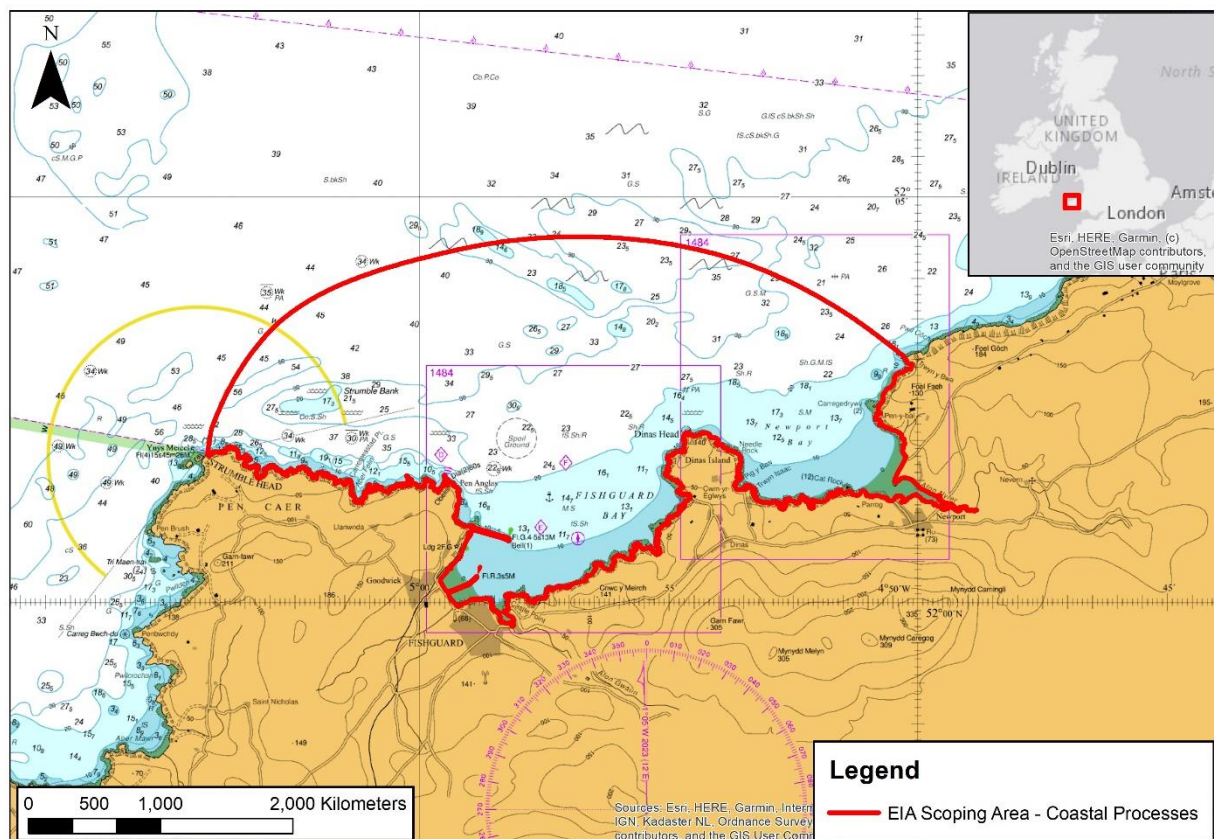


Figure 6-3: General features within the EIA Scoping Area

6.1.3.2 Wind and Waves

RPS procured baseline wave data from the WAVEWATCH III North-West Shelf configuration wave model available on the Copernicus Marine Data Store (Copernicus, 2024) for the period between 2010 – 2021 for an offshore point at the entrance to Fishguard Bay. A high-level analyses of this dataset indicated an average annual significant wave height of 0.96 m with a corresponding mean peak wave period of 6.85 s. The location in the context of the EIA Scoping Area is illustrated in Figure 6-4.

Wind data was extracted from the National Centre for Environmental Information (NCEI) Climate Forecast System Reanalysis (CFSR) using the <https://www.metocean-on-demand.com/> data portal hosted by DHI model at a location near the WAVEWATCH III point, illustrated in Figure 6-4. Analysis indicated that the average annual wind speeds at 10 m above sea level in this area equated to 6.56 m/s, with average wind speeds ranging between 8.81 – 9.52 m/s during winter periods.

Annual average wave and wind roses based on the ECMWF and CFSR data are illustrated in Figure 6-5 and Figure 6-6.

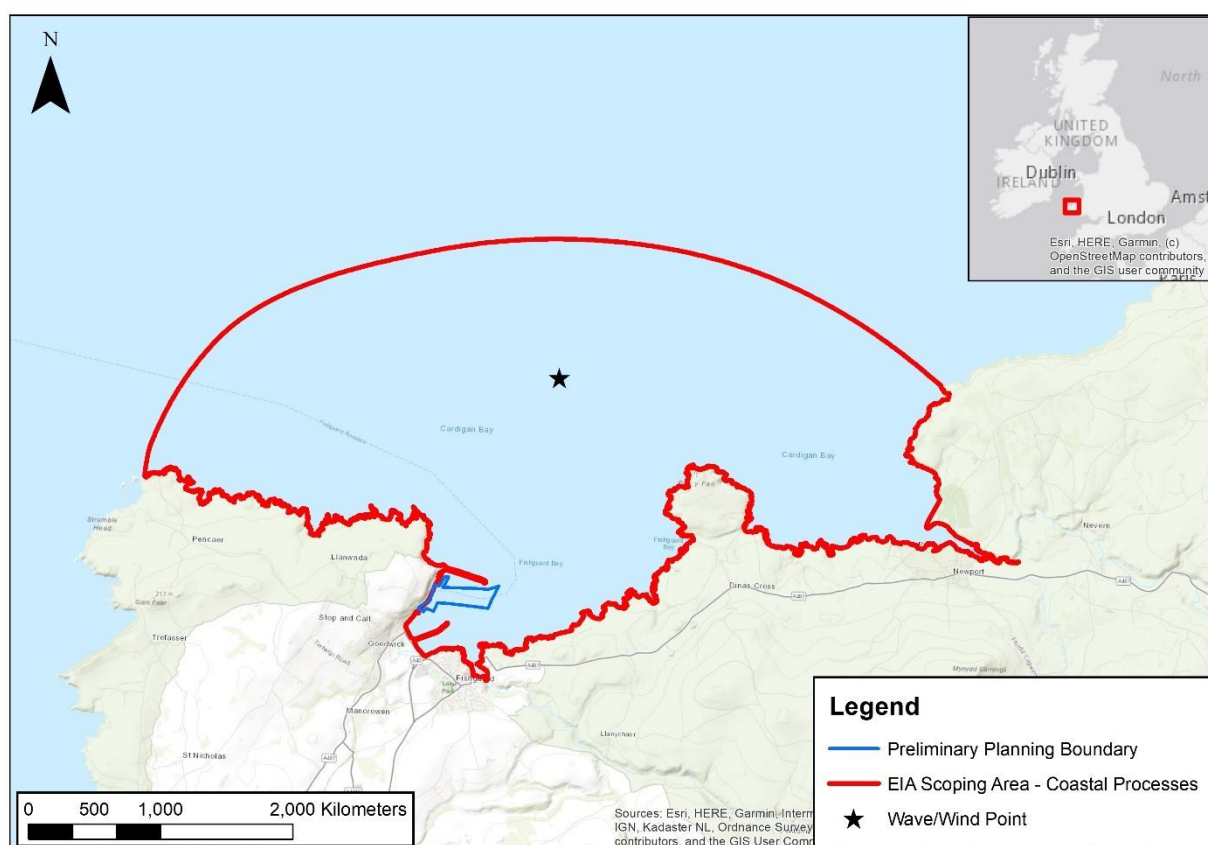


Figure 6-4: WAVEWATCHIII and CFSR wave/wind point

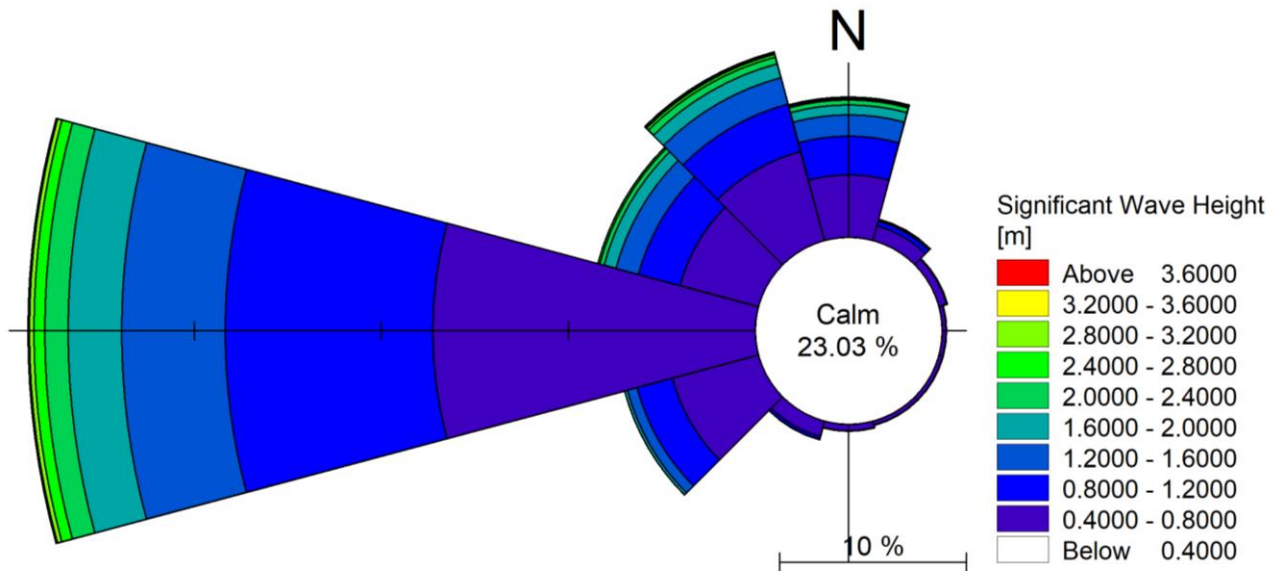


Figure 6-5: Wave rose for point 52.05°N, 4.95°W taken from the WAVEWATCH III North-West Shelf model 2010 - 2021

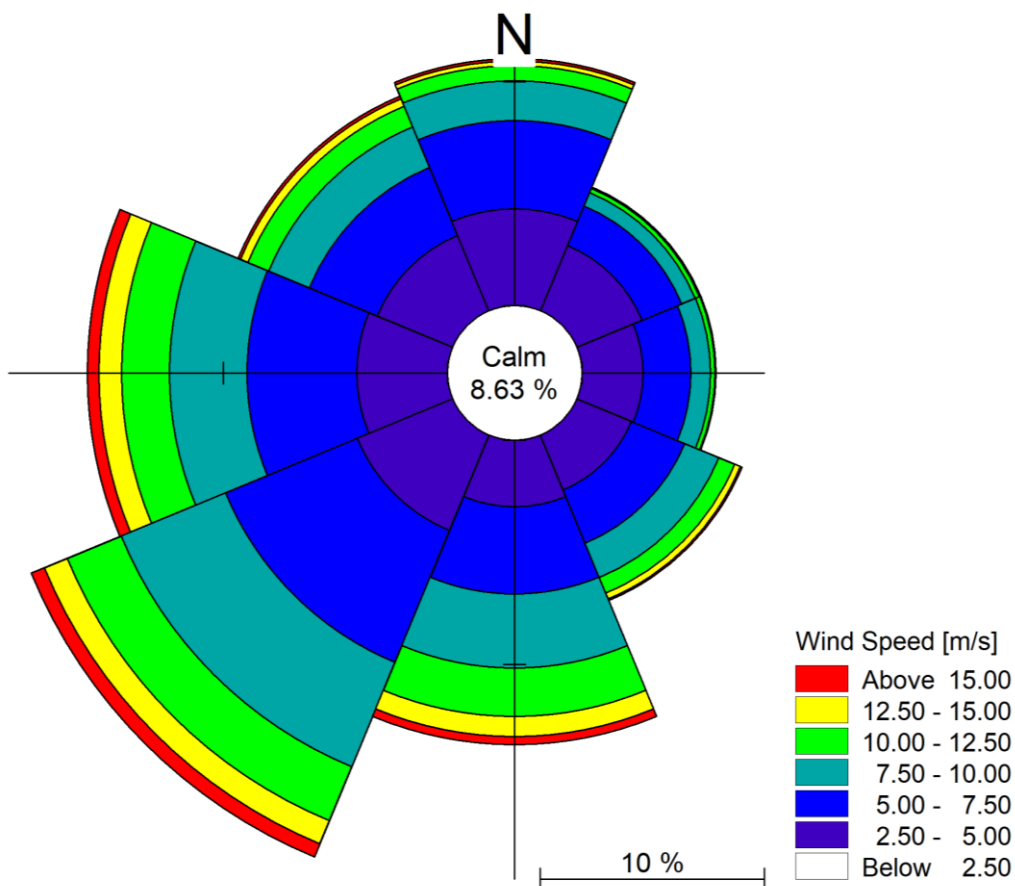


Figure 6-6: Wind rose for point 52.05°N, 4.95°W taken from the CFSR model 2010 - 2021

As part of a previous application for works to the Fishguard Linkspan in 2018, RPS undertook a numerical modelling assessment to assess the wave climate in the vicinity of the Harbour. The most arduous heights at the linkspan belonged to those waves approaching from the northerly sector when waves were diffracted

around the end of the breakwater and approached the site from the east. Waves of similar heights were also found to occur during storms generated in the east/southeast when waves were generated across the fetch from the adjoining coast. Under storm conditions (1 in 50-year storm) waves approaching from the north were found to generally reach the Linkspan with significant wave heights of c. 1 m and peak energy wave periods of c. 9 s. Waves approaching from the east under the same conditions would have similar heights but reduced peak wave energy periods (c. 2.4 - 3.1 s).

6.1.3.3 Tidal Currents

The tidal range at Fishguard Harbour and Newport Bay varies from c. 4.0 m at springs to 1.4 m at neap tides. Prior modelling was undertaken by RPS to evaluate coastal processes at Fishguard Harbour in 2018 as part of a previous application to replace the Fishguard Linkspan. Numerical modelling results demonstrated that tidal currents are extremely weak within the Harbour with peak current speeds of less than 0.05 m/s, the tidal flow will generally be in a south/south-westerly direction for the majority of the tidal cycle. Tidal flow within Newport Bay is dominantly from the northwest with a range of c. 4.0 m (White Consultants, 2013).

6.1.3.4 Sediment Transport Regime

The results of the previous modelling regime found that during northerly storms and particularly during the flood tide, there is a general clockwise circulation around the bay due to the presence of the breakwater. However, around the linkspan site the currents are so weak and the wave climate so benign that there will be little sediment movement due to the coastal processes. As can be seen from the bathymetry of the seabed around the linkspan, the most significant impact on the sediment regime comes from the movement of ships on and off the berth, particularly at times of low water when the ship's propulsion systems can mobilise and redistribute fine sediment.

6.1.3.5 Geology and Seabed Substrate

Information on the geology of the EIA Scoping Area provided an understanding of the origin and stability of the seabed and the geology that will be encountered on the seabed during installation. Pre-Quaternary sediment information indicates that Fishguard Harbour is located in the Ordovician layer, consisting of volcanic rocks and slates. As illustrated in **Figure 6-7**, the substrate within the EIA Scoping Area is expected to be comprised primarily of sand, muddy sand, gravelly sand and diamicton.

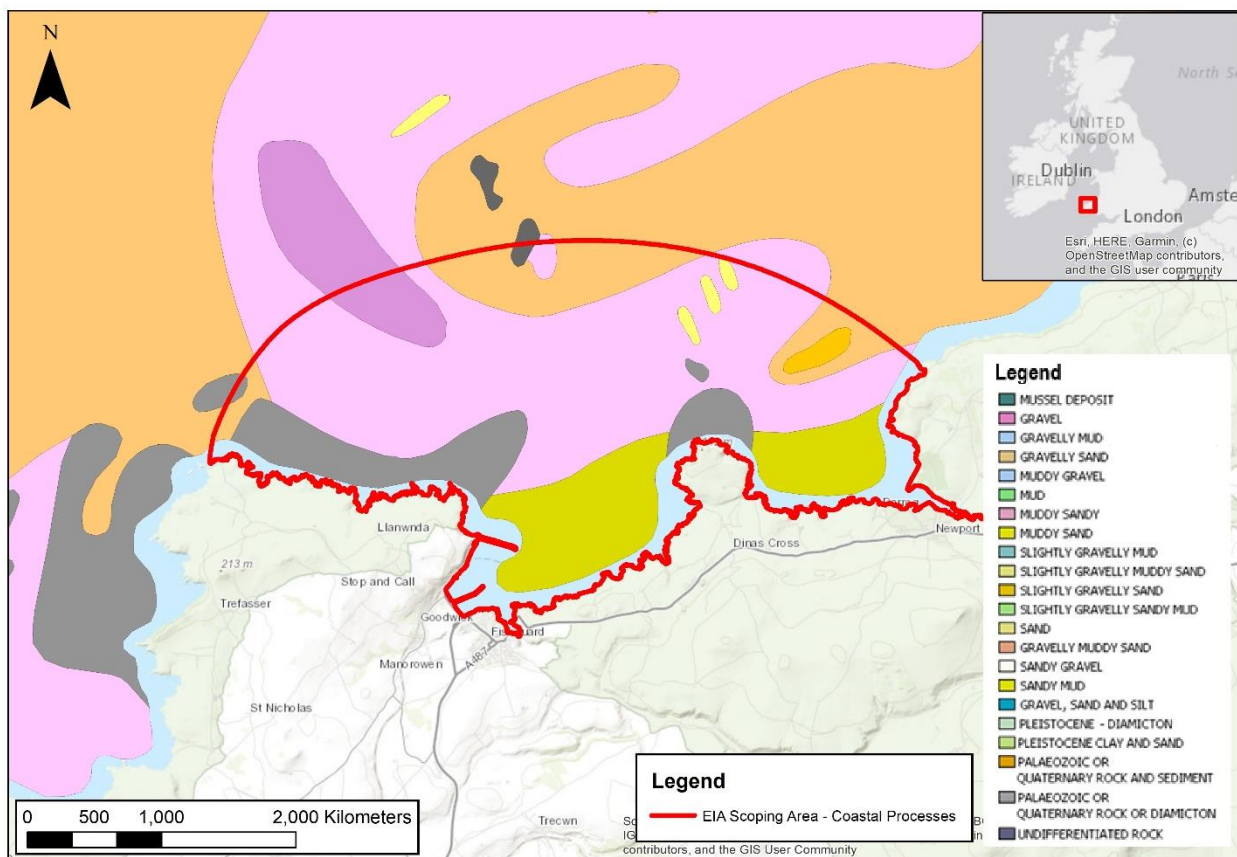


Figure 6-7: Marine sediments along the Offshore Cable Corridor (Contains British Geological Survey materials @UKRI 2024)

6.1.3.6 Suspended Sediments

Data from CEFAS presents an analysis of the spatial distribution of non-algal Suspended Particulate Matter (SPM) in UK waters. Within the EIA Scoping Area, mean SPM levels were estimated to range between 4 to 7 mg/l from 1998 to 2015,

During storms, wave-driven currents can temporarily elevate suspended sediment concentrations (SSCs). SSC levels can rise significantly, compared to baseline levels, and then gradually decrease to baseline conditions after storm events. Therefore, SSC levels follow a broadly seasonal pattern, due to the seasonal nature and frequency of storms.

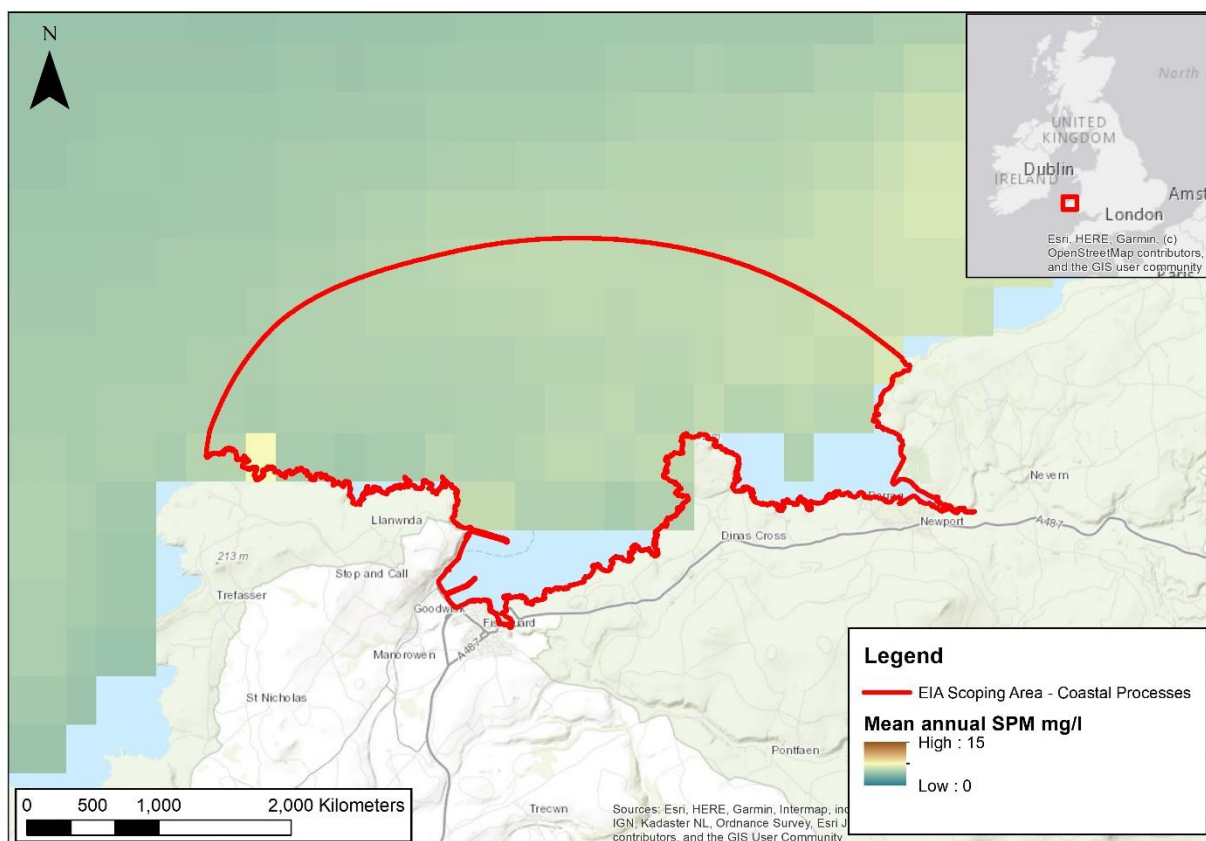


Figure 6-8: Distribution of average annual non-algal suspended particulate matter (SPM) CEFAS

6.1.3.7 Designated Marine Areas

All designated marine areas within and surrounding the area of the Proposed Development including qualifying features that could be affected by the construction, operation and maintenance phases of the Proposed Development were identified using resources from the Joint Nature Conservation Committee (<https://jncc.gov.uk/mpa-mapper/>).

As illustrated in **Figure 6-9**, the EIA Scoping Area is situated in the direct vicinity of a small number of designated marine areas, defined in **Table 6.2**. In this case, both relevant designations were Special Areas of Conservation (SACs). These SACs are as follows:

1. West Wales Marine/Gorllewin Cymru Forol SAC (UK0030397): The West Wales Marine SAC is located in the coastal waterbodies between Llŷn peninsula in the north to Pembrokeshire in the south-west, primarily designated due to the presence of harbour porpoise (*Phocoena phocoena*) which are listed in Annex II of the Habitats Directive (92/43/EEC).
2. Cardigan Bay/Bae Ceredigion SAC (UK0012712): The Cardigan Bay SAC stretches from Ceibwr Bay in Pembrokeshire to Aberarth in Ceredigion, extending c. 20 km from the coast. The site is designated for seven features, those being:
 - a. Sandbanks which are slightly covered by sea water all the time (Annex I) (1110)
 - b. Reefs (Annex I) (1170)

- c. Submerged or partially submerged sea caves (Annex I) (8330)
- d. Bottlenose dolphins (*Tursiops truncatus*) (Annex II) (1349)
- e. Sea lamprey (*Petromyzon marinus*) (Annex II) (1095)
- f. River lamprey (*Lampetra fluviatilis*) (Annex II) (1099)
- g. Grey seal (*Halichoerus grypus*) (Annex II) (1364)

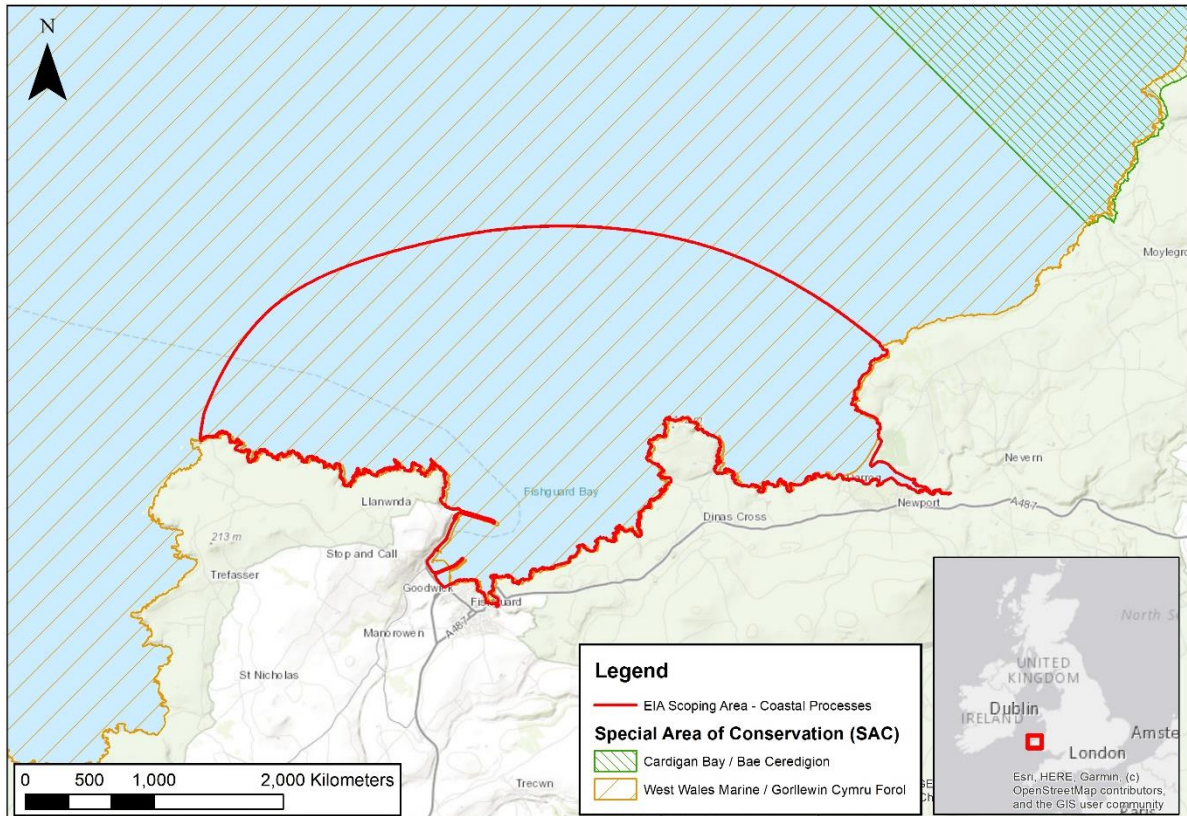


Figure 6-9: Relevant designated marine areas within or near the EIA Scoping Area

Table 6.2: Relevant designated marine area within or near the project scoping area and relevant features

Name	Status	Feature
West Wales Marine/Gorllewin Cymru Forol	Special Area of Conservation (SAC)	Species: Harbour porpoise (<i>Phocoena phocoena</i>)
Cardigan Bay/Bae Ceredigion	Special Area of Conservation (SAC)	Habitats: - Sandbanks which are slightly covered by sea water at all times - Reefs - Submerged or partially submerged sea caves Species: - Bottlenose dolphin - Sea lamprey - River lamprey - Grey seal

6.2 Potentially Significant Effects

A range of potential impacts on coastal processes have been identified which may occur during the construction, operation and maintenance phases of the Proposed Development in the absence of designed-in mitigation measures. These are outlined in the following sections.

6.2.1 Construction Phase

During the construction phase of the Proposed Development, a number of activities will be undertaken including:

- Installation of a floating pontoon.
- Landslide works.
- Dredging works.
- The construction of a new run-up area built on reclaimed land.
- Construction of a reinforced concrete bank seat structure.
- Demolition of existing 'buffer dolphin' tower structure, operations room, suspended concrete deck structure, and disused RNLI Jetty.

Initially, dredging works will be required to provide material for the reclaimed land used to support the new run-up area, ensure sufficient depth below the proposed pontoon (-9 m CD), and allow safe berthing for the Stena Line ferry to berth. During these works, sediment will be suspended into the water column increasing SSC and resulting in subsequent deposition within the EIA Scoping Area. Maintenance dredging of the harbour will also be conducted to maintain depths of -7.3 m CD and -5.5 m CD.

Dredged material will be utilised in the construction of an area of reclaimed land which shall be retained through the installation of a rock armour revetment with a buried toe, which would tie into the existing revetment at the Linkspan. The reclaimed land will be topped with an asphalt surface forming a new run-up area.

At the edge of the reclamation area, a reinforced concrete bank seat structure will be constructed to support the pontoon. The structure is expected to be a piled bank seat, using rotary-installed steel tubular piles filled with concrete. The piling process has the capacity to increase SSCs and contribute to subsequent deposition with the EIA Scoping Area. The installation of the bank seat would be followed by the installation of the pontoon along with its supporting guide pile, which would again be rotary bored.

Several removal and demolition operations are required throughout the construction phase. These include the removal of the existing temporary jack-up barge along with the existing steel access bridge, and the demolition of one of the existing 'buffer dolphin' tower structures, the operations room, and the existing disused RNLI jetty. These operations are not expected to increase suspended sediments however without appropriate mitigation measures, demolition activities may result in foreign material entering the water column.

6.2.2 Operation Phase

The presence of infrastructure in the water column has the potential to impact the wave and tidal regimes, and sediment transport pathways, as the flow of water or sediments is obstructed. Thus, the impact on hydrodynamics is at its greatest during the operation phase wherein all relevant infrastructure has been installed or removed as required. Likewise, the significant dredging operations required within the Proposed Development scope, may alter seabed morphology via reduced bathymetry to such an extent that impacts occur to coastal processes.

6.3 Inclusion or Exclusion from EIA

As there may be significant increases in SSC and subsequent deposition during the construction phase, and there may be significant changes to the wave, tide and/or sediment transport regimes as project infrastructure enters or is removed from the marine environment it is proposed that a coastal processes assessment remains within the scope the EIAR.

6.4 EIA Assessment Methodology

A numerical modelling study will be utilised within the EIA to assess the magnitude of relevant coastal processes, including:

- The dispersion and concentration of suspended sediments released into the water column as a result of construction phase activities;
- The fate and deposition of suspended sediments released into the water column as a result of construction phase activities;
- The impact of project infrastructure on waves, tides and sediment transport once operational.

This study will be undertaken using the industry standard MIKE software developed by DHI (www.dhigroup.com), which contains a suite of coastal and environmental modelling modules. The key to the MIKE suite of computational models is that each module may be applied to a single model mesh and then the modelling of combined (coupled) parameters may be undertaken.

The MIKE 21 Flexible Mesh (FM) coupled modules would be used to model baseline tidal flows and sediment transport, using a model which, whilst providing sufficient detail to simulate the necessary parameters, is also computationally efficient by utilising a flexible mesh comprised of the most up-to-date bathymetric data.

Sediment will be released into the water column to replicate the construction phase works during the significant dredging works. Suspended sediment concentration plume models will be developed and utilised for this exercise. Modelling will be validated using all available data sources, including measured current meter information where available.

Specific to this assessment, the following guidance documents will also be considered:

- Advice to Inform Development of Guidance on Marine, Coastal and Estuarine Marine Processes Numerical Modelling Assessments (Pye, Blott, & Brown 2017);
- Guidance on Best Practice for Marine and Coastal Marine Processes Baseline Survey and Monitoring Requirements to inform EIA of Major Development Projects (Brooks, Whitehead, & Lambkin 2018);
- Guidelines in the use of metocean data through the lifecycle of a marine renewable's development (Cooper, Saulter, & Hodgetts 2008).

6.5 Preliminary Mitigation Measures

6.5.1 Construction Phase

Prior to the construction phase, a construction environmental management plan (CEMP) should be developed by the appointed contractor. The encompassed measures would include daily checks of short/ long range weather and tide forecasts, thresholds for stopping work, and safe storage areas of equipment during storms and high tides.

Likewise for dredging works an appropriate dredging management plan should be produced and employed in order to mitigate further increases in SSC during operation amongst other impacts to the receiving water environment.

Appropriate measures should be undertaken throughout the construction phase with respect to the demolition of existing infrastructure, in order to mitigate the risk of foreign sediment entering the water environment.

6.5.2 Operation Phase

Scour protection shall be proposed as part of the operational phase of the Proposed Development to mitigate the impact of scour around the toe of the rock armour revetment surrounding the area of reclaimed land, and the steel piles at the reinforced concrete bank seat and the supporting guide pile for the floating pontoon.

6.6 Interactions

There exists the potential for inter-related impacts to occur with respect to changes to coastal processes and other environmental topics, namely:

- Cultural Heritage: The Proposed Development has the potential to impact on cultural heritage remains on the seabed by modifying the sedimentation and erosion regime at Fishguard Harbour.
- Water Quality: The coastal processes of the Harbour area at construction and operational phases of the Proposed Development can influence marine water quality.
- Marine Biodiversity: There is an inter-relationship between coastal modelling and marine biodiversity impacts.

6.7 Summary of Scoping Exercise

This Chapter of the Scoping Report has considered the potential effects of the Proposed Development on coastal processes, during both the construction and operational phases. This scoping exercise has concluded that the effect of the project on coastal processes should be scoped into the EIAR.

As part of the EIAR it is planned to undertake numerical modelling study to assess the key coastal processes. The proposed modelling study will be undertaken using the industry standard MIKE software developed by DHI and will assess:

- The dispersion of and concentration of suspended sediments released into the water column as a result of construction phase activities;
- The fate and deposition of suspended sediments released into the water column as a result of construction phase activities;
- Impacts on waves, tides and sediment transport as a result of project infrastructure.

As significant impacts and/or safety concerns may arise during the construction phase and operation phase of the Proposed Development, it is proposed that a CEMP be produced prior to undertaking works, and that plans be established for safe closing and evacuation of the Proposed Development during extreme conditions during the operation phase. Likewise, it is proposed that comprehensive dredge and demolition management plans be established and put in place during the construction phase. To avoid risk of primary scour during the operational phase, scour protection measures should be employed in the vicinity of permanent infrastructure within the water column.

6.8 References

- BGS @ UKRI (2024) Seabed Sediments 250K. Available: <https://www.bgs.ac.uk/datasets/marine-sediments-250k/>. Accessed October 2024.
- Brooks A.J., Whitehead P.A. and Lambkin D.O. (2018) *Guidance on Best Practice for Marine and Coastal Physical Processes Baseline Survey and Monitoring Requirements to inform EIA of Major Development Projects* [Report].
- CEFAS (2016) *Suspended Sediment Climatologies around the UK*. Report for the UK Department for Business, Energy & Industrial Strategy offshore energy Strategic Environmental Assessment programme.
- Cooper W., Saulter A. and Hodgetts P. (2008) *Guidelines for the Use of Metocean Data Through the Lifecycle of a Marine Renewable Energy Development* [Book]. - [s.l.] : Construction Industry Research & Information Association (CIRIA).
- Copernicus (2024) Atlantic – European North West Shelf – Wave Physics Reanalysis. Marine Data Store. Available: https://data.marine.copernicus.eu/product/NWSHELF_REANALYSIS_WAV_004_015/description. Accessed October 2024.
- DHI (2024) MetOcean Data Portal. Available: <https://www.metocean-on-demand.com/>. Accessed October 2024.
- Joint Nature Conservation Committee (2024) MPA Mapper. Available: <https://jncc.gov.uk/mpa-mapper/>. Accessed October 2024.
- Pye, K., Blott, S.J. and Brown, J., 2017. Advice to inform development of guidance on marine, coastal and estuarine physical processes numerical modelling assessments. *NRW Evidence Report*, 139.

7 WATER RESOURCES AND WATER FRAMEWORK DIRECTIVE

7.1 Baseline Scenario

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development

on Water Resources and Water Framework Directive (WFD) compliance. Data collated from Water Watch Wales and Natural Resource Wales establishes the environmental baseline for the study area. The Proposed Development as outlined in Chapter 2 Project Description has the potential to impact on the water environment of which is described in this chapter. Potential mitigation measures are presented which outlines the best practise measures that will be deployed to reduce significant impacts on the marine environment.

7.1.1 Study Area

The location of the Proposed Development lies within Cardigan Bay South coastal water body (GB621009580000) in the Western Wales River Basin District (WWRBD). Within the development area there are no direct surface freshwater inputs from rivers or streams. According to the Fishguard Harbour Marina Development Environmental Statement (Axis, 2011) potential inputs of freshwater in the vicinity of the development are restricted to direct precipitation (rainfall) and the entry of two surface water drainage outfalls (one of 500mm diameter and the other of 900mm diameter pipes) at the southern end of the harbour. There are two rivers which ultimately flow into the Cardigan Bay South water body to the south of this development, namely Goodwick Brook (GB110061038490) and Gwaun River (via Gwaun Estuary) (GB11061038460). As the rivers are upstream of the development, it is unlikely that they will be impacted in terms of water quality and therefore have not been included in this assessment. The Gwaun Estuary has been included in this assessment, as it is hydrologically connected to Cardigan Bay South

7.1.2 Data Sources

Table 7.1 provides a summary of the data sources used to assist in establishing the water quality baseline for WFD Resources and WFD compliance.

Table 7.1: Summary of Key Desktop Datasets and Materials

Title	Source	Year	Author
WFD Cycle 3 Coastal Waterbodies	Natural Resources Wales	2021a	Natural Resources Wales
WFD Cycle 3 Transitional Waterbodies	Natural Resources Wales	2021b	Natural Resources Wales
Dee and Western Wales River Basin Management	Natural Resources Wales	2021c	Natural Resources Wales

Planning (RBMP) Measures and Objectives			
RBMPs 2021-2027 Register of Protected Areas	Natural Resources Wales	2022	Natural Resources Wales
Abermawr Bathing Water Profile	Natural Resources Wales	2024a	Natural Resources Wales
Newport North Bathing Water Profile	Natural Resources Wales	2024b	Natural Resources Wales
Joint Nature Conservation Committee (JNCC) Natura 2000 Sites Conservation Management Objectives	JNCC	2008, 2009a, 2009b, and 2019	JNCC

7.2 Legislative Context

The assessment of the potentially significant effects of the Proposed Development will be undertaken in line with the following key legislation.

7.2.1 Water Framework Directive

The key focus of the water quality assessment is to ensure that the Proposed Development is undertaken in a manner which is consistent with the objectives of the Water Framework Directive (2000/60/EC) (WFD).

The WFD (Council Directive 2000/60/EC establishing a framework for community action in the field of water policy) was adopted by the European Commission in December 2000. The WFD is transposed into law in England and Wales by The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (hereafter referred to as 'the 2017 WFD Regulations'). The WFD is retained EU legislation and is still applicable in England and Wales as set out in sections 2 and 3 of the European Union (Withdrawal) Act 2018 and the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019. The 2017 WFD regulations require Secretary of State (SoS), Welsh Ministers, the Environment Agency and NRW to exercise their 'relevant functions' so as to secure compliance with the WFD (Regulation 3). Under the regulations the SoS, the Welsh Ministers, NRW, and each public body have a specific duty to have regard to the relevant River Basin Management Plan (RBMP), and any supplementary plans made under it, in exercising their functions. 'Having regard to' river basin management plans includes taking account of and considering the environmental objectives and summary of measures contained within the plan when exercising any functions and the effects of those functions on the objectives and measures within the plan (Planning Inspectorate, 2018).

A key requirement of the WFD is that surface water bodies attain at least good, and that there should be no deterioration in existing status.

For groundwater the objective is to achieve good groundwater status, requiring both quantitative status and chemical status to be at least good. Therefore a WFD assessment must be conducted to ensure that the

Proposed Development does not compromise this fundamental requirement of the WFD. The aim of conducting a WFD Assessment is to determine if specific components or activities related to the Proposed Development will compromise the attainment of a WFD objective or result in the deterioration in the overall status of any water body. This will determine whether it is possible to proceed with the scheme or whether amendments or mitigation measures are necessary.

The WFD requires the preparation of a Programme of Measures (POMs) outlining the steps that will be taken to meet WFD objectives as applicable to each water body. This Programme is contained within an overarching RBMP. One RBMP is prepared for each RBD and also contains information on water body status, objectives, and timescales. The RBMPs were published in 2009 in Wales for the first river basin management cycle from 2009 – 2015. The third cycle of river basin management plans (2021 – 2027) are now finalised and available on the Natural Resources Wales website.

In the context of the RBMPs, this development concerns the Cleddau and Pembrokeshire Coastal Rivers Management Catchment within the Western Wales RBD. Natural Resources Wales is responsible for producing the RBMP, there are, however a number of public authorities and organisations that are required to undertake their functions with due regard for the RBMP and the requirements of the WFD. These include regulators, deliverers, experts, and organisations representing the public in particular the voluntary sectors though Non-Governmental Organisations.

The Proposed Development proposals have been scoped to determine potentially significant effects in terms of current status and the WFD objectives for the Cardigan Bay South Coastal water body to determine what elements of the project have the potential to have a significant effect on the water environment and the environmental objectives of the water bodies affected.

7.2.2 Marine Strategy Framework Directive

Marine Strategy Regulations 2010 transpose the requirements of the EU's (Marine Strategy Framework Directive) into domestic law requires the UK to put in place measures to achieve or maintain Good Environmental Status (GES) in the marine environment.

The overarching aim of the Directive is to protect Europe's marine waters by applying an ecosystem-based approach to the management of human activities while enabling the sustainable use of the marine environment for present and future generations. The Directive establishes a legal framework for the development of marine strategies designed to achieve GES in the marine environment by the year 2020 (EU, 2008). The marine strategy involves defining GES, setting environmental targets and indicators, implementing monitoring programmes for ongoing assessment, and developing and implementing programmes of measures to achieve or maintain GES.

GES is defined as 'the environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations.'

The assessment of GES is undertaken by reference to qualitative descriptors which define overarching objectives in respect of key socio-economic or ecological aspects of the marine environment. Those relevant to offshore water quality include:

- eutrophication; and
- contaminants.

7.2.3 The Environmental Permitting (England and Wales) Regulations 2016;

These regulations were introduced to provide a framework for controlling activities that may affect the water environment including engineering activities, discharges, and abstractions.

7.2.4 The Bathing Water Regulations 2013

The Bathing Water Regulations 2013 details quality standards for bathing water sites across Wales. It is a requirement for each bathing location to develop and maintain a bathing water profile for each designated site to monitor water quality and to inform the public of water quality incidents that may arise at these locations.

7.2.5 The Urban Wastewater Treatment (England and Wales) Regulations 1994

The Urban Wastewater Treatment (England and Wales) Regulations 1994; these regulations implement the Urban Waste Water Treatment Directive (91/271/EC) in Wales aiming to protect the environment from the adverse effects of the collection, treatment, and discharge of urban waste water.

7.3 Baseline Environment

7.3.1 Water Framework Directive Status

Cardigan Bay South coastal water is a large coastal water body of 163.84km² and is currently at Good ecological status and High chemical status. The typology of the Water Body is exposed mesotidal, which means the water body has an intermediate tidal range, where the difference in height between high and low waters is between 1 and 5 metres.

Gwaun Estuary is a small transitional water body of only 0.18km² and is currently at Moderate ecological status and High chemical status. The typology is considered 'Mixed, meso, extensive intertidal.

Despite Port activities, neither of the TraC (Transitional or Coastal) water bodies included in this assessment have been designated as Heavily Modified Water Bodies (HMWB). **Table 7.2** and **Figure 7-1** outline the WFD baseline data including current overall, ecological, and chemical status for 2021 and its supporting elements.

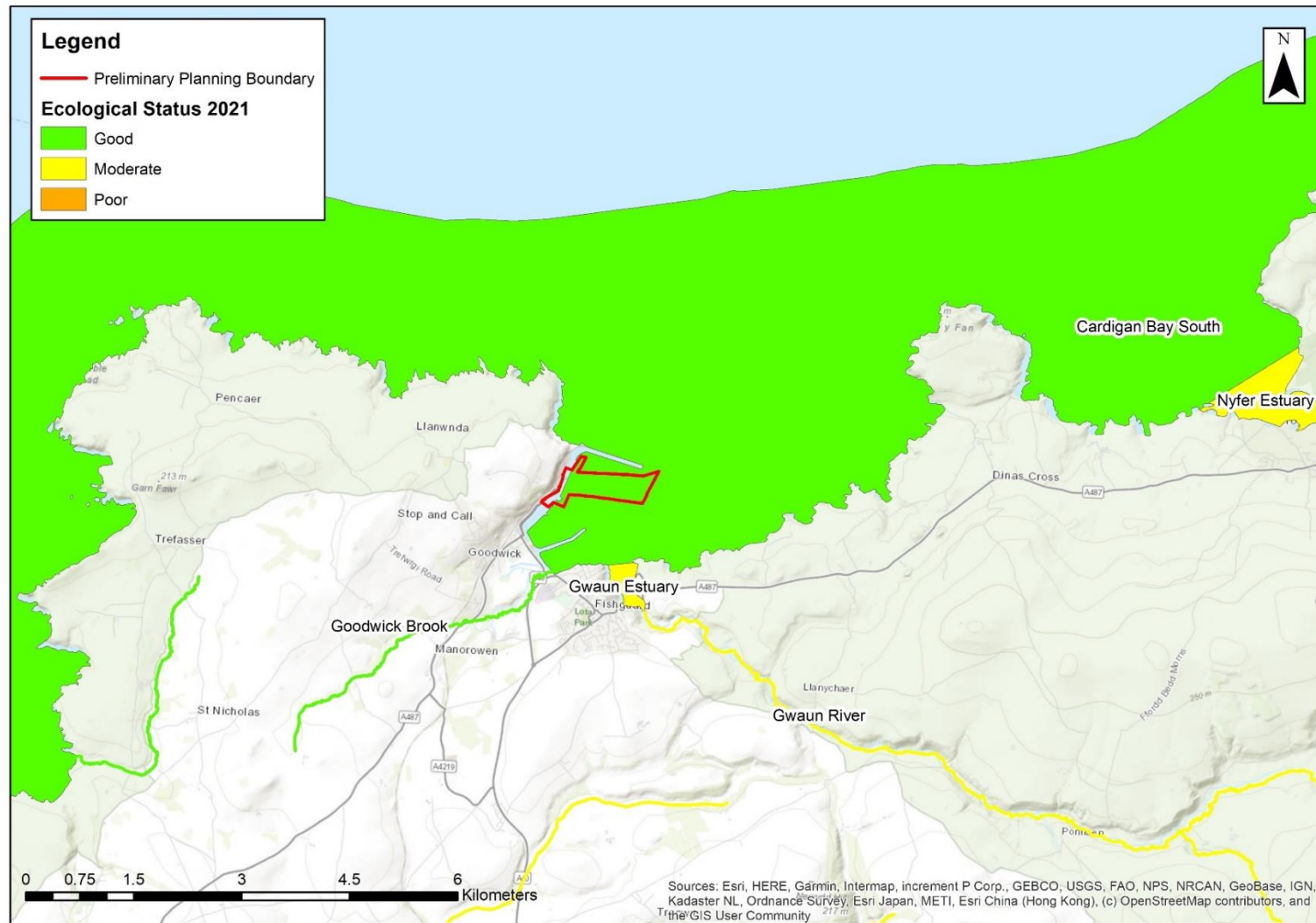


Figure 7-1: WFD Waterbodies

Table 7.2: WFD Water Body (WB) Status 2021

WBID	GB521006110500	GB621009580000
Name	Gwaun Estuary	Cardigan Bay South
Country	Wales	Wales
RBD Description	Western Wales	Western Wales
WB Type	Transitional	Coastal
Catchment	Cleddau and Pembrokeshire Coastal Rivers TraC	Cleddau and Pembrokeshire Coastal Rivers TraC
Region	WA South West	WA South West
Area (km ²)	0.2	163.9
HMWB	No	No
Overall Status	Moderate	Good
Chemical Status	High	High
Ecological Status	Moderate	Good
Eco Cert	Not Applicable	Not Applicable
Mitigation Measures Assessment	N/A	N/A
Macro algae	High	High
MacroCert	Not Applicable	Not Applicable
Opportunistic Macro algae	High	High
Invertebrates	Not Available	Good
InvertCert	Not Applicable	Not Applicable
Morphology	Not High	Not High
Hydrological Regime	Not High	Not High
Flow	Not Available	Not Available
DO	Not Available	High
DO Cert	Not Available	Not Available
A8Cert	Not Applicable	Not Applicable
Annex10	Not Applicable	Not Applicable
A10Cert	Not Applicable	Not Applicable
Other Pollutants Cert	Not Applicable	Not Applicable

7.3.2 MSFD Status

The Proposed Development is located within the Celtic Seas MSFD sub region. A summary of progress towards the achievement of Good Environmental Status (GES) under the MSFD is provided in **Table 7.3**

Table 7.3: Summary of Progress towards GES

Qualitative Descriptor	GES Achieved	Trend since Period 1	Commentary
Biodiversity – cetaceans	Partially achieved	Stable	The status of coastal bottlenose dolphin and minke whale are consistent with the achievement of GES in the Greater North Sea, but unknown/uncertain elsewhere.
Biodiversity - birds	Partially achieved	Improving	The UK has achieved GES for grey seals in Celtic Seas. The abundance of harbour seal is unknown in Celtic Seas.
Biodiversity - fish	Not achieved	Improving	Demersal fish communities are recovering from over-exploitation in the past, but GES has not yet been achieved in the Celtic Seas. A partial assessment of pelagic fish did not provide a clear result.
Biodiversity – pelagic habitats	Partially achieved	Stable	Prevailing environmental conditions are likely to be driving the observed changes in plankton communities but human activities cannot be ruled out and it is uncertain whether GES has been achieved
Biodiversity – benthic habitats	Not achieved	Stable	The achievement of GES is uncertain for intertidal and soft sediment habitats. The levels of physical damage to soft sediment habitats are consistent with the achievement of GES in UK waters to the West of the Celtic Seas, but not in the Celtic Seas. Sublittoral rock and biogenic habitats have not yet achieved GES.
Non-indigenous species (NIS)	Not achieved	Stable	The UK has not yet achieved its aim of GES for non-indigenous species (NIS). Our ability to detect new NIS has improved but there has been no significant change in the number of new records of NIS made between 2003 and 2014.
Commercially exploited fish and shellfish	Not achieved	Improving	The UK has achieved its aim of GES for some commercially exploited fish. In 2015, 53% of marine fish (quota) stocks were fished below maximum sustainable yield (MSY). Most national shellfish stocks have either not yet achieved GES or their status is uncertain. The percentage of quota stocks fished below MSY and the proportion of marine fish spawning stock biomasses capable of producing MSY have increased significantly since 1990.
Food webs	Achieved	Stable	The extent to which Good Environmental Status has been achieved is uncertain: plankton communities are changing; some fish communities are recovering, but others are not; breeding seabird populations are in decline; grey seal numbers are increasing and trends in cetacean populations are unclear. It is known that components of the marine food web are changing, but it is not clear how they are affecting each other.
Eutrophication	Achieved	Stable	The UK has largely achieved its aim of GES for eutrophication. A small number of eutrophication problems remain in coastal and estuarine waters, representing 0.03% of the UK Exclusive Economic Zone, and 0.41% of estuarine and coastal waters.
Changes in hydrographic conditions	Achieved	Stable	The UK continues to achieve its aim of Good Environmental Status for hydrographical conditions.

Qualitative Descriptor	GES Achieved	Trend since Period 1	Commentary
Contaminants	Achieved	Improving	The UK has largely achieved its aim of Good Environmental Status for contaminants. Concentration of hazardous substances and their biological effects are generally meeting agreed target thresholds. Highly persistent legacy chemicals are the cause of the few failures, mainly in coastal waters close to polluted sources.
Contaminants in seafood	Achieved	Improving	The UK has achieved its aim of Good Environmental Status for contaminants in seafood. There is a high level of compliance with agreed safety levels.
Litter	Not achieved	Stable	The UK has not yet achieved its aim of Good Environmental Status for litter. Beach litter levels in the Celtic Seas have remained largely stable since the assessment in 2012, whilst beach litter levels in the Greater North Sea have increased.
Introduction of anthropogenic sound	Partially achieved	Stable	The achievement of Good Environmental Status for underwater noise in the UK is uncertain. Research and monitoring programmes established since 2012 have provided an improved understanding of the impacts of sound on marine ecosystems

7.3.3 Protected Areas

A significant proportion of waters in the Western Wales RBD are protected under existing EU legislation requiring special protection due to their sensitivity to pollution or their particular economic, social, or environmental importance (**Figure 7-2**). All these areas requiring special protection in the RBD have been identified by Natural Resources Wales, then mapped and listed in a register of protected areas (required under Article 5 of the WFD Directive). The register of protected areas includes:

- Drinking water protected areas
- Economically protected areas
- Recreational waters
- Nutrient Sensitive areas
- Special Protection Areas (SPAs); and
- Special Areas of Conservation (SACs)

A number of protected areas, listed on the register are located within or in water bodies adjacent to the Cardigan Bay South water body and therefore the Proposed Development site. These protected areas have their own monitoring and assessment requirements to determine their condition. They are often assessed for additional pollutants or requirements relevant to their designation. For example, faecal coliform levels are assessed within shellfish and bathing waters. It is important that proposed mitigation ensures the standards required for these protected areas are met, otherwise a water body which otherwise meets the requirements of the WFD, may have the status reduced to “less than good” as it is not meeting the protected area objectives.

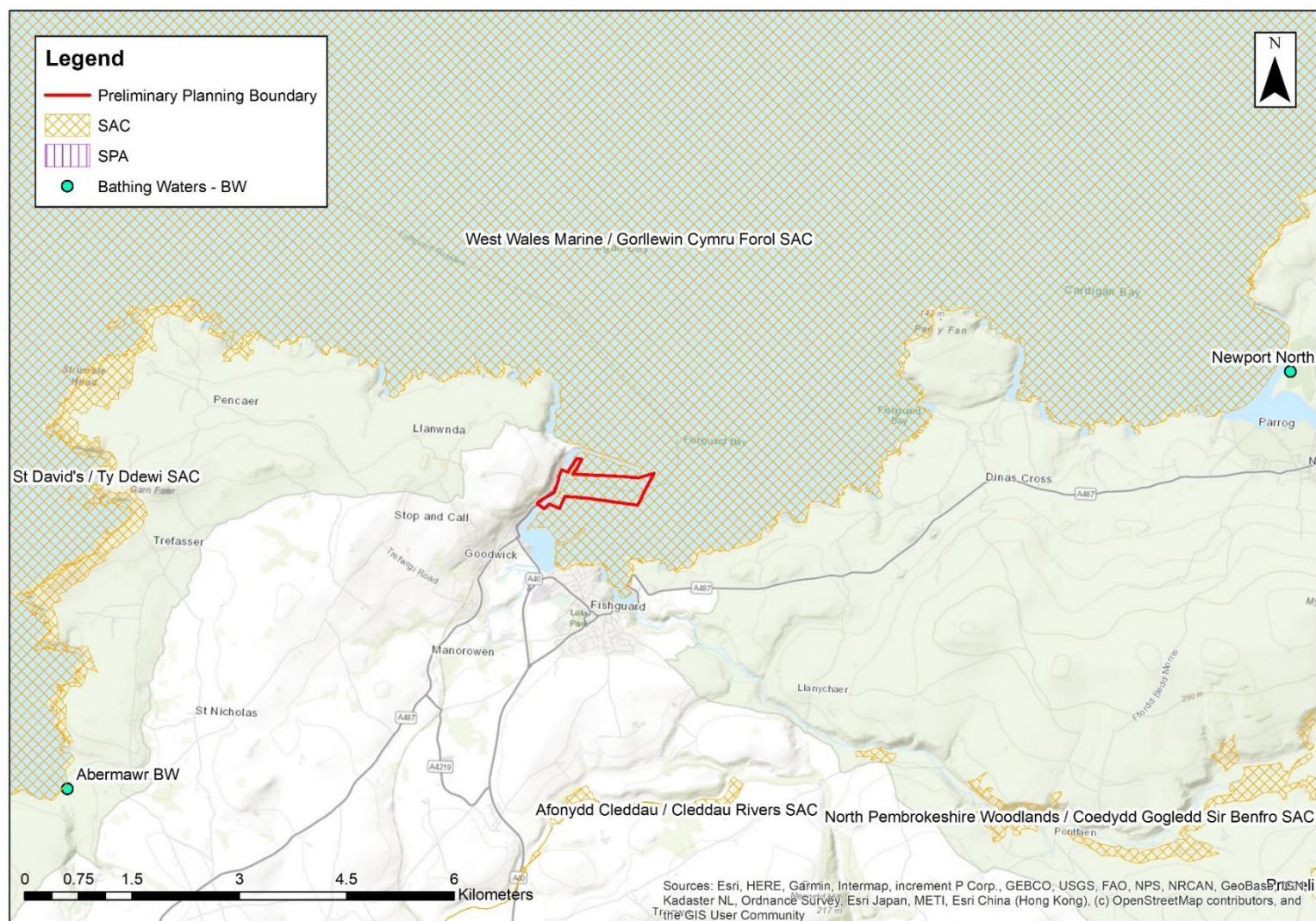


Figure 7-2: WFD Protected Areas

7.3.4 Shellfish Water Protected Areas

Shellfish Waters Protected Areas are designated as a protected area under the WFD and all shellfish protected waters have an objective that 'good' water quality as defined by (Council Directive 2006/113/EC), is maintained within these areas to ensure the production of high-quality shellfish.

There are no shellfish areas designated under the Shellfish Water Directive (2006/113/EC) within 20km of Fishguard Bay.

7.3.5 Bathing Water Protected Areas

The closest designated EU bathing water beach is at Abermawr, 7.6km SW, and Newport North, 9km NE of the Proposed Development, respectively. Bathing water quality is monitored at Newport North which typically achieves a high water quality standard. Abermawr and Newport North bathing waters were classified as having 'Excellent' water quality in 2023 bathing water season.

7.3.6 National Sites Network (Special Areas of Conservation (SACs)/Special Protection Areas (SPAs))

The National Site Network for SACs and SPAs are included in the Register of Protected Areas included within the RBMP which helps to ensure that water bodies within these areas are managed and that they achieve the objectives required by the Water Environment (Register of Protected Areas) (Wales) Regulations (2017) to protect the Conservation Objectives of water dependant SACs and SPAs.

Cardigan Bay South hosts important protected areas such as the West Wales Marine/Gorllewin Cymru Forol SAC, Cardigan Bay SAC and the Pembrokeshire Marine/Sir Benfro Forol SAC. Ramsey and St David's Peninsula Coast SPA is also within the Cardigan Bay South water body. **Table 7.4** outlines the distance from the Proposed Development to each protected area. The location of the protected areas are illustrated in **Figure 7-2**.

Table 7.4: WFD Protected Areas

Protected Areas	Distance and Direction to the Proposed Development
West Wales Marine/Gorllewin Cymru Forol SAC	Development occurring within this waterbody
Cardigan Bay SAC	15.4 km NE
Pembrokeshire Marine/Sir Benfro Forol SAC	16.7 km SW
Ramsey and St David's Peninsula Coast SPA	20.6 km SW

7.3.7 Marine Protected Areas (MPAs)

A marine protected area is any area of sea or shore that is protected by law for the conservation of habitats, species, or other natural features. The UK has signed up to international agreements that aim to establish an 'ecologically coherent network of Marine Protected Areas (MPAs).' This network will be made up of current MPAs as well as newly designated Marine Conservation Zones (MCZs). Each of the UK Administrations is responsible for designating Marine Conservation Zones, for the protection of nationally important habitats and

species, in their territorial waters (out to twelve nautical miles). The Marine and Coastal Access Act 2009 allows for the designation of MCZs anywhere in English and Welsh territorial and UK offshore waters for the protection of nationally important marine wildlife, habitats, geology, and geomorphology.

In Wales there are a total of 132 MPAs which protect species and habitats including those already listed in the National Sites network. Proposed and Candidate SPAs and SACs are protected under MPA Legislation. The West Wales Marine SAC has been identified as an area of importance for harbour porpoise. The site is three times the size of Snowdonia National Park covering 7,376km². The SAC encompasses the entire Cardigan Bay South water body and thus the Proposed Development site. The area included within the site covers important summer habitat for harbour porpoise, while part of the site in Cardigan Bay was also identified as important during the winter.

7.3.8 Receiving Environment Sensitivity

In terms of the impact assessment and based on baseline data, Cardigan Bay South coastal water body is considered to be a feature of extremely high importance based on the evaluation of significance set out in the generic methodology for determining environmental sensitivity of the water body is extremely high as sections of the water body are protected, i.e., National Sites Network (European Sites) designated under the Habitats Directive (92/43/EEC) and Birds Directive (2009/147/EC). This is relevant to the assessment of significance of environmental impacts as outlined in Table 7.7 and Table 7.8Table 7.9. The baseline information reported in this chapter will be used to conduct an impact assessment and inform mitigation to remediate potential detrimental impact from the Proposed Development upon the water environment.

7.4 Potentially Significant Effects

A range of potential impacts on water environment have been identified which may occur during construction and operation phases of the Proposed Development. These impacts have the potential to result in likely significant effects on water quality and therefore the achievement of the Environmental Objectives under the WFD and associated water dependant protected areas.

The potential impacts that have been considered in scoping are outlined in Table 7.5. The WFD scoping exercise that is required under the WFD assessment on estuarine and coastal waters, based on the scoping template provided in the Environmental Agency guidance, 'Clearing the Waters for All', (Environmental Agency, 2023) is summarised in Table 7.6 which outlines contributing elements to water body status that could be affected by the potential impacts identified in Table 7.5. According to this guidance and as informed by relevant industry guidance (IEMA, 2015), impacts on fish and habitat biology, chemistry and hydromorphology need to be considered in relation to WFD water body status classes and reported under specific WFD section in any EIA report or report produced in a separate WFD compliance report.

7.4.1 Construction Phase

7.4.1.1 Suspended Sediment and Dredging

The construction of the Proposed Development has the potential for the mobilisation of sediment from dredging activities, pilling activities, and demolition of existing infrastructure. Dredging activities include removal of soft material behind and within the new berth pocket within the harbour. Dredge material may contain contaminants which may be released into the water column and therefore may impact upon the WFD ecological status supporting elements such as hydromorphology. Therefore, to protect the marine environment, stringent mitigation measures will be deployed. It is anticipated that once construction has been completed baseline sediment conditions will return.

7.4.1.2 **Oils, Fuels, and Cement**

There is potential for accidental release of oils, fuels, and cement during the construction of the proposed development. A new run up area is proposed which includes asphalt resurfacing, rock armour revetment, and concrete suspended deck. Fresh concrete and cement is highly alkaline and therefore will affect water quality if washed into the marine environment. In addition, the storage of these substances within the designated site compound may contribute to runoff if not subject to effective mitigation measures. Demolition works can contribute accidental release of such substances into the marine environment in the absence of mitigation measures.

7.4.2 **Operation Phase**

7.4.2.1 **Maintenance**

Upon completion of the construction of the proposed development, little will be required in terms of maintenance. It is anticipated that Stena Line's existing regular maintenance dredging activities will continue as normal. However, any impact from such maintenance works associated with this new proposal can be considered negligible/imperceptible.

7.4.2.2 **Oils, Fuels, and Cement**

Pollution from oils, fuels or chemicals is a potential impact during the operations of the new facility. This may arise from the vehicles operating in the terminal vicinity as well as directly from ship navigation within the harbour. If vessels are being re-fuelled on site, any fuel spillages would potentially have adverse impacts on water quality in the area depending on the volumes released. Even small leaks and spills may have localised effects near the berths. Storage of chemicals or fuels and oils on-site for activities such as re-fuelling also has the potential to result in leaks or spillages which may enter directly into the adjacent water body. However, there is no change in the existing use of the replacement linkspan and no additional impact will occur.

Table 7.5: Impact Proposed to be Scoped into the Proposed Development Assessment for WFD Compliance

Impact	Project Phase*			Justification
	C	O	D	
Increase Suspended Sediment Concentrations (SSC) and associated deposition due to construction, demolition and operation related activities and potential impact to physical features	✓	✓	✓	Potential impacts associated with pollution from mobilised suspended solids (sediment) is generally considered a significant risk to water bodies. Suspended sediment due to the construction, decommissioning and operation of the Proposed Development can have an adverse impact on the biological elements, supporting physico-chemical elements and water dependant habitats and aquatic ecology.
The impact of habitat disturbance and its impact on the supporting hydromorphological conditions of water bodies	✓	✓	✓	Changes in physical processes including alterations to tidal/flow regime and impacts to Fishguard Harbour associated with the construction and operation phases of the Proposed Development could impact on the hydromorphological supporting conditions of the water bodies affected. The highest risk of impact from the construction of the Proposed Development will be upon supporting hydromorphological conditions within the Cardigan Bay South coastal water body. Higher and lower sensitivity habitats less than 2km from the development are most at risk. These include Mussel beds, Polychaete reefs and Subtidal kelp beds (higher sensitivity) and subtidal reefs soft sediments and rocky coasts (lower sensitivity)
The impact of pollution caused by accidental spills/contaminant release	✓	✓	✓	Activities required for construction and operation of the Proposed Development could result in accidental spills/contaminant release. This could adversely affect supporting physico-chemical conditions and therefore the biological elements of the WFD status and protected or notable habitats and species but also the chemical status of the water bodies affected. Works taking place within the marine environment presents the greatest risk of spills and contamination to estuarine and coastal water bodies. Runoff from construction onshore can contribute to pollution impacting the marine environment.
The impact of Invasive non-native species (INNS)	✓	✓	✓	There is potential for the increased risk of introduction and spread of INNS during all phases of the development. The installation of new artificial hard structures may present increased available habitat for INNS to colonise in the operation phase

Table 7.6: Summary of WFD scoping undertaken in Accordance with the Guidance ‘Clearing our Waters for All’ (Environmental Agency, 2023)

Receptor	Water Body	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	Cardigan Bay South	Yes	The Cardigan Bay South is not designated as a HMWB. The hydromorphological status of this water body is not high which is a contributing element of overall Ecological Status which is currently good. The Proposed Development within the water body may cause localised sediment plumes to form due to the displacement of sediment. Works will take place solely within this water body. However, it is possible for sediment to disperse and impact adjacent water bodies.
	Gwaun Estuary	Yes	The Gwaun Estuary transitional waterbody is not a HMWB. The hydromorphological status of this water body is not high which is a contributing element of the overall Ecological Status which is currently moderate. The Proposed Development within the water body may cause localised sediment plumes to form due to the displacement of sediment. Works will take place within the adjacent Cardigan Bay South coastal water body and it is possible for sediment to disperse and impact adjacent water bodies.
Biology: habitats	Cardigan Bay South	Yes	Lower sensitivity and higher sensitivity habitats are located either within the boundary or close to the boundary of the proposed development. These include Mussel beds, Polychaete reefs and Subtidal kelp beds (higher sensitivity habitats) and subtidal reefs soft sediments and rocky coasts (lower sensitivity habitats).
	Gwaun Estuary	Yes	The habitats within the Gwaun Estuary are not expected to be impacted by the proposed development. However mobilised sediment may be transported to adjacent water bodies within Cardigan Bay. Mussel beds and subtidal kelp beds, rockys shore, gravel and cobbles and intertidal soft sediment are the higher and lower sensitivity habitats present within this transitional water body.
Biology: fish	Cardigan Bay South	No	Fish migration in the marine or freshwater environment will not be at risk from the Proposed Development.
	Gwaun Estuary	No	
Water quality	Cardigan Bay South	Yes	A broad range of potential pollutants, such as hydrocarbons i.e. fuels can accumulate in surfaces waters, during the construction and operation phases. These chemicals may be included on the Environmental Quality Standards Directive (EQSD) list. This can arise from accidental spillages and in collisions between marine plant during construction. This cannot be discounted at scoping stage and will therefore be assessed further.
	Gwaun Estuary	Yes	

EIA SCOPING REPORT

Receptor	Water Body	Potential risk to receptor?	Note the risk issue(s) for impact assessment
			A Marine Pollution Coordination Plan (MPCP) will be developed to ensure that spills are properly contained, spill kits will be provided on-site. The Proposed Development should not cause a deterioration in water quality as there is a low potential for likely significant effects with regards to pollution.
Protected areas	Cardigan Bay South	Yes	The development is located within the West Wales Marine/Gorllewin Cymru Forol SAC
	Gwaun Estuary	Yes	
INNS	Cardigan Bay South	Yes	All waterbodies potentially affected by the Proposed Development are considered to be free from invasive species. Construction may cause the spread of INNS, which could adversely affect the status of native, protected or notable habitats and species and present a risk in the achievement of the Environmental Objectives of the water bodies affected.
	Gwaun Estuary	Yes	

7.5 Inclusion or Exclusion from EIA

Water Resources and the WFD should be included within the Environmental Impact Assessment Report (EIAR) as there is potential for significant water quality impacts on the marine environment.

7.6 EIA Assessment Methodology

7.6.1 Criteria for Rating Impact Significance

The significance of effects on surface water quality likely to occur during the demolition, construction and operation phases of the Proposed Development are determined using the predominantly qualitative process described below. The first step in the process is to determine the sensitivity of the receiving environment. The method for determining the sensitivity of receiving water bodies is summarised in Table 7.7. In order to assess the significance of the effects the definitions of potential magnitude and receiving environment sensitivity are also listed in the tables below (adapted from the generic methodology for environmental sensitivity outlined in the Design Manual for Roads and Bridges (2011)). Effects can be described as adverse, negligible, or beneficial.

Table 7.7: Sensitivity Indication

Value (Sensitivity)	Typical descriptors
Very High	Very high importance and rarity, international scale, and very limited potential for substitution. Examples: Water body protected area interests are of international importance and are included on the WFD Register of Protected areas having been designated under the Habitats, Birds, Shellfish, Bathing Water, Drinking Water or Nitrate Directives. High Status Water bodies
High	High importance and rarity, national scale, and limited potential for substitution. Examples: Water body where the current status is good or better and no deterioration is permitted. National designation e.g. Area of Special Scientific Interest (ASSI)
Medium	High or medium importance and rarity, regional scale, limited for substitution. Example: Moderate Status with an objective of good status by 2021, regionally important resource in terms of ecology or fisheries interest
Low	Low or medium importance and rarity, local scale Local potable water source supplying <50 homes. Quality Class D, WFD Status Poor. Amenity site is used by small numbers of local people.
Negligible	Very low importance and rarity, local scale WFD Status Bad, limited amenity value or fisheries interest

The magnitude of the impact has also been adapted from the generic methodology for environmental assessment outlined in the Design Manual for Roads and Bridges (2011) (Table 7.8). Impacts may be

considered to have no effect or be negligible to major adverse or beneficial and their magnitude has necessarily been assessed on a qualitative basis.

Table 7.8: Magnitude of Impact Indicating Type and Scale of Effect (DMRB, 2011)

Magnitude	Type and scale of effect
Major	Major alteration to water body status causing deterioration in either the ecological status including supporting elements, i.e., physico-chemical, specific pollutants and hydromorphology, chemical status or protected area status. Severe damage to key water body characteristics, features, or elements (Adverse). Large scale or major improvement to water body status, extensive restoration, or enhancement of water body (Beneficial).
Moderate	Water quality impact but not adversely affecting the integrity or status of the water body, partial loss or damage of certain characteristics or water body attributes (Adverse). Benefit to or addition of key characteristics or features of the water body, improvement in water status (Beneficial)
Minor	Some measurable change in water quality attributes, minor loss, or alteration to one (maybe more) key characteristics (Adverse). Minor benefit to one or more key characteristics, features, or elements of the water body (Beneficial)
Negligible	Very minor loss to water body characteristics, features, or elements (Adverse). Very minor benefit to or positive addition of one or more water body characteristics, features, or elements (Beneficial)
No change	No loss or alteration to water quality or water body status

Applying the formula, the greater the environmental sensitivity or value of the receptor or resource, and the greater the magnitude of impact, the more significant the effect. The consequences of a highly valued environmental resource suffering a major detrimental impact would be a very significant adverse effect. Table 7.9 illustrates how the sensitivity of attributes was considered against the magnitude of impacts to determine the significance of potential impacts.

Table 7.9: Estimating the Significance of Potential Impacts (Source: DMRB, 2011)

Importance of Attribute (sensitivity)	Magnitude of Impact			
	Negligible	Minor	Moderate	Major
Very High	Negligible/Neutral	Moderate/Large	Large	Large
High	Negligible/Neutral	Moderate	Large	Large
Medium	Negligible/Neutral	Slight	Moderate	Large
Low	Negligible/Neutral	Negligible/Neutral	Slight	Slight/Moderate

7.6.2 Rating of Significance of Environmental Impacts

Based on the importance of the receiving water body, which has been assessed to be of extremely high importance (due to the presence of Natura 2000 sites), and the impact significance an assessment of the

potential environmental impacts of the Proposed Development has been made based on the matrix presented in Table 7.7 - Table 7.9 above.

7.6.3 Compliance with the Water Framework Directive Objectives

A key requirement of the WFD is that surface water bodies attain at least good surface water status, requiring ecological status to be at least good and chemical status to pass the environmental quality standards for hazardous and priority hazardous substances, and that there should be no deterioration in existing status. The impact assessment will need to demonstrate that the proposed project will not compromise the environmental objectives of the water bodies affected and a separate WFD technical report will be produced to demonstrate that this is the case.

7.7 Preliminary Mitigation Measures

7.7.1 Construction Phase

The following general water quality control measures shall be implemented during construction:

- A protocol for regular communication between the appointed contractor, the engineer's representatives, statutory agencies, such as Natural Resources Wales and Fishguard & Goodwick Town Council, and other third parties shall be established;
- Management and auditing procedures, including toolbox talks to personnel, shall be put in place to ensure that any works which have the potential to impact on the aquatic environment are being conducted in accordance with required permits, licenses, certificates, and planning permissions.
- Existing and proposed surface water drainage and discharge points shall be mapped on a site plan which should also include the location of existing and proposed measures such as monitoring points, sediment traps, settlement lagoon and oil receptors.
- A contingency plan for the construction works shall be prepared by the appointed contractor, in accordance with *GPP 21 Pollution Incident Response Planning* (Environment Agency 2021). The Plan should also detail the procedures to be followed if there is a breach in any licence conditions or non-compliance.
- *GPP 6 Working at demolition and construction sites* (Environmental Agency, 2023) shall be adhered to particularly in relation to safe and secure decommissioning of existing structures, onsite storage and minimising storage time, wheel washing, placing of concrete and dealing with silty water. Other relevant guidance exists, including:
 - GPP 1: Understanding your environmental responsibilities – good environmental practises
 - GPP 2: Above Ground Oil Storage Tank
 - GPP 5: Works and maintenance in or near water
 - GPP 8: Safe storage and disposal of used oils

- GPP 13: Vehicle washing and cleaning
- GPP 21: Pollution incident response planning
- GPP 26: Safe storage – drums and intermediate bulk containers

7.7.2 Operation Phase

The following mitigation measures will be deployed during the operation phase:

- Compliance with the Oil Spill Contingency Plan as outlined above;
- Adequate bunding for any fuel, oils or chemicals stored on-land in accordance with relevant GPPs and the Control of Pollution (Oil Storage) (Wales) Regulations 2016;
- Regular inspection of the condition of chemical and fuel storage facilities along with routine maintenance to ensure the risk of leaks is minimised

7.8 Interactions

There is potential interactions to arise with Water Resources and the WFD and Biodiversity – Marine, Biodiversity – Terrestrial & Birds, Flood Risk, Coastal Processes, Soils, Geology & Hydrogeology and Human Health chapters.

7.9 Summary of Scoping Exercise

This chapter of the EIA Scoping Report has assessed the potential impacts that may arise from the Proposed Development on WFD water bodies and associated protected areas. The potential impacts on the water environment associated with the construction, operation and decommissioning phases have been identified and will be considered further in the impact assessment. Water Resources and the WFD will therefore be scoped into the Environmental Impact Assessment.

7.10 References

Axis (2011) Fishguard Harbour Marina Development Environmental Statement.

Design Manual for Roads and Bridges (2011) Available at: <https://www.standardsforhighways.co.uk>. Accessed: 31 October 2024.

Environmental Agency, (2017a) Guidance for Pollution Prevention GPP 8: Safe storage and disposal of used oils.

Environmental Agency, (2017b) Guidance for Pollution Prevention GPP 13: Vehicle washing and cleaning.

Environmental Agency, (2018) Guidance for Pollution Prevention GPP 5: Works and maintenance in or near water.

Environmental Agency, (2019) Guidance for Pollution Prevention GPP 26: Safe storage – drums and intermediate bulk containers.

Environmental Agency, (2021a) Guidance for Pollution Prevention GPP 1: Understanding your environmental responsibilities – good environmental practises.

Environmental Agency, (2021b) Guidance for Pollution Prevention GPP 21: Pollution incident response planning.

Environmental Agency, (2023a) Guidance for Pollution Prevention GPP 2: Above Ground Oil Storage Tank.

Environmental Agency, (2023b) Guidance for Pollution Prevention GPP 6 Working at demolition and construction sites.

JNCC (2008) Ramsey and S David's Peninsula Coast SPA Conservation Management Objectives;. Available at: <https://naturalresources.wales/media/673968/St%20David's%20SAC%20Plan%20English.pdf>. Accessed: 08/11/2024.

JNCC (2009a) Cardigan Bay SAC Conservation Management Objectives.; Available at: <https://naturalresources.wales/media/673505/Cardigan%20Bay%20R33%20Feb%202009.pdf>. Accessed:08/11/2024.

JNCC (2009b) Pembrokeshire Marine/Sir Benfro Forol SAC Conservation Management Objectives Available at: <https://naturalresources.wales/media/673806/Pembrokeshire%20Marine%20Reg%2033%20Advice%20Feb%202009.doc.pdf>. Accessed: 08/11/2024.

JNCC (2019) West Wales Marine / Gorllewin Cymru Forol SAC. Available at: <https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030397.pdf>. Accessed: 08/11/2024.

Natural Resources Wales (2021a) WFD Cycle 3 Coastal Waterbodies Available at: <https://waterwatchwales.naturalresourceswales.gov.uk/en>. Accessed: 31/10/2024.

Natural Resources Wales (2021b) WFD Cycle 3 Transitional Waterbodies Available at: <https://waterwatchwales.naturalresourceswales.gov.uk/en/>. Accessed 31/10/2024

Natural Resources Wales (2021c) Dee and Western Wales River Basin Management Planning (RBMP) Measures and Objectives <https://naturalresources.wales/evidence-and-data/research-and-reports/water-reports/river-basin-management-plans/dee-and-western-wales-river-basin-management-plans-2021-2027/?lang=en>. Accessed: 31/10/2024

Natural Resources Wales (2022) RBMPs 2021-2027 Register of Protected Areas. Available at: <https://naturalresources.wales/evidence-and-data/research-and-reports/water-reports/river-basin-management-plans/river-basin-management-plans-2021-2027-protected-area-register/?lang=en>. Accessed: 31/10/2024

Natural Resources Wales (2024a) Abermawr Bathing Water Profile Available at: <https://environment.data.gov.uk/wales/bathing-waters/profiles/profile.html?site=ukl1403-38540>. Accessed: 08/11/2024

EIA SCOPING REPORT

Natural Resources Wales (2024b) Newport North Bathing Water Profile. Available at: <https://environment.data.gov.uk/wales/bathing-waters/profiles/profile.html?site=ukl1403-38600>. Accessed: 08/11/2024

8 FLOOD RISK

8.1 Baseline Scenario

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development on flood risk within the study area.

8.2 Baseline Scenario

The site is located adjacent to and within Fishguard Harbour.

Planning Policy Wales Technical Advice Note (TAN) 15 'Development and Flood Risk' and the associated Development Advice Map is the current framework for assessing flood risk to and from new development. A key requirement of TAN15 is that a Flood Consequence Assessment (FCA) must be produced for any development at risk of river or coastal flooding. The results of the FCA should be used to inform the final design of a development and to demonstrate that all risks have been identified and appropriately mitigated for. This is vital to ensure that the development will be safe for people to live in or use for all of its proposed lifetime.

The Development Advice Map contains three zones (A, B and C with subdivision into C1 and C2) which is used to trigger the appropriate planning tests in TAN15. An extract from the Development Advice Map is shown in Figure 8.1. The map shows that the Proposed Development lies within Zone C2 - Areas of floodplain (0.1% AEP) without significant flood defence infrastructure.

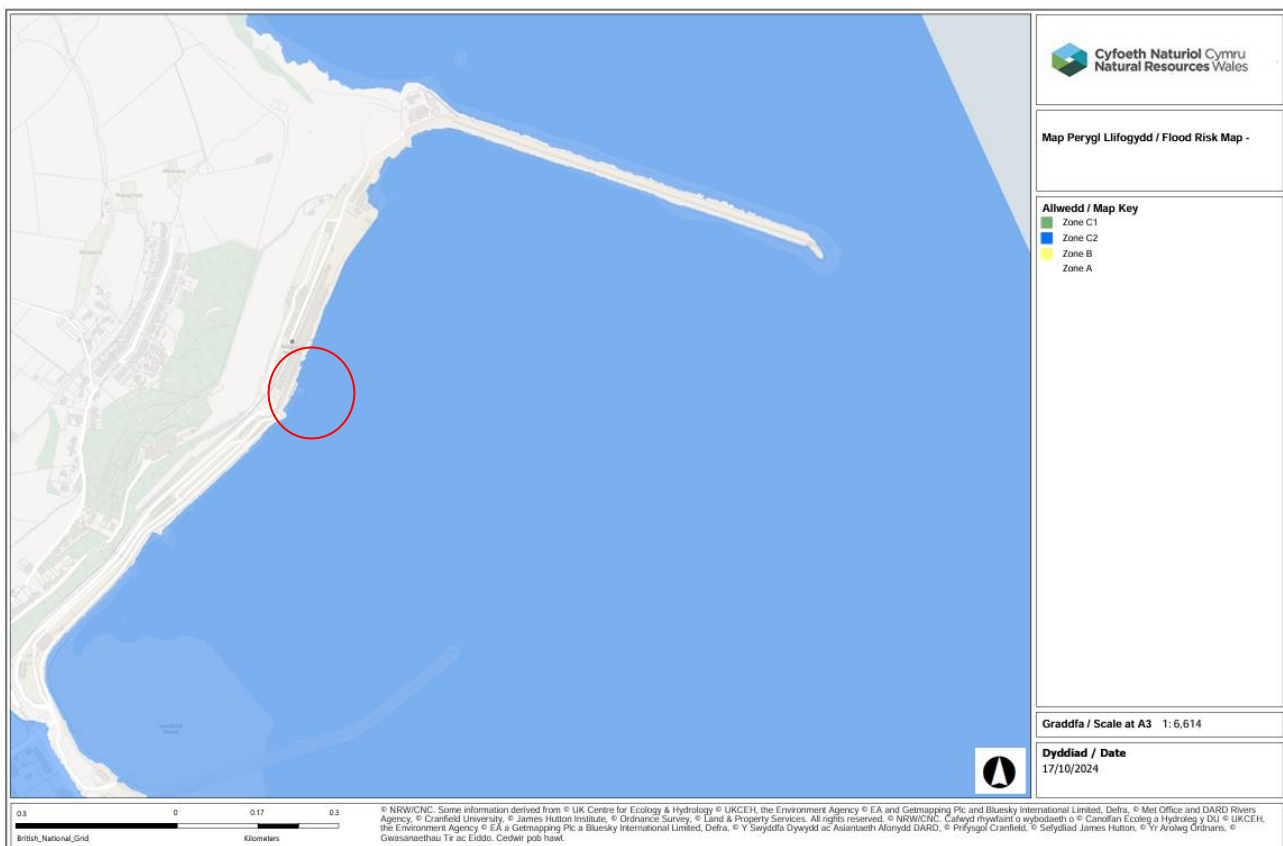


Figure 8.1: Extract from Development Advice Map

The Welsh Government is due to implement a revised TAN15. This will be supported by the Flood Map for Planning, which shows how climate change will affect flood risk extents over the next century. The map shows the potential extent of flooding assuming no defences are in place. The Flood Map for Planning has no official status until the Welsh Government implements the revised TAN15. However, it represents the best available information available on flood risk. An extract from the Flood Map for Planning is shown in Figure 8.2. The map shows that the Proposed Development lies within Sea Flood Zone 3 - areas with more than 0.5% (1 in 200) chance of flooding from the sea in a given year, including the effects of climate change.

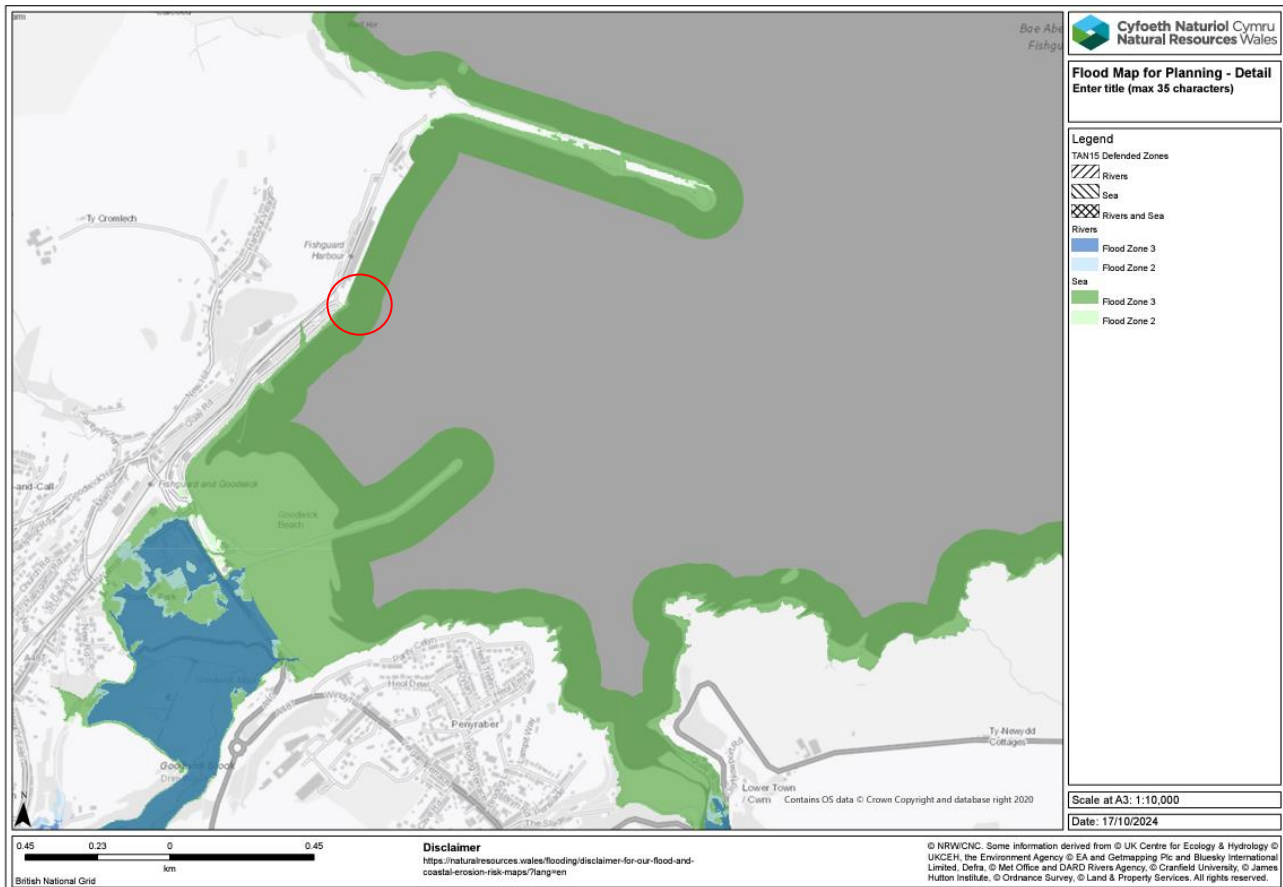


Figure 8.2: Extract from Flood Map for Planning

8.3 Potentially Significant Effects

8.3.1 Construction Phase

As the construction works will be at sea, there is a risk of flooding to the works from extreme tidal events that will need to be managed. Impacts would include flooding of the works, flooding of plant and machinery, and a risk to construction workers.

8.3.2 Operation Phase

There is an existing linkspan in place and the site currently operates in a similar manner, so the flood risk exists at present. The Proposed Development will be at risk of coastal flooding during the operation phase. Mitigation measures are therefore required to manage the consequences of flooding to an acceptable level.

The Proposed Development will not have an impact on flood risk elsewhere as it is a waterfront development built within the existing harbour to replace an existing linkspan arrangement.

Storm water runoff from the site will be collected in the existing dedicated storm water drainage system at the Port. There is therefore no increase in storm water runoff to the Port because of the development. An application will be made to the SuDs Approving Body (SAB) as part of the planning application.

8.4 Inclusion or Exclusion from EIA

As shown in the Development Advice Map, the Proposed Development lies within Zone C2. TAN15 defines these areas as *'used to indicate that only less vulnerable development should be considered subject to application of justification test, including the acceptability of consequences'*. The precautionary framework in TAN15 identifies the vulnerability of different land uses to flooding, and development has been sub-divided into three categories in Figure 2 of TAN15. This is reproduced as Figure 8.3.

Figure 2

Development category	Types
Emergency services	hospitals, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood
Highly vulnerable development	all residential premises (including hotels and caravan parks), public buildings (e.g. schools, libraries, leisure centres), especially vulnerable industrial development (e.g. power stations, chemical plants, incinerators), and waste disposal sites
Less vulnerable development	General industrial, employment, commercial and retail development, transport and utilities infrastructure, car parks, mineral extraction sites and associated processing facilities, excluding waste disposal sites

Figure 8.3: Extract from TAN15- Development classification

Paragraph 5.3 of TAN 15 states *'there are uses which are considered to be exceptions to the general rule, and have not been classified above, because they are required to be in a fluvial, tidal or coastal location by virtue of their nature. These include boatyards, marinas, essential works required at mooring basins, and*

development associated with canals'. Replacement of the Linkspan can be considered under this category. The types of developments will not subject to the first part of the justification test in Section 6 of TAN (Justifying the location of development) but will be subject to the acceptability of the consequences part of the test as outlined in Section 7 of TAN (Assessing flooding consequences).

Flood risk should therefore be included in the EIA as the acceptability of the consequences part of Flood Consequence Assessment is required to be completed.

8.5 EIA Assessment Methodology

The following tasks will be implemented to complete the assessment:

- identify and assess the hazard from all sources of flooding to the Proposed Development;
- consideration of the consequences of flooding on the Proposed Development;
- consideration of the consequences of the Proposed Development on flood risk elsewhere;
- identification of any mitigation measures that can be incorporated into the design of the Proposed Development to ensure that the risk to life, damage to property and disruption to people is minimised;
- assessment of any residual impacts;
- demonstrate that the Proposed Development complies with planning policy and guidance.

8.6 Preliminary Mitigation Measures

8.6.1 Construction Phase

Temporary works may be required to prevent coastal waters interacting with works activities throughout the duration of the construction period. The temporary works design to ensure the method of temporary flood protection is stable and avoids seepage will be the responsibility of the appointed Contractor.

Met Office and Natural Resources Wales both provide a weather warnings alert service. These warnings can be used during construction to manage the risk of flooding to the works from extreme events.

8.6.2 Operation Phase

Under TAN15, suitable mitigation measures should be incorporated within the design to ensure that development is as safe as possible and there is:

- Minimal risk to life;
- Minimal disruption to people living and working in the area;
- Minimal potential damage to property;
- Minimal impact of the Proposed Development on flood risk generally; and
- Minimal disruption to natural heritage.

There is an existing linkspan in place and the site currently operates in a similar manner. The flood risk exists at present and there will be no increase in the flood risk at the site because of the Proposed Development. If an extreme event is forecast, any sailings from the port are likely to be cancelled meaning that the linkspan will not be in operation so there will be no risk to life. The entire port area will be at risk, so it is likely to have been closed and evacuated in accordance with any existing emergency plans. There will be no damage caused to the linkspan if it is flooded, and there will be no major clean up required. No further mitigation measures are therefore proposed.

8.7 Interactions

The impact of the Proposed Development on coastal water levels will be assessed in Chapter 6 Coastal Processes, and this should be considered in the Flood Risk chapter of the EIA.

8.8 Summary of Scoping Exercise

RPS have assessed the flood risk to the Proposed Development and determined that the predominant source of flood risk emanates from coastal flooding. The scoping exercise has concluded that Flood Risk should be included in the EIA to show compliance with Planning Policy Wales Technical Advice Note (TAN) 15 'Development and Flood Risk'.

8.9 References

Development Advice Maps:

https://gisgeoext.cyfoethnaturiolcymru.gov.uk/Geocortex/Viewers/Html5Viewer_4145/index.html?viewer=FloodRisk

Flood Map for Planning: <https://flood-map-for-planning.naturalresources.wales/>

Met Office UK weather warnings: <https://www.metoffice.gov.uk/weather/warnings-and-advice/uk-warnings/#?date=2024-10-17>

Natural Resources Wales Flood warnings and alerts: <https://flood-warning.naturalresources.wales/>

Technical Advice Note 15 (TAN 15) Development and Flood Risk. Planning Policy Wales, 2004.

9 NOISE & VIBRATION

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development on Noise and Vibration. It sets out the baseline scenario, potentially significant effects, preliminary mitigation and methodology proposed for the EIA on this topic.

9.1 Baseline Scenario

9.1.1 Study Area

Analysis of an address database will be undertaken during the EIA to assist the identification of noise sensitive receptors. The following sensitive receptors will be considered within the environmental impact assessment: residential dwellings; hospitals, schools, nurseries, elderly homes, and places of worship.

For construction phase the noise study area for the Proposed Development will include a 1km buffer around construction works. For construction phase the vibration study area will include a buffer of up to 100m from any construction activity as significant vibration effects are not expected beyond this distance.

For the operation phase, given there are no planned change to the vessel traffic (vessel size/type or number) there is no expected difference in noise between baseline conditions and the operation phase.

9.1.2 Data Sources

Data sources used for the Noise and Vibration scoping of the Development are summarised in Table 9-1.

Table 9-1: Data Sources used for Scoping Noise and Vibration

Data Source	Data Type
Ordnance Survey (OS Wales)	Locations of buildings and receptors
Google Maps and Google Earth	Locations of buildings and receptors

9.2 Potentially Significant Effects

The potentially significant effects on Noise and Vibration receptors that could arise from the Proposed Development during the construction and operation phases are summarised below.

9.2.1 Construction Phase

Noise generated by the Proposed Development impacts on nearby sensitive receptors. Construction activities, including piling, dredging and rock breaking, could temporarily increase the noise levels at receptors within the construction study area. Construction activities potentially could overlap.

Construction vibration during the construction phase from rock breaking, piling and demolition, has the potential to impact on nearby sensitive receptors. Ground-borne vibration can arise from demolition and construction works and may lead to perceptible levels of vibration at nearby receptors, which at higher levels

can cause annoyance to residents. In extreme cases, cosmetic or structural building damage can occur, however vibration levels have to be very high for this effect to be manifested and such cases are rare. Vibration from construction activities is generally temporary and intermittent in nature.

9.2.2 Operation Phase

Following construction of the linkspan the operational vessel sailings, numbers and sizes, are not anticipated to change. Operational traffic noise assessment will not be included in EIA as there will be no additional traffic noise impact associated with the Proposed Development. Operational noise from the Proposed Development is not likely. Operational vibration from the Proposed Development is unlikely.

Operational noise and vibrations from the Proposed Development are not likely and will not be included in the EIA noise and vibration impact assessment.

9.3 Inclusion or Exclusion from EIA

Construction noise and vibration assessment will be included within EIA Noise and Vibration for all construction activities proposed.

Operational noise assessment will not be included within the EIA.

Noise impacts on the nearest noise sensitive receptors:

- During the construction phase to be included, and
- During the operation phase not to be included.

Vibration impacts on the nearest noise sensitive receptors:

- During the construction phase to be included, and
- During the operation phase to be excluded.

9.4 EIA Assessment Methodology

9.4.1 Noise and Vibration Assessment Guidance

The Noise and Vibration assessment will include the following relevant policy and guidance documents:

- Technical Advice Note (Wales) 11:1997 Noise;
- Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment (IEMA 2014);
- World Health Organisation (WHO) – Guidelines for Community Noise (1999);
- British Standard BS 5228:2009+A1:2014 Noise and Vibration Control on Construction and Open Sites;
- British Standard BS 7445-1 Description and Measurement of Environmental Noise – Part 1: Guide to quantities and procedures (BS 7445-1).

9.4.2 Data Sources

Data sources to be relied on for the Noise and Vibration assessment of the Proposed Development are summarised in Table 9-2.

Table 9-2: Data Sources used for the Assessment of Noise and Vibration

Data Source	Data Type
Ordnance Survey (OI Wales)	Locations of buildings and receptors
Google Maps and Google Earth	Locations of buildings and receptors
Baseline noise monitoring surveys (to be confirmed)	Baseline noise data
BS 5228 Construction Plant and Activities	Noise modelling and propagation calculations

9.4.3 Sensitive Receptors

A desk-based review and consultation will be undertaken to identify potentially sensitive receptors. Noise sensitive receptor locations will be obtained from the following data sources:

- Aerial mapping included Google and Bing aerial maps; and
- OS OpenData.

9.4.4 Baseline Noise Monitoring

The purpose of the baseline noise monitoring survey will be to determine the baseline noise levels at the nearest noise sensitive receptors and assess these levels in accordance with the relevant guidance to determine the following:

- Evaluate the baseline noise climate; and
- The applicable BS 5228 construction noise threshold limit in accordance with British Standard BS5228, Code of Practice of Noise Control on Construction and Open sites.

Baseline noise monitoring will be undertaken at receptors where the potential for significant construction noise effects from the Proposed Development is identified, and where needed to inform the construction phase noise impact assessments.

Baseline noise monitoring surveys will be agreed in consultation with the client throughout the EIA process and will be carried out for a sufficient period to allow typical sound levels to be established, taking account of different types of noise sources and weather conditions that occur. Noise surveys will be accompanied by the inclusion of supplementary non-acoustic data (rainfall and wind records), as required.

9.4.5 Baseline Vibration Monitoring

Baseline vibration survey to establish the existing level of ground-borne vibration will not be undertaken since any assessment would be based upon exceedance of criteria rather than change in vibration. There are no known existing significant sources of vibration.

9.4.6 Assessment of Construction Noise

Construction activities can give rise to noise which will be predicted at receptor locations using accepted modelling techniques and industry standard source sound-level data. This will follow guidance on construction noise within British Standard BS5228-1:2009+A1:2014, 'Code of practice for Noise and Vibration control on construction and open sites – Part 1: Noise'. This guidance details the "ABC method" of assessment, which specifies a construction noise limit based on the existing ambient noise level and for different periods of the day. Therefore, the EIA will assess the predicted construction noise levels against noise limits derived from advice within Annex E of BS 5228. Construction Road Traffic and Noise Impacts.

9.4.7 Assessment of Construction Vibration

Consideration will be given to all potential sources of vibration associated with the construction phase particularly those in proximity to residential and other sensitive receptors. Guidance on the human response to vibration in buildings is found in BS 6472-1:2008 Guide to Evaluation of Human exposure to Vibration in buildings, Part 1, Vibration sources other than blasting.

For construction vibration from sources other than blasting, the vibration level and effects will be adopted based on Table B-1 of BS 5228-2. These levels and effects are based on human perception of vibration in residential environments. In the case of typical earthworks projects, vibration may be generated by operations such as piling. The piling is required during the construction of the Proposed Development and the potential for vibration impacts will be assessed at the nearest sensitive receptors using accepted modelling techniques and industry standard source data. This will follow guidance on construction vibration within British Standard BS5228-2:2009+A1:2014, 'Code of practice for Noise and Vibration control on construction and open sites. Vibration'.

9.4.8 Assessment of Operation and Maintenance Noise

Operational noise and vibration from the Proposed Development are not likely and will not be included in the EIA noise and vibration impact assessment.

9.5 Preliminary Mitigation Measures

The findings of the Noise and Vibration impact assessment will be used to identify relevant mitigation measures as appropriate for the construction phase of the Proposed Development to remove or mitigate any potential significant adverse impacts, where possible.

9.5.1 Construction Phase

There will potentially be temporary significant noise impacts at times during the construction phase. The Proposed Development will implement best practicable means (BPM) as defined in BS 5228:2009-Part 1 Noise. The use of the proposed construction noise mitigation measures will ensure that construction noise levels are controlled to the lowest levels practicable.

A Construction Noise and Vibration Management Plan will be developed prior to construction starting. This will define suitable construction methodologies to be used and include details on working hours, construction methods and plant and noise limits and monitoring as appropriate. Monitoring of noise related complaints would also be undertaken.

9.5.2 Operation Phase

Operational noise or vibration mitigations are not anticipated as existing operations are planned on completion of Proposed Development and will not be included in the EIA noise and vibration assessment

9.6 Interactions

The potential interactions caused by construction phase will be considered on Population and Human Health Chapter 3 and Landscape and Visual in Chapter 16.

9.7 Summary of Scoping Exercise

This section of the Scoping Report identifies the elements of the Proposed Development and considers the potential noise and vibration impacts from the construction and operation of the Proposed Development.

Construction noise and vibration assessment will be included within EIA Noise and Vibration. Operational noise assessment will not be included as existing operations are planned on completion of Proposed Development. Operational traffic noise assessment will not be included in EIA as there will be no significant traffic noise impact associated with the proposed.

There will be temporary significant noise impacts at particular phases of works during the construction phase.

9.8 References

Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment (IEMA, 2014);

Technical Advice Note (Wales) 11:1997 Noise;

World Health Organisation (WHO) – Guidelines for Community Noise (1999);

British Standard 8233: 2014 Sound Insulation and Noise Reduction for Buildings – Code of Practice (BS, 2014);

British Standard BS5228:2009+A1:2014 Noise and Vibration Control on Construction and Open Sites;

British Standard BS 7445-1 Description and Measurement of Environmental Noise – Part 1: Guide to quantities and procedures (BS, 7445-1)

10 UNDERWATER ACOUSTICS

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development of underwater acoustics. on the marine environment from the proposed dredging, piling (vibro-piling and installation in pre-drilled holes), partial removal of quay and rock dumping or placement together..

This scoping assessment provides an overview of the risk of effects due to underwater noise from The Proposed Development on the surrounding marine environment based on the NOAA 2024 (National Oceanic and Atmospheric Administration, 2024) and Popper et al. 2014 (Popper, et al., 2014) frameworks for assessing impact from noise on marine/aquatic mammals and fish.

Consequently, the primary purpose of the underwater noise scoping assessment is to assess the risk of significant adverse effects on marine/aquatic mammals and fishes due to increased anthropogenic noise as a result of The Proposed Development.

10.1 Baseline Scenario

10.1.1 Ambient noise

Ambient noise in Fishguard port is dominated by the ferry service from/to Rosslare, Ireland (Figure 10 1). This means probable background broadband levels of 80-85 dB SPL with most of this originating from shipping noise in the Celtic Sea. The visiting Stena Line Ferry service (Rosslare, Ireland Fishguard, Wales) has 13 weekly trips, meaning that c. twice a day a ferry will enter and exit the harbour, elevating the sound levels within the harbour (taken as within 1500 m of the ferry terminal) to a minimal SPL of 140-160 dB of mainly lower frequency noise (<1000 Hz) but with potentially significant energy at higher frequencies.

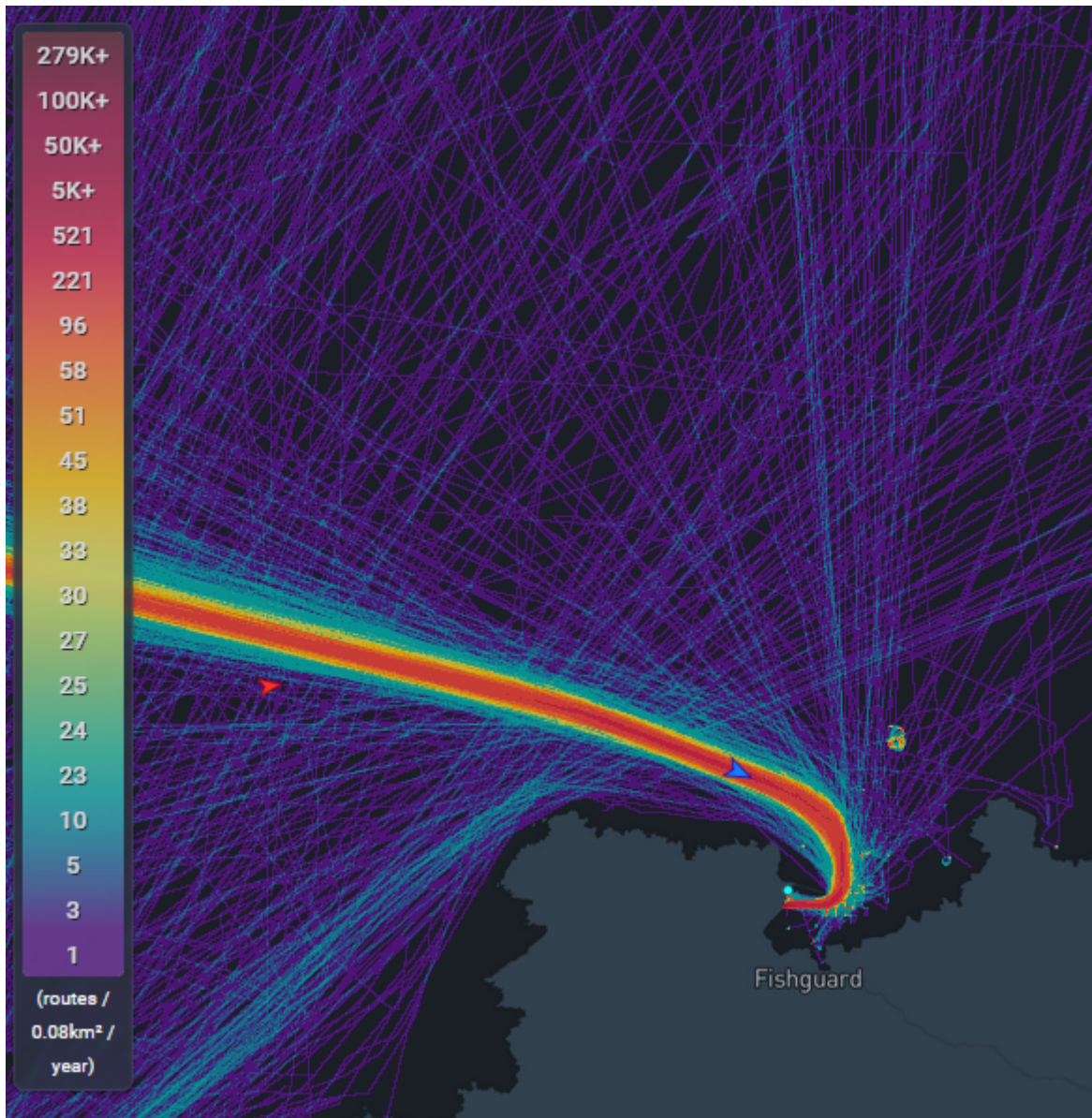


Figure 10-1 Traffic Density from AIS Data, showing the annual mean traffic per 0.08km. Data from marinetraffic.com

10.2 Potentially Significant Effects

10.2.1 Construction Phase

During the construction phase any of the activities could overlap and all activities are considered active for the scoping assessment (section 10.2.1.1.1, Table 10 1 & Figure 10 2).

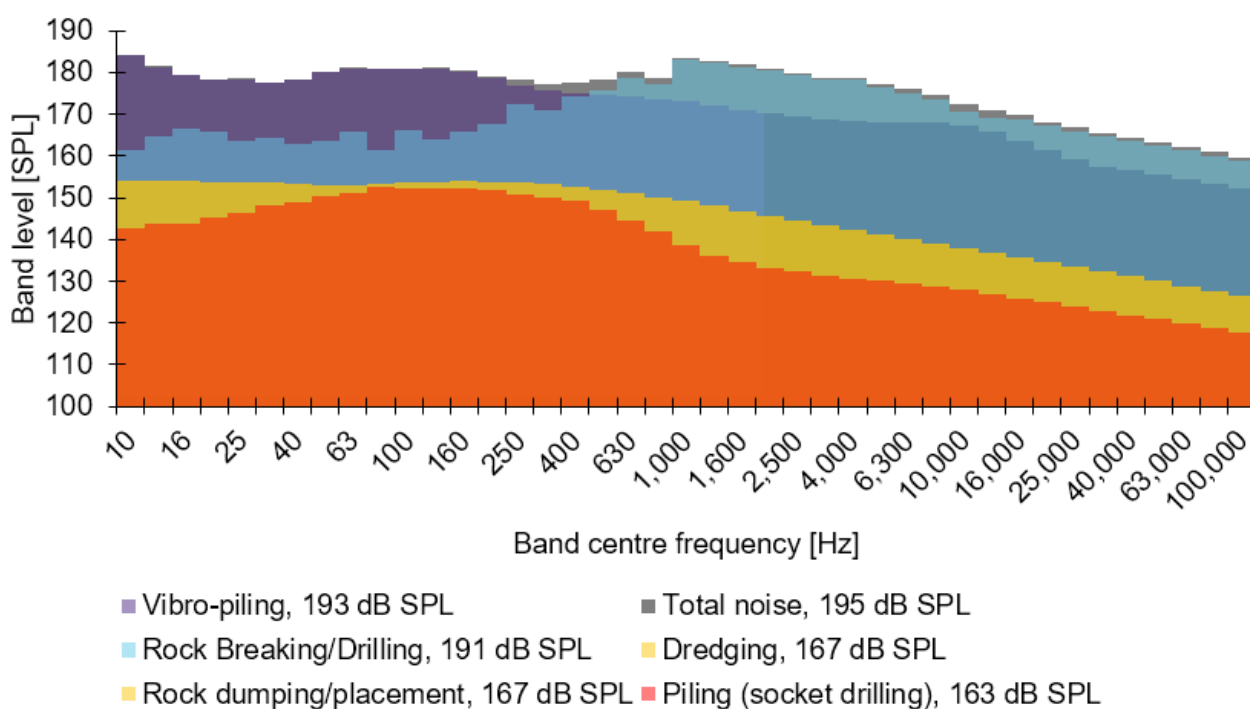
10.2.1.1 Noise Sources

10.2.1.1.1 Overview

Table 10 1 and Figure 10 2 provide details on activities resulting from The Proposed Development with a significant underwater noise component.

Table 10-1. Overview of noisy activities relevant to an underwater noise assessment.

Source/Equipment/Activity	Source level [SPL]	Assumptions and comments
Vibro-piling	194	Based on 90 th percentiles of recordings from piles of 80-260 cm.
Dredging	167	Based on tug or dredging vessel of 20 m length.
Piling (Socket drilling)	163	2 m rotary drill assumed.
Drilling or Rock Breaking	191	Based on percussive Standard Penetration Testing and marine drilling with diameters of 0.1 m.
Rock Dumping or Placement	167	"Dredging" above used as proxy


Figure 10-2. Band levels summary for all noise sources. Note that “Total noise” can be hard to see as it nearly equals the loudest bands where sources have different levels, but clearly seen e.g. 250-1,000 Hz.

10.2.1.1.2 Vibro-piling

Three piles are expected to be installed with vibro-piling; two guide piles (diameter 1.22 m) and a single larger pile (diameter 2.0 m) to act as casing for the main pile to support the linkspan pontoon. A broadband level of 194 dB SPL with most energy at lower frequencies is expected to be a conservative estimate based on recordings from similar installations.

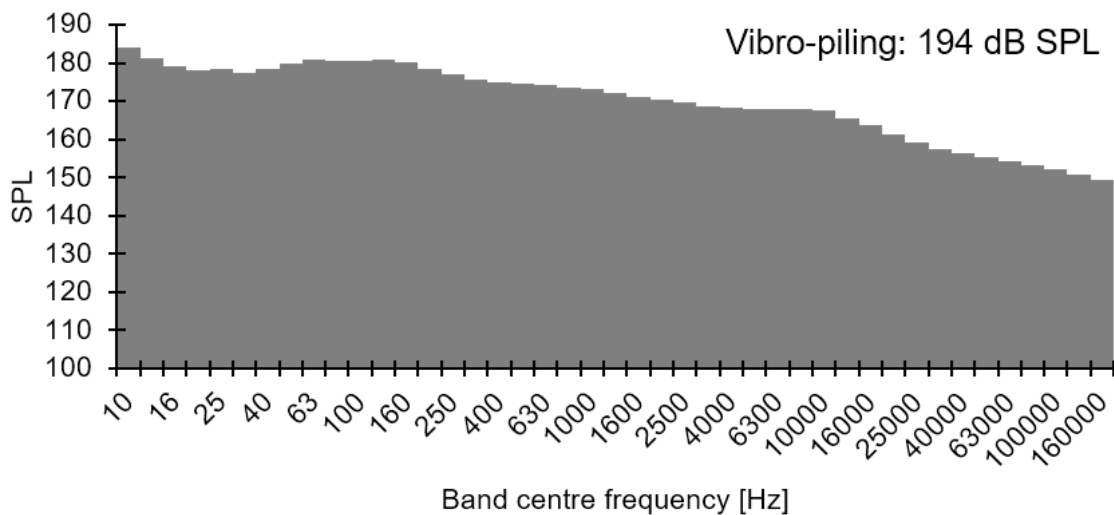


Figure 10-3. Band levels for likely worst-case for 1.2-2.0 m diameter vibro-piling.

10.2.1.1.3 Dredging

Dredging is assumed to be done by backhoe dredging, which itself has low noise emissions, but as the dredging will be done from either a barge (which will likely be positioned by tug or similar) or a vessel the dredging noise is essentially the noise from the supporting vessel.

The dredging operation is expected to have a broadband SPL of 167 dB, with -20 dB bandwidth from 10-20,000 Hz.

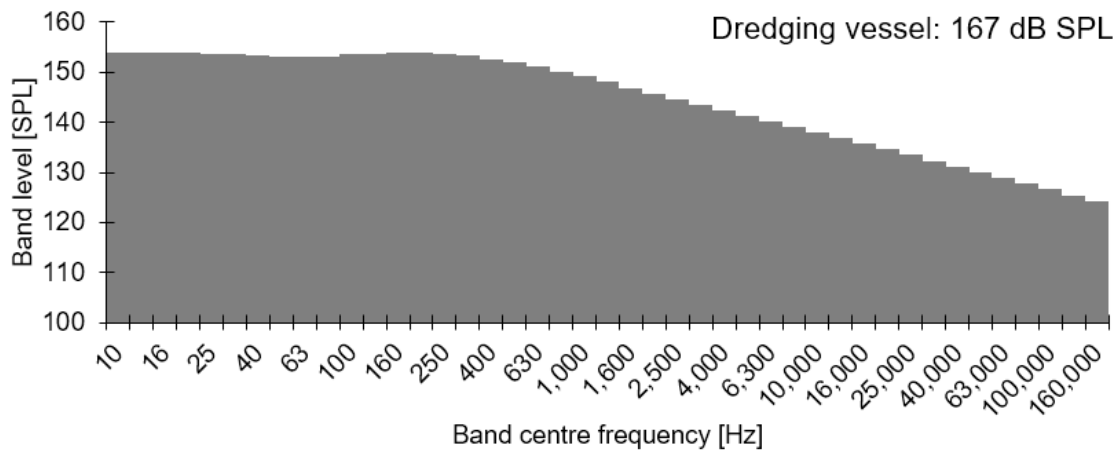


Figure 10-4. Band levels for a representative dredging vessel or support vessel for a barge of 20 m length.

When the vessel noise is weighted for the NOAA 2024 hearing groups (Appendix A) it's more than 15-29 dB below the TTS threshold (and 37 dB below for fishes), meaning very little risk of any hearing impact from the noise.

10.2.1.1.4 Piling (Socket drilling)

Installation of piles will be done by drilling sockets into the sediment and possibly bedrock, and then installing and grouting/cementing the piles in place. This method is relatively quiet, compared to vibro and impact piling. A broadband source level of 163 dB SPL is expected (Figure 10-5), assuming a rotary drill of maximally 2 m diameter.

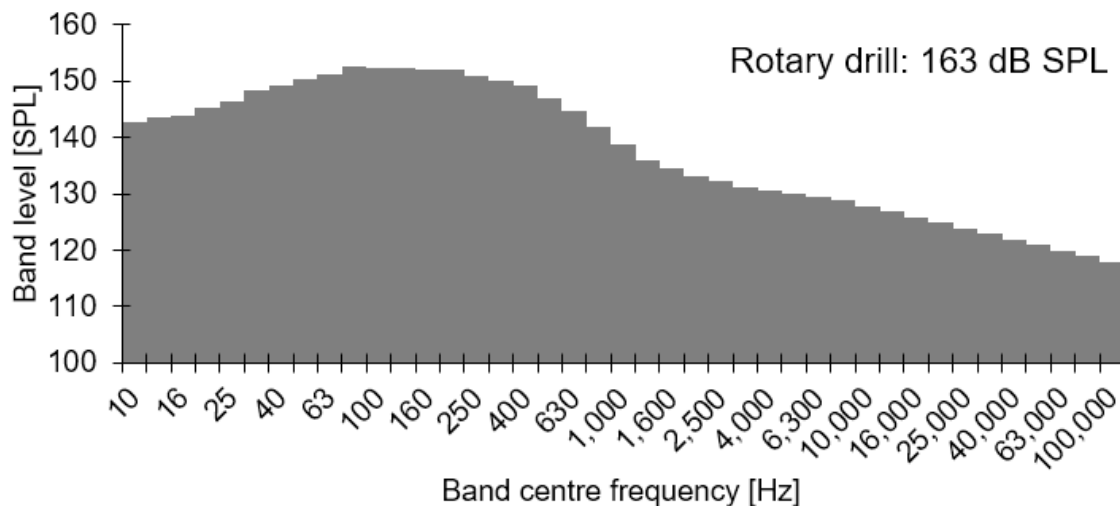


Figure 10-5. Band levels for socket drilling assuming a 2 m diameter drill.

10.2.1.1.5 Drilling or Rock Breaking

The rock breaking noise levels have been based on levels from standard penetrations testing and underwater rock drilling, assuming a drill/hammer diameter of 0.1 m and an impact rate of 100 blows/second (Figure 10-6).

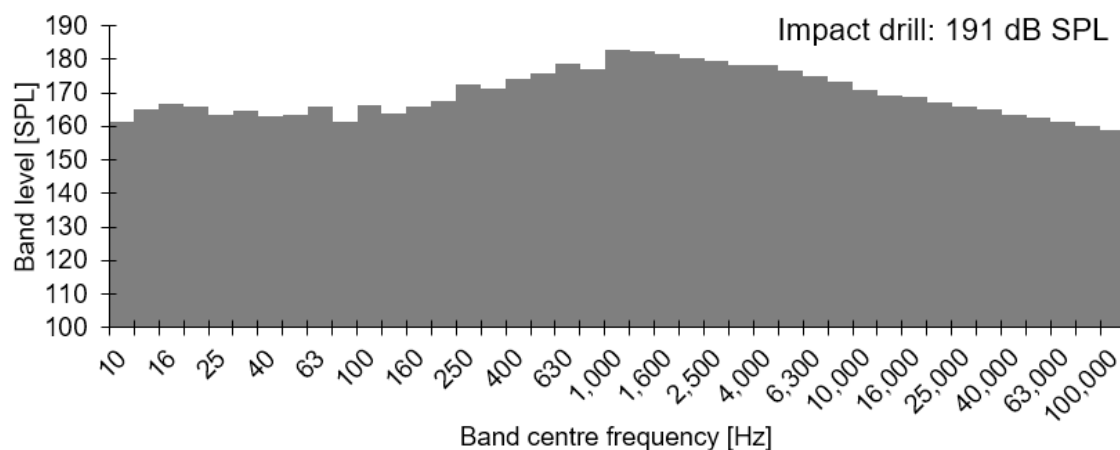


Figure 10-6. Band levels for impact drilling or rock breaking.

Weighting the source level for the rock drilling/breaking for the NOAA 2024 hearing groups shows that source levels are 6-18 dB over the TTS threshold, with an unweighted broadband level of 191 dB SPL.

10.2.1.1.6 Rock Dumping/Placement

Rock dumping noise is likely to be dominated by the noise from the vessel carrying out the activity and as such has been covered here by the inclusion of the “Dredging” activity. A report from JIP (JIP, 2020) shows that the rock placement could not be detected over the noise from the vessel carrying out the activity.

10.2.2 Operation Phase

Given no planned change to the vessel traffic (vessel size/type or number) there is no expected difference in noise between baseline conditions and the operation phase.

10.3 Inclusion or Exclusion from EIA

10.3.1 Construction Phase

Table 10-2 provides details on the results of this scoping assessment in relation to underwater noise and the need for inclusion in an EIA. The assessment is made based on whether the range to TTS risk for any hearing group is above 50 meters for 1 hours’ exposure. Ranges above this will be recommended for inclusion in an EIA as there is potential for likely significant effects.

Given that Fishguard Harbour’s northern breakwater effectively attenuates noise, this structure, together with the headland of Ynys Dinas, c. 5 km east north-east of The Proposed Development, limits the area within which an animal is exposed to significant noise levels.

This 5 km value coincides with the one-hour criteria above as 5 km is approximate distance a marine mammal can be expected to flee in 1 hour (3600 seconds @ 1.5 m/s is 5400 m).

Table 10-2. Overview of noisy activities relevant to an underwater noise assessment.

Source/Equipment/Activity	Inclusion in EIA	Justification	Assumptions
Dredging	NO	One hours’ activity estimated to have TTS risk <50 m for all hearing groups.	Backhoe dredging from or supported by a vessel of up to 20 m length at waterline.
Vibro-piling	YES	One hours’ activity estimated to have TTS risk >50 m for all hearing groups.	
Piling (Socket drilling)	NO	One hours’ activity estimated to have TTS risk <50 m for all hearing groups.	Rotary drilling with drill of up to 2 m diameter. No percussive drilling and no vibro or impact piling.
Drilling or Rock Breaking	YES	One hours’ activity estimated to have TTS risk >50 m for all hearing groups.	
Rock Dumping or Placement	NO	One hours’ activity estimated to have TTS risk <50 m for all hearing groups.	Rock placement or dumping done from vessel of similar size to dredging vessel or land based.

10.3.2 Operation Phase

No part of the normal operation is planned to change following the completion of The Proposed Development and thus does not need to be included in an EIA.

10.4 EIA Assessment Methodology

Using relevant environmental characteristics (e.g. water salinity, temperature, depth and sediment properties relevant to sound propagation) and sound sources the propagation loss should be modelled using suitable propagation models which can be a mix of numerical models (normal modes, parabolic equation & ray tracing) and empirical models (e.g. Roger's 1981 model) to estimate a reasonable worst-case impact (e.g. as 90th percentile value of results).

To evaluate the results, the NOAA 2024 and Popper et al, 2014 frameworks will be used to establish "risk ranges" for marine mammals and fish, specifically the hearing groups LF, HF, VHF, PCW & OCW, covering all marine and aquatic mammals, and the lower threshold for fish given by the Popper et al. 2014 framework. These two frameworks represent the latest scientific consensus on the topic.

The assessment will also account for fleeing animals.

Behavioural impact range will be assessed according to common national and international practice.

10.5 Preliminary Mitigation Measures

10.5.1 Construction Phase

The JNCC (Joint Nature Conservation Committee) recommends a 30-minute pre-activity search to establish absence of marine mammals within a 500 m range prior to impact piling (JNCC, 2010). This mitigation would be a suitable cautious approach given the likely similarity in noise type from rock breaking and impact piling, with the former being less noisy but similarly impulsive.

A similar mitigation method might be needed for vibro-piling depending on modelling outcomes, as even if sound levels are the same, animals' hearing tends to be more robust to non-impulsive noise (thresholds for impulsive noise are lower than for non-impulsive).

10.5.2 Operation Phase

No additional noise is expected, and hence, no mitigation is needed.

10.6 Interactions

Interaction are expected with Section 4, Biodiversity – marine, where the increase in noise during The Proposed Development might have negative effects on the marine ecology. Results from underwater noise modelling should feed into such an assessment.

10.7 Summary of Scoping Exercise

The rock breaking or percussive drilling and the vibro-piling has the potential to cause hearing impact from emitted noise. These activities should be assessed in an EIA to ensure proper mitigation and protection of marine protected species.

The remaining activities assessed generate negligible sound levels with respect to hearing impact on marine mammals and fishes.

10.8 References

JIP Review On Existing Data On Underwater Sounds Produced By The Oil And Gas Industry [Report]. - [s.l.] : E&P Sound & Marine Life Programme, 2020.

JNCC Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise [Report]. - [s.l.] : Joint Nature Conservation Committee, 2010.

National Oceanic and Atmospheric Administration 2024 Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0) [Report]. - Silver Spring : National Marine Fisheries Service, 2024.

Popper A. N. [et al.] Sound Exposure Guidelines for Fishes and Sea Turtles [Report]. - [s.l.] : Springer, 2014.

11 AIR QUALITY & CLIMATE

This chapter of the Scoping Report sets out the proposed methodology for assessing the impact on air quality and climate arising from the construction and operation of the proposed development. It considers air quality and climate features within associated with the Proposed Development and provides information on the key receptors that have the potential to be subject to likely significant effects resulting from the proposed development, and how that assessment is to be conducted.

This chapter of the scoping report will comprise two sub-topics:

- Air Quality - which relates to pollutants with potential to affect human health and ecosystems at a local level (this includes a construction phase dust and emissions assessment);
- Climate change - which is related to emissions of greenhouse gases (GHGs). Climate change will continue to cause impacts on the environment. In this regard, it is appropriate to assess the impact of the projects Proposed Development on climate (for example greenhouse gas emissions) and their also its vulnerability to climate change.'

11.1 Baseline Scenario

11.1.1 Air Quality

11.1.1.1 Primary Atmospheric Pollutants

Atmospheric pollution within the surrounding area of the Proposed Development is largely dominated by emissions associated with operational activities at the Stena Line Fishguard, agricultural emissions from the nearby farms, road traffic exhaust fumes and residential emissions. Therefore, the primary contaminants of concern identified were Nitrogen Oxides (NOX) and Particulate Matter (PM₁₀ and PM_{2.5}). NOX is primarily produced during combustion at high temperatures with contributions from traffic, residential heating, and industry. PM₁₀ are particles in air with diameters of 10µm (microns) or less. These particles can consist of direct emission from combustion engines and burning solid fuels, while natural sources can be windblown salt, plant spores, and pollens. PM_{2.5} or fine particulate matter is composed of varying components depending on its source but can include nitrates, sulphates, volatile organic compounds (VOCs), metals and soil or dust particles.

11.1.1.2 Air Quality in Wales 2022 Report

The Welsh Government and the Welsh Air Quality Forum (WAQF) maintain a close collaborative relationship with air quality experts and the Department for Environment, Food and Rural Affairs (Defra) to actively oversee and mitigate air pollution within Wales. **Figure 11-1** illustrates the annual average long-term trends for nitrogen dioxide (NO₂), fine particles (PM₁₀) and ozone (O₃) concentrations across Wales. These trends are derived from measurements taken at monitoring sites affiliated with local authorities and the Automatic Urban and Rural Network (AURN), where annual data capture was 75% or greater. With the exception of O₃, concentrations of pollutants have exhibited an overall decline since the pollutant records began. It is worth

noting that O₃ qualifies as a regional pollutant, with transboundary characteristics, and as such its regulation falls beyond immediate purview of the Welsh Government and local authorities.

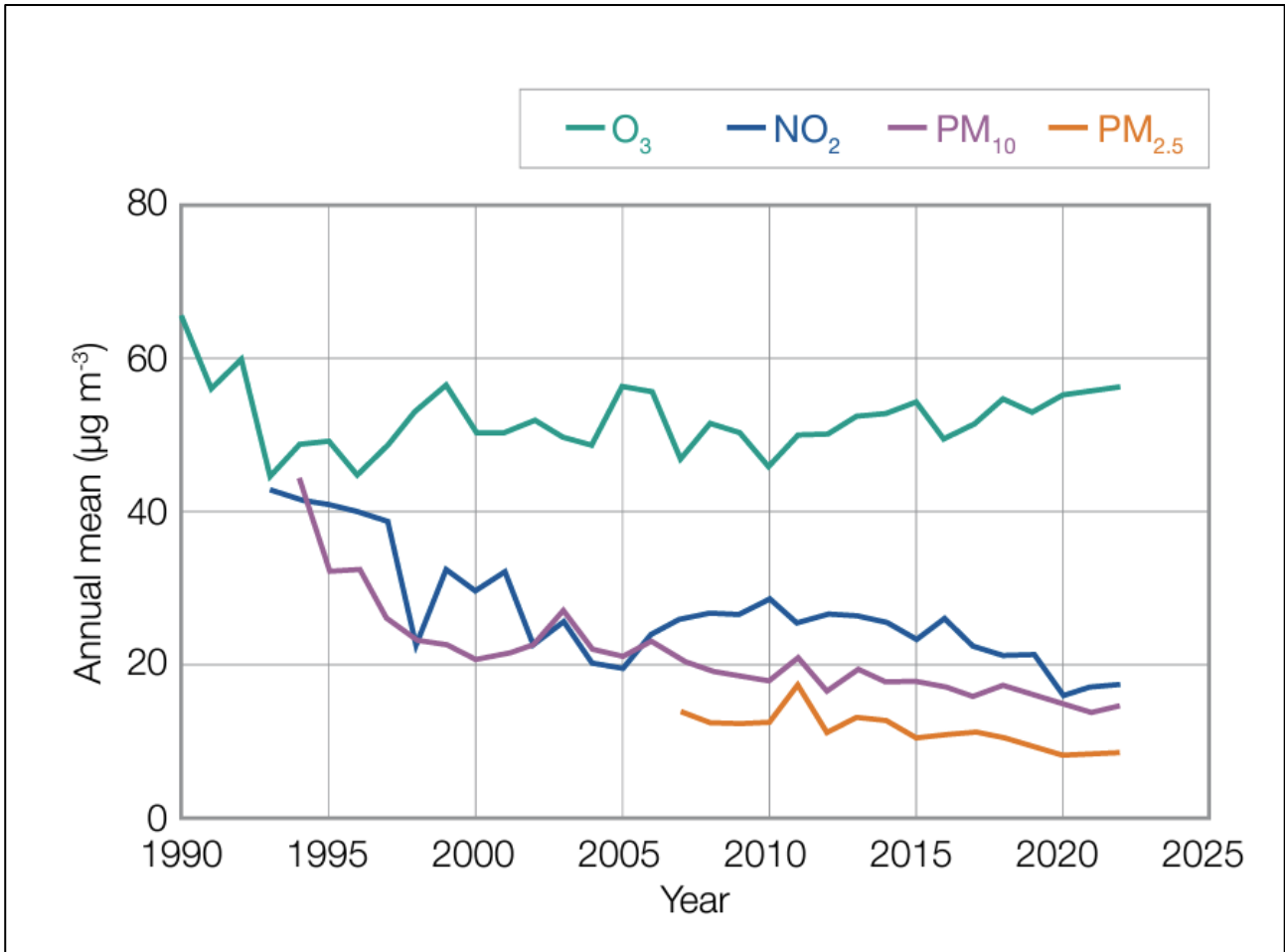


Figure 11-1: Key Ambient Air Pollutant Trends in Wales 1990-2022

In 2022, ambient concentrations of PM₁₀ were 'moderate' on 40 days, 'high' on 8 days and 'very high' on 1 days (as defined by the Daily Air Quality Index bandings). For PM_{2.5} there were 6 days with 'moderate' concentrations, no days were recorded as 'high' or 'very high' for PM_{2.5} concentrations. For NO₂, there was 1 day with 'moderate' concentrations, 3 days of 'high' and no days of 'very high' concentrations - this was due to a diesel generator being in service close to the Marchlyn Mawr monitoring site for 4 days in December 2022. SO₂ had no 'moderate', 'high' or 'very high' levels recorded. For O₃, there were 37 days with 'moderate' levels, 3 days recorded as 'high' and no days recorded as 'very high'. Overall, pollution levels in Wales were low for 284 days, moderate for 66 days, high for 14 days and very high for 1 days. Therefore, 78% of the time, pollution levels were low across the whole of Wales. Details of the Daily Air Quality Index banding system used can be found **Table 11-1**.

Table 11-1: Air Pollution Bands and Indices $\mu\text{g}/\text{m}^3$

Pollutants	Band	Low			Moderate			High			Very High
	Index	1	2	3	4	5	6	7	8	9	10
Ozone - running 8 hourly mean	µg/m³	0-33	34-66	67-100	101-120	121-140	141-160	161-187	188-213	214-240	241 or more
Nitrogen Dioxide - hourly mean	µg/m³	0-67	68-134	135-200	201-267	268-334	335-400	401-467	468-534	535-600	601 or more
Sulphur Dioxide - 15-minute mean	µg/m³	0-88	89-177	178-266	267-354	355-443	444-532	533-710	711-887	888-1064	1065 or more
PM _{2.5} Particles - 24 hour running mean	µg/m³	0-11	12-23	24-35	36-41	42-47	48-53	54-58	59-64	65-70	71 or more
PM ₁₀ Particles - 24 hour running mean	µg/m³	0-16	17-33	34-50	51-58	59-66	67-75	76-83	84-91	92-100	101 or more

A health descriptor is associated with each band based upon current understanding and research studies (Department of Health). Current descriptors are presented below in **Table 11-2**.

Table 11-2: Air Pollution Bandings and Health Descriptor Impacts on Sensitive Receptors

Air Pollution Banding	Value	Accompanying health messages for at-risk groups and the general population	
		At-risk individuals*	General Population
Low	1-3	Enjoy your usual outdoor activities.	Enjoy your usual outdoor activities.
Moderate	4-6	Adults and children with lung problems, and adults with heart problems, who experience symptoms, should consider reducing strenuous physical activity, particularly outdoors.	Enjoy your usual outdoor activities.
High	7-9	Adults and children with lung problems, and adults with heart problems, should reduce strenuous physical exertion, particularly outdoors, and particularly if they experience symptoms. People with asthma may find they need to use their reliever inhaler more often. Older people should also reduce physical exertion.	Anyone experiencing discomfort such as sore eyes, cough or sore throat should consider reducing activity, particularly outdoors.

Air Pollution Banding	Value	Accompanying health messages for at-risk groups and the general population	
		At-risk individuals*	General Population
Very High	10	Adults and children with lung problems, adults with heart problems, and older people, should avoid strenuous physical activity. People with asthma may find they need to use their reliever inhaler more often.	Reduce physical exertion, particularly outdoors, especially if you experience symptoms such as cough or sore throat.

**Adults and children with heart or lung problems are at greater risk of symptoms. Follow your doctor's usual advice about exercising and managing your condition. It is possible that very sensitive individuals may experience health effects even on Low air pollution days.*

11.1.1.3 Air Quality in Pembrokeshire County Council ⁵

Narberth Monitoring Station is the only automatic monitoring location within Pembrokeshire County Council and resides approximately 32km south east of the Proposed Development (as illustrated in **Figure 11-2**). The monitoring station is within a self-contained, air conditioned housing located at the edge of a field adjacent to a hedgerow. A quiet rural road runs to the south of the site at a distance of approximately 90 metres.

The nearest road is the B4314 and has a traffic flow of approximately 1130 vehicles a day according to the most recent 2019 manual count⁶. The manifold inlet is approximately 3 metres high at a distance of approximately 5 metres from the nearest obstruction. The surrounding area is open and comprises fields with a small amount of light industry at distances of up to 0.5 - 1.8 km distance.

⁵ <https://www.airquality.gov.wales/>

⁶ <https://roadtraffic.dft.gov.uk/local-authorities/16>

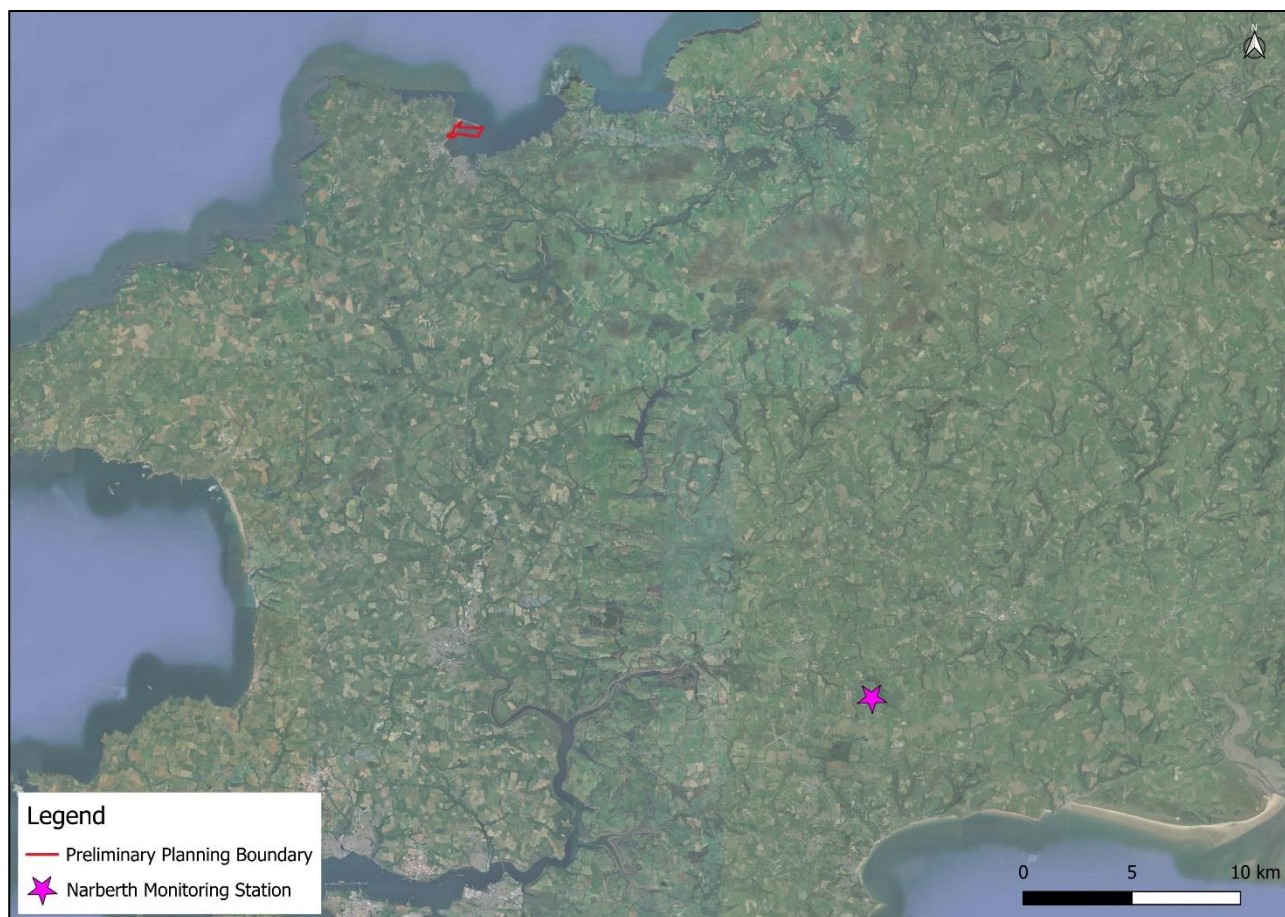


Figure 11-2: Automatic Monitoring Location

This monitoring location is Air Pollution Banding “**Low**” and the ambient concentrations of pollutants recorded between the 13th August 2024 to the 11th November 2024 are illustrated below in **Figure 11-3**.

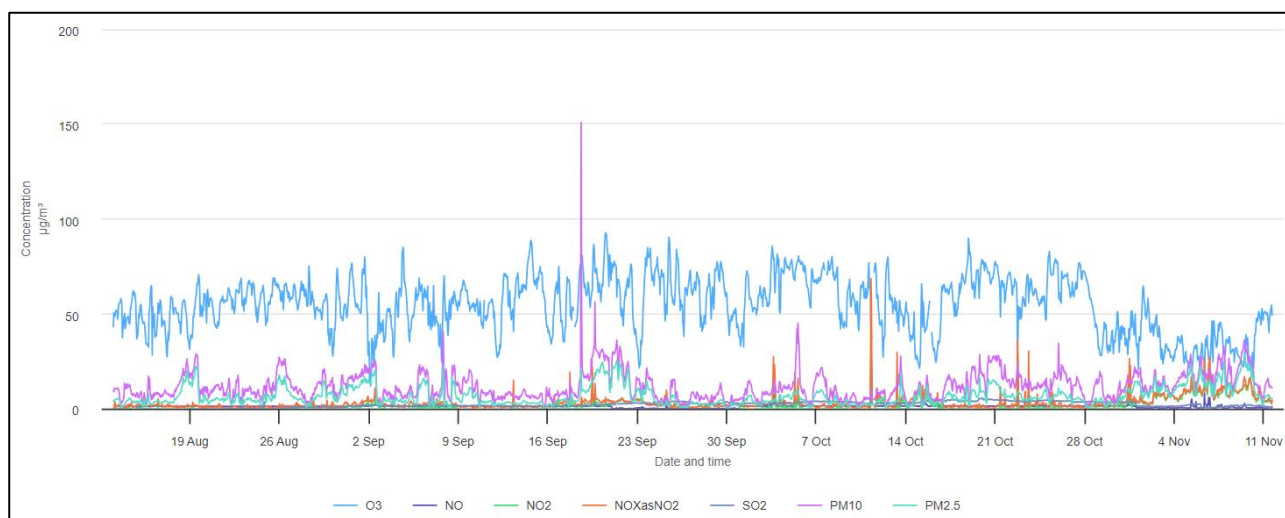


Figure 11-3: Narberth Monitoring Location Ambient Concentrations of Pollutants Recorded over the Previous 90 Days⁷

⁷ <https://www.airquality.gov.wales/air-pollution/site/PEMB>

11.1.1.4 Pembrokeshire County Council 2023 Air Quality Progress Report

11.1.1.4.1 Air Quality in Pembrokeshire

Pembrokeshire County Council's monitoring network in 2022 reports no exceedances of the NO₂ annual mean AQS (Air Quality Strategy) objective of 40 µg/m³ reported throughout Pembrokeshire. The maximum reported concentration was located at PCC45 of 32.2 µg/m³; this monitoring station is situated along Main Street, located within the Pembroke Air Quality Management Area (AQMA). The remaining monitoring stations reported concentrations well below the AQS objective.

Pembrokeshire County Council currently have two declared AQMAs (Haverfordwest and Pembroke). All AQMAs have been declared due to exceedances of the NO₂ annual mean AQS objective. All AQMA boundaries are either close to, or have busy roads within them, recognising the influence vehicle emissions have upon local air quality. Both Pembroke and Haverfordwest AQMAs have been compliant for three years.

Neither of the declared AQMAs are in close proximity to the proposed development.

11.1.1.4.2 Automatic Monitoring Sites

Pembrokeshire County Council undertook automatic (continuous) monitoring at one site during 2022 (Narberth). This monitoring site is part of, and managed by, the Automatic Urban and Rural Network (AURN). This location monitors NO₂, O₃, PM₁₀, PM_{2.5} and SO₂, and is not in closer proximity to the proposed development.

11.1.1.4.3 Non-Automating Monitoring Sites

Pembrokeshire County Council undertook non-automatic (passive) monitoring of NO₂ at 45 sites during 2022. These non-automatic monitoring locations are dispersed throughout Haverfordwest, Pembroke and Narberth. The nearest non-automatic monitoring sites to the Proposed Development are those located in Haverfordwest, as illustrated in **Figure 11-4**.

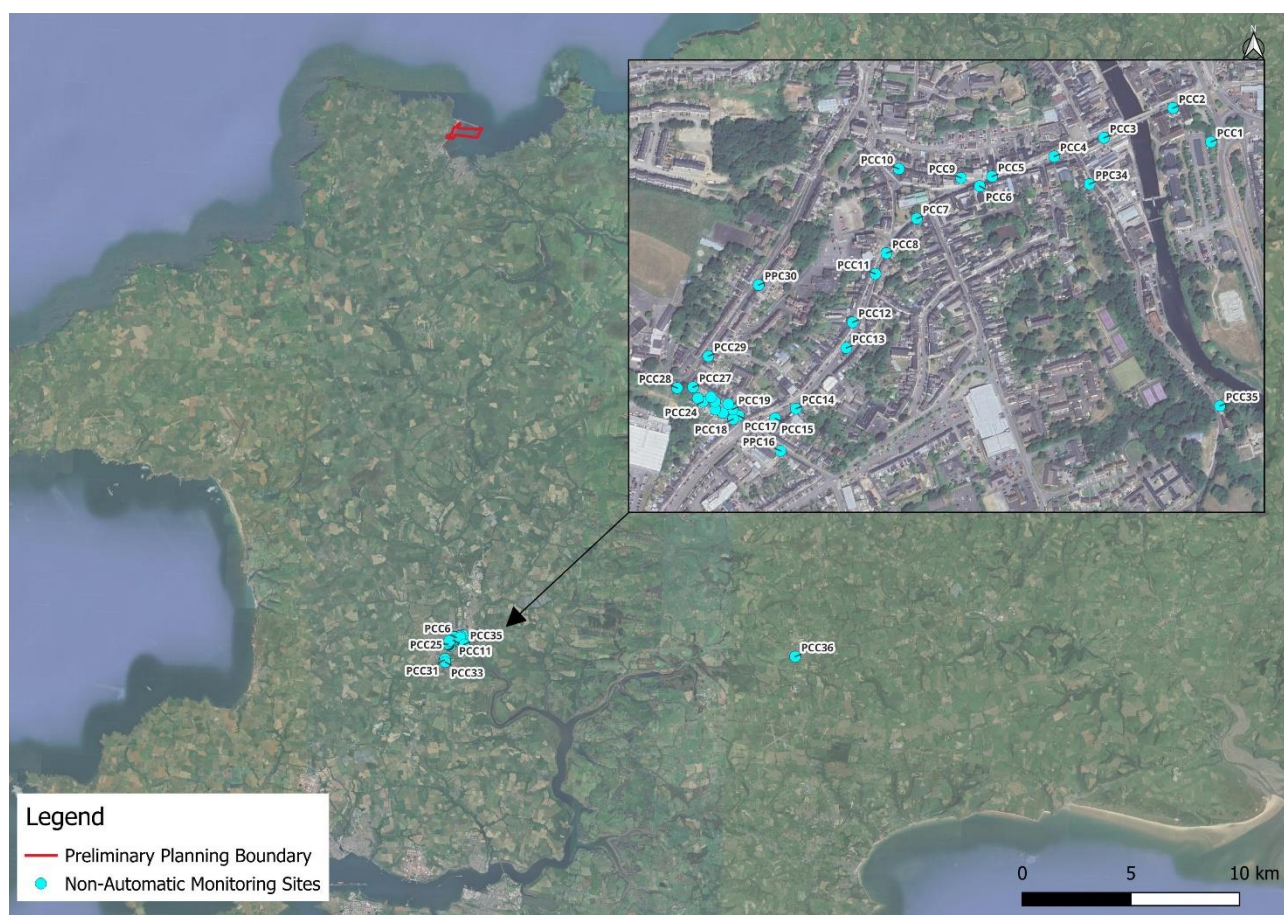


Figure 11-4: Non-Automatic Monitoring Locations

The nearest non-automatic monitoring location to the Proposed Development is Location ID PCC2 Picton Place, which is situated within the Haverfordwest AQMA approximately 23km away. The annual mean NO₂ monitoring results to this location from 2018 to 2022 are summarised below in **Table 11-3**.

Table 11-3: Annual Mean NO₂ Monitoring Results (µg/m³)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%)		Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
		(1)							
PCC2	Roadside	100	100		26.4	25.6	16.2	19.3	20.6

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

11.1.1.4.4 Summary of Compliance with AQS Objectives as of 2022

Pembrokeshire County Council has examined the results from monitoring in the county, concentrations are all below the relevant objectives, therefore no further action is required.

Nitrogen Dioxide (NO₂)

The automatic monitoring station located in Narberth continues to report compliance with the annual mean NO₂ AQS objective, with stable concentrations fluctuating between 3 to 4 µg/m³. This is expected due to the rural nature of the monitoring site. During 2022 there were no exceedances of the NO₂ AQS objective, with the majority of passive monitoring sites recording concentrations well under the objective. From 2021 to 2022 35 sites reported decreases in NO₂. The maximum NO₂ annual mean concentration in 2022 was 32.2 µg/m³, reported at PCC45 which is located along Main St within the Pembroke AQMA.

Particulate Matter (PM₁₀)

During 2022 the Narberth automatic monitoring site recorded PM₁₀ concentrations well below the 40 µg/m³ PM₁₀ AQS objective. There is a minor reduction of 1.2 µg/m³ from 2021, overall, the annual mean concentration remains relatively stable and consistent over the last five years. There was only 2 exceedances of the 24-hour mean concentrations in excess of 50 µg/m³ in 2022, therefore compliance to the 24-hour AQS objective.

Particulate Matter (PM_{2.5})

During 2022 the Narberth automatic monitoring site recorded PM_{2.5} concentrations well below the PM_{2.5} AQS target of 20 µg/m³. There is a minor increase of 0.4 µg/m³ from 2021, but overall, the annual mean concentrations remains relatively stable and consistent over the last five years.

11.1.2 Climate

11.1.2.1 Future Wales The National Plan 2040

The climate is already changing and trends show the UK climate is continuing to warm and sea levels continue to rise. In terms of the future, the latest climate projections for Wales come from the 2018 UK Climate Projections and are detailed in **Figure 11-5**. State of the art modelling is used to provide detailed projections of climate change up to 2100 (and to 2300 on sea level rise). The projections show an increased chance of milder, wetter winters and hotter, drier summers, rising sea levels and an increase in the frequency and intensity of extreme weather events.

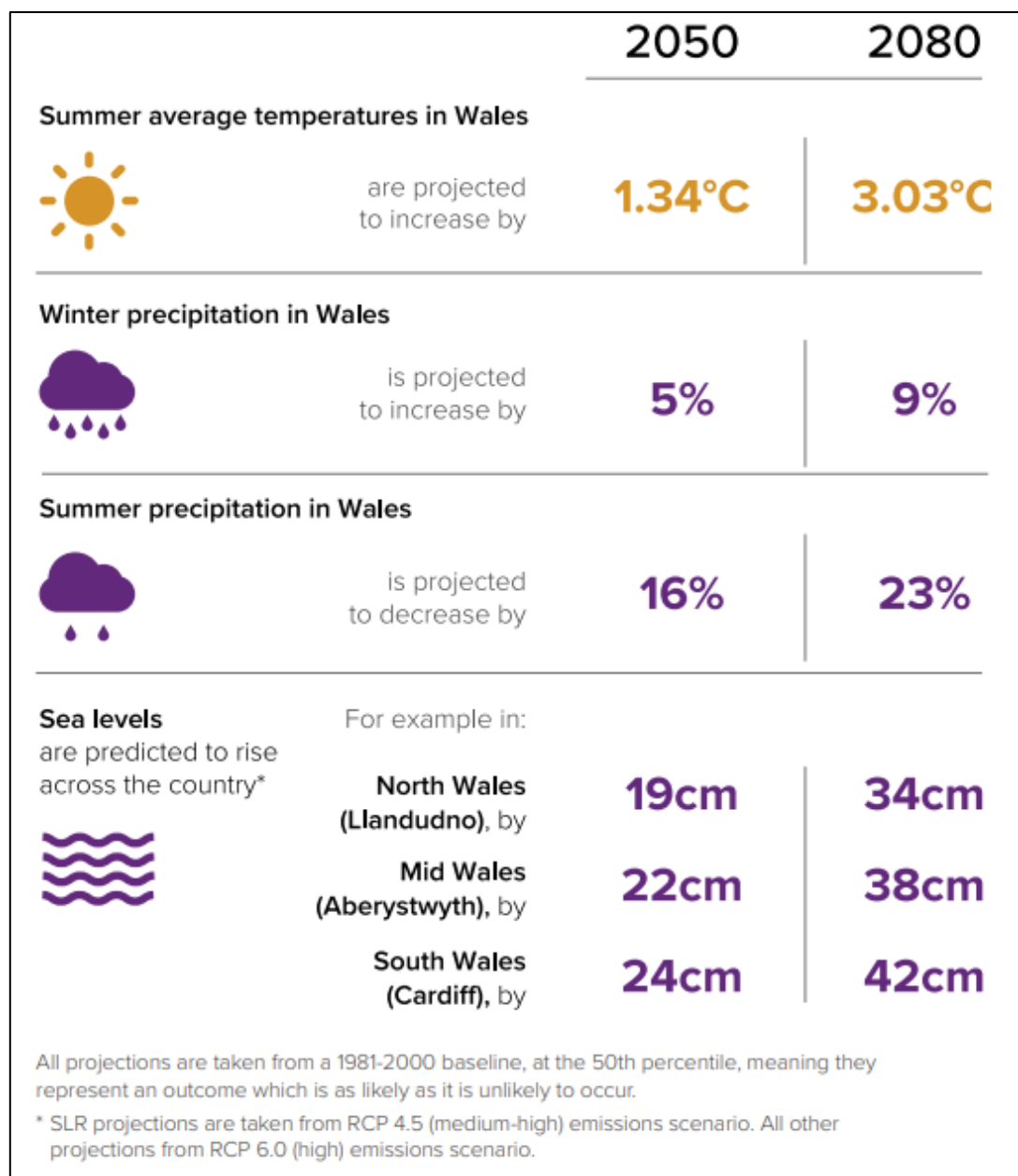


Figure 11-5: Climate change projections for Wales

Changes to our climate and weather patterns will have a significant impact on well-being on both current and future generations. Increasing temperatures and extreme weather events caused by climate change are putting pressure on ecosystems, infrastructure, built environment and our unique landscape and cultural heritage, which all contribute to social, economic and ecological resilience.

Climate change is an equality issue as it will disproportionately affect the most vulnerable communities in Wales and the wider world. This is despite the most vulnerable communities historically contributing the least to the problem of climate changing emissions. Vulnerable communities are more likely to be exposed to the risks and impacts of climate change without the ability to cope with or recover from those impacts.

11.1.2.2 Wales' Greenhouse Gas Emissions 2021

The Welsh Government is committed to working with the UK Government, the other devolved administrations, the statutory, voluntary sector and business partners in Wales, and the community to tackle the threat of climate change. The Welsh Government Climate Change Strategy for Wales builds upon the targets and approach outlined in previous documents. It contains a number of specific proposals to enable Wales and the UK to meet targets set out by the Kyoto Protocol and Climate Change Act 2008. These proposals focus on helping people to make climate-friendly choices, leading by example by building climate change into Welsh Government decisions, and improving energy efficiency in the following areas:

- Transport
- Business
- Residential
- Waste
- Public
- Agriculture and land management

The overall aim of the strategy is to reduce the direct emissions of all greenhouse gases by 3% each year (including electricity consumption but excluding emissions from heavy industry and energy generation). However, many of the actions identified by the Climate Change Commission for Wales and laid out in the strategy documents will have wider benefits for Welsh communities. The creation of a low carbon economy will present business opportunities and create jobs across the country, and there are clear health and monetary savings to be made by individuals and organisations changing their behaviour.

On 7th December 2022 the Welsh Government published a Greenhouse gas emissions: infographic⁸, which details information about greenhouse gas emissions in 2021. The volume of emissions is reported for seven greenhouse gases:

- **carbon dioxide (CO₂);**
- **methane (CH₄);**
- **nitrous oxide (N₂O);**
- **hydrofluorocarbons (HFCs);**
- **perfluorocarbons (PFCs);**
- **sulphur hexafluoride (SF₆); and,**
- **nitrogen trifluoride (NF₃).**

⁸ <https://www.gov.wales/greenhouse-gas-emissions-infographic>

In 2021, Wales GHG emissions were estimated to be 36.2 million tonnes of carbon dioxide equivalent. This was an increase of 7% compared to 2020. The longer term trend showed a decrease of 35% compared to the base year (1990). The base year is 1990 for carbon dioxide, methane and nitrous oxide, and 1995 for the fluorinated gases.

Most sectors showed a decreasing trend since the base year. The largest decreases, in terms of tonnes of carbon dioxide equivalent, were in the waste management, public sector buildings, electricity and heat production, industry and business sectors. These were driven by improvements in energy efficiency, fuel switching from coal to natural gas, which only became available in the late 1990s, and the introduction of methane capture and oxidation systems in landfill management.

Between 2020 and 2021, emissions from the waste management sector decreased by 1.7% and accounted for most of the total decrease. All other sectors found an increase in emissions between 2020 and 2021, the largest being electricity and heat production by 20.2%. Industry and business is the largest emitting sector of Wales' 2021 greenhouse gas emissions at 39%.

The Land Use, Land-Use Change and Forestry (LULUCF) sector has remained a net removal of emissions throughout the whole time-series. The emissions sink from LULUCF has reduced in size by 0.24 MtCO₂e between 1990 (2.3 MtCO₂e) and 2021, and it has increased in size by 0.10 MtCO₂e between 2020 (1.97 MtCO₂e) and 2021 (2.07 MtCO₂e).

11.1.2.3 Flood Risk & Climate Change

An increased flood risk, associated with climate change, has the potential to result in considerable impacts on riparian and coastal developments, higher sea levels have already been observed, while wetter winters are anticipated. There are approximately 273,000 properties across Wales at risk of flooding: 1 in every 7. Climate change is increasing the risks and impacts of flooding, with the number of properties at risk set to increase to approximately 350,000 by 2120, an increase of approximately 77,000 properties (approximately 28%). There could also be significant consequences for settlements that are close to lakes and artificial waterbodies (canals and reservoirs). Predicted impacts of climate change include an increase in the frequency and intensity of rainfall, an increase in peak flows in rivers, a rise in sea levels and increased storminess. These climate change effects are likely to increase pluvial, fluvial and coastal flooding and will require that future development be adaptable or resilient to future climatic changes and its associated impacts. Water management infrastructure should be developed with climate change in mind, in order to ensure that it is adaptable to climate change and can be safely exceeded.

The Welsh Government already invests an average of over £54 million per annum in flood and coastal risk management until 2020, but a longer term settlement would help for the strategic planning and adaptation. The Welsh Government has also committed to reviewing policy and putting in place new guidance and tools to increase Wales' capacity to manage coastal flooding and erosion. In September 2019, consultation on the future National Strategy for Flood and Coastal Erosion Risk Management closed and the Welsh Government will publish a new strategy in 2020. The primary goal of the strategy will be to ensure the risks to people and communities from flooding and coastal erosion are effectively managed.

Sea level rise caused by climate change, along with increased incidence of storms, means the risk of erosion and flooding of coastal communities is increasing. There are a number of communities which are already vulnerable to spring tides and coastal surges. With the projected sea level rises in the long term, some of those communities may become unsustainable.

11.2 Potentially Significant Effects

Air Quality

The chapter will summarise the levels of atmospheric pollution in the area and also provides details of Pembrokeshire County Council Donegal County Council air quality reports. The air quality assessment considers the likely impacts of the proposal on the local environment and ascertains whether or not the Proposed Development will lead to a breach of relevant threshold levels of particular atmospheric pollution concentrations. Local council air quality monitoring information will be used as background data along with relevant EPA LAQM references.

11.2.1 Construction Phase

The potential impacts associated with the demolition and construction phase of the Proposed Development are the effects of:

- The generation of dust and particulates (e.g., from the demolition, dredging and construction phase) potentially having an adverse impact on dust sensitive ecological receptors, effects on human health and nuisance caused by dust soiling of surfaces at residential properties; and
- Exhaust emissions from construction traffic and NRMM⁹ (plant and equipment) having the potential to increase local ambient concentrations of NO_x and particulate matter (PM₁₀ and PM_{2.5}) and impact human health.

Effects during demolition, dredging and general construction can often be more significant than those that arise during the operational life of a project. For the construction phase it is important to define the physical characteristics of the whole project, including, where relevant, demolition works, the land-use requirements during construction and operation as well as other works that are integral to the project. Dust emissions can lead to elevated PM₁₀ and PM_{2.5} concentrations and may also cause dust soiling. The significance of impacts due to vehicle emissions during the construction phase will be dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to site access routes. It is not likely that construction traffic would lead to a significant change (> 10%) in Average Annual Daily Traffic (AADT) flows near to sensitive receptors, then concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} will be predicted.

⁹ Non-Road Mobile Machinery (NRMM) is a broad category which includes mobile machines, and transportable industrial equipment or vehicles which are fitted with an internal combustion engine and not intended for transporting goods or passengers on roads.

A dust and emissions management plan will be included in the Outline Construction Environmental Management Plan (oCEMP) that will set out management and mitigation measures for atmospheric emissions during the demolition and construction phase.

11.2.2 Operation Phase

11.2.2.1 Traffic

For the operational phase of the development, the main pollutants from road traffic with potential for local air quality impacts are nitrogen oxides (NO_x) and particulate matter (PM₁₀). Emissions of total NO_x from combustion sources comprise nitric oxide (NO) and NO₂. The NO oxidises in the atmosphere to form NO₂. The assessment of operational impacts usually therefore focuses on changes in NO₂ and PM₁₀ concentrations. The impact from fine particulate matter, known as PM_{2.5} (a subset of PM₁₀) concentrations may also be considered. It is likely that an operational phase air quality assessment is scoped out for traffic source emissions due to the likely low changes in existing traffic volumes as a result of the proposed development.

Climate

11.2.3 Construction Phase

The first life cycle stage is 'construction', which includes GHG emissions from the construction process and the manufacture/transport of materials. Therefore, the potential impact within the study area shall comprise of GHG emissions associated with project construction related activities/materials and their associated transport. The recycling of materials will help to minimise the lifecycle carbon cost of the Development.

Embodied carbon refers to the emissions during the construction of a development rather than when it is operational – or the carbon footprint of a material.

With regard to embodied carbon (material resourcing, processing and manufacturing) this is not likely to be significant, but acknowledgement will be made in the EIA in regard to carbon datasets. Typical embodied carbon datasets are 'cradle-to-gate' (i.e. all emissions to the point of delivery from the factory gate) and expressed in kilograms of CO₂e per kilogram of product or material.

11.2.4 Operation Phase

In accordance with IEMA Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation, health and safety risks to the workforce during severe weather events and unsuitable conditions (due to very hot weather or very wet weather, for example) are included for certain construction activities as a worst-case scenario.

The effective assessment and management of impacts on climate, as well as the effects of climate change on projects offers the opportunity to: 1) improve the resilience of projects to future climate conditions, such as increased risk and severity of flooding, drought, heatwaves, intense rainfall events and other extreme weather events; and 2) reduce the impact of projects on climate by minimising the magnitude of GHG emissions as far as possible.

The Proposed Development also has the potential to be impacted upon by a changing climate and, in particular, more frequent severe weather events. An assessment of these factors will be included in the EIA.

11.3 Inclusion or Exclusion from EIA

It is proposed to screen in the demolition and construction phase air quality assessment. A dust and emissions management plan will be included in the oCEMP that will set out management and mitigation measures for atmospheric emissions during the construction phase.

It is considered highly unlikely that the operational phase of the Proposed Development will have any impacts on local air quality due to the unlikely change in existing number of vehicle trips associated with the operation and maintenance of the proposed development. It is not expected that any dust will be generated following completion of the construction works. Therefore, traffic operational impacts of the Proposed Development on air quality are likely to be scoped out of further assessment in the EIA.

It is proposed to include a climate and GHG assessment as part of the Proposed Development.

11.4 EIA Assessment Methodology

The proposed EIA chapter will follow the guidance for assessment set out in the following documents:

Air Quality - Dust and emissions management plan will reference Holman et al (2024). IAQM Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management (IAQM), London.

Climate - Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance, Institute of Environmental Management & Assessment (IEMA), 2022.

11.4.1 Air Quality

11.4.1.1 Legislation and Policy

Air pollution can have an effect on people's health. Exposure to air pollution can have long-term effects on health, it also has negative impacts on the environment. The UK government's and devolved administrations' primary objective is to ensure that all members of the public should have access to outdoor air without significant risk to their health, where this is economically and technically feasible.

11.4.1.1.1 EU legislation¹⁰

The following EU Directives set limits for air pollutants in ambient air:

- Cleaner air for Europe (CAFÉ directive – 2008/50/EC); and,

¹⁰ Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe (the Air Quality Directive) and Directive 2004/107/EC (the Fourth Daughter Directive) are not referred to in the Protocol, and so following the end of the transition period the UK is no longer required to comply with these Directives at the EU level. However, the air quality policy regime which operated in Wales before the transition period (regulations which transpose directives) remain in place.

- Air quality 4th daughter directive.

11.4.1.1.2 UK Air Quality Strategy

Local authorities are responsible for reviewing the state of air quality in their district council area. To assist them with this process, an Air Quality Strategy (AQS) has been devised for the UK. This sets out standards and objectives for the air quality pollutants causing the problems and enables councils to review air quality in their area against these. Northern Ireland departments also have a responsibility to ensure limit values, target values and alert thresholds for specified pollutants are not exceeded. The AQS is presented in two volumes:

- Volume 1 of the UK air quality strategy,
- Volume 2 of the UK air quality strategy.

In most cases, the AQS objectives are identical to the EC Directive limit values, the only differences being the more stringent dates by which the former must be achieved.

11.4.1.1.3 Wales Policy & Legislation

Air Quality (Wales) Regulations 2000, as amended by the Air Quality (Wales) (Amendment) Regulations 2002

The national air quality objectives for Wales represent pragmatic thresholds above which the Welsh Government considers the health risks associated with air pollution to be unacceptable. However, air just barely compliant with the objectives should not be considered 'clean' and still carries long-term health risks. The lower the concentration of pollutants such as nitrogen dioxide and particulate matter, the lower will be the risks of adverse health effects in the exposed population. Therefore, while compliance with the national air quality objectives is essential, it is desirable to keep levels of pollution as low as reasonably practicable.

The national air quality objectives contained in the Air Quality (Wales) Regulations 2000, as amended by the Air Quality (Wales) (Amendment) Regulations 2002 are detailed below in **Table 11-4**.

Table 11-4: National Air Quality Objectives

Pollutant	Air Quality Objective	
	Concentration	Measured as
Benzene	16.25 µg/m ³	running annual mean
	5 µg/m ³	annual mean
1,3-Butadiene	2.25 µg/m ³	running annual mean
Carbon Monoxide	10 mg/m ³	maximum daily running 8-hour mean
Lead	0.25 µg/m ³	annual mean

Pollutant	Air Quality Objective	
	Concentration	Measured as
Nitrogen dioxide	200 µg/m ³ not to be exceeded more than 18 times per year	1-hour mean
	40 µg/m ³	annual mean
Particles (PM ₁₀) (gravimetric)	50 µg/m ³ , not to be exceeded more than 35 times per year	24-hour mean
	40 µg/m ³ (WHO guideline 20 µg/m ³)	annual mean
Sulphur Dioxide	266 µg/m ³ , not to be exceeded more than 35 times per year	15-minute mean
	350 µg/m ³ , not to be exceeded more than 24 times per year	1-hour mean
	125 µg/m ³ , not to be exceeded more than 3 times per year (WHO guideline 20 µg/m ³)	24-hour mean

Well-being of Future Generations (Wales) Act 2015

Air quality management is a public health and environmental priority, and integrated action to improve the air people breathe and to which we expose the natural environment must be taken internationally, nationally, regionally and locally. The Welsh public sector is driving air quality improvements in a number of ways, including through local air quality management, land use and transport planning, environmental permitting, active travel, investment in cleaner technologies and education and awareness-raising.

Public bodies in Wales need to carry out air quality and noise management in accordance with the five ways of working set out in the Well-being of Future Generations (Wales) Act 2015 ("the WFG Act"). This means:

- looking to the long term when making decisions so they do not compromise the ability of future generations to meet their own needs;
- taking an integrated approach, such as by joining up action to reduce air and noise pollution with action to improve road safety, make transport more sustainable, reduce greenhouse gas emissions and enhance the built environment with appropriately sited trees and hedgerows;
- taking every opportunity to talk to the public, including businesses, about the challenges associated with air and noise pollution, listen to their concerns and seek their views on potential solutions and their involvement in delivering them;

- collaborative working between environment, public health, transport and planning professionals and others to find shared sustainable solutions to air quality and noise problems; and
- keeping exposure to air and noise pollution as low as reasonably practicable across the whole of the population, looking out in particular for areas where the national air quality objectives might be at risk of being breached, a nuisance created, or a critical load for wildlife exceeded at some point in the future and acting pre-emptively to prevent those situations from occurring.

Environment (Air Quality and Soundscapes) (Wales) Act 2024

The Environment (Air Quality and Soundscapes) (Wales) Act 2024 (the 2024 Act) became law on 14 February 2024. The 2024 Act seeks to improve the quality of our air environment and reduce the impacts of airborne pollution on human health, nature, the environment and our economy.

The 2024 Act creates a framework for the Welsh Ministers to set targets in relation to air quality and amends existing air quality legislation in relation to local air quality management, road user charging, anti-idling and smoke control such as the Environment Act 1995. The Act also creates new duties for the Welsh Ministers to take steps to promote awareness of the risks to human health and the natural environment caused by air pollution, and ways of reducing or limiting air pollution.

The 2024 Act also places the Welsh Ministers and local authorities under a duty to promote active travel as a way of reducing or limiting air pollution and makes provision for this duty to be imposed by regulations, on other public authorities. The Act also requires the Welsh Ministers to produce a national strategy on soundscapes.

11.4.1.2 Other Key Guidance

11.4.1.2.1 Local Air Quality Management (LAQM) Technical Guidance 2022

Local Air Quality Management Technical Guidance LAQM.TG22 supersedes all previous versions. It is designed to support local authorities in carrying out their duties under the Part IV of the Environment Act 1995 as amended by the Environment Act 2021, and subsequent regulations.

Authorities will continue to appraise air quality, with the main emphasis on those pollutants shown to be challenging in respect of compliance i.e. Nitrogen Dioxide (NO₂), Particulate Matter (PM₁₀) and Sulphur Dioxide (SO₂), whilst introducing a new role for local authorities to work towards reducing levels of PM_{2.5} in England and a statutory objective for this pollutant in Scotland. At the core of LAQM delivery are three pollutant objectives; these are:

- Nitrogen Dioxide (NO₂),
- Particulate Matter (PM₁₀), and;
- Sulphur Dioxide (SO₂).

All current AQMA's across the UK are declared for one or more of these pollutants, with NO₂ accounting for the majority. It is a statutory requirement for local authorities to regularly review and assess air quality in their area and take action to improve air quality when objectives set out in regulation cannot be met.

Reflecting feedback under the LAQM review process, the UK and Welsh Governments have decided to retain Benzene, 1,3-Butadiene, Carbon Monoxide and Lead in regulations for England and Wales. However, in recognition of the fact that all of the objectives for these pollutants have been met for several years and are well below objective values, local authorities in England and Wales do not have to report on these pollutants (or SO₂, in the case of Wales) unless local circumstances indicate otherwise. These pollutants remain a statutory reporting requirement in Scotland and Northern Ireland.

As of February 2022, there were more than 600 AQMAs currently declared across the UK (over 500 of which are in England). There are currently 214 Local Authorities that have one or more AQMAs declared within their jurisdiction. Of these, the vast majority (over 95%) are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO₂) is considered unlikely, sometimes in association with exceedances of the 24-hour mean PM₁₀ objective, or in Scotland the annual mean PM₁₀ objective.

Examples of where air quality objective may apply is given in Table 11-5.

Table 11-5: Example of Where Air Quality Objectives Apply

Averaging Period	Objectives should apply at:	Objectives should generally not apply at:
Annual-mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building's façades), or any other location where public exposure is expected to be short-term.
Daily mean	All locations where the annual-mean objective would apply, together with hotels. Gardens of residential properties	Kerbside sites (as opposed to locations at the building's façade), or any other location where public exposure is expected to be short-term
Hourly-mean	All locations where the annual and 24-hour mean would apply. Kerbside sites (e.g. pavements of busy shopping streets). Those parts of car parks and bus stations etc which were not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations to which the public might reasonably be expected to spend 1-hour or longer	Kerbside sites where the public would not be expected to have regular access

11.4.1.2.2 The Clean Air Plan for Wales

The aim of the Clean Air Plan for Wales is to improve air quality and reduce the impacts of air pollution on human health, biodiversity, the natural environment and our economy. This Plan supports delivery of commitments under Prosperity for All: our national strategy. In particular, 'reducing emissions and delivering vital improvements in air quality' to support 'healthier communities and better environments. Wales are

undertaking work to understand the impact of COVID-19 on air quality. As this is an emerging picture, they will take account of any impacts of COVID-19 when reviewing this Plan and implementing actions within it. Their first Clean Air Plan for Wales brings together work across many Government departments and public sector organisations. It includes ambitions to meet and where possible exceed requirements set down in UK and international guidance and legislation.

This Plan sets out a 10-year pathway to achieving cleaner air. We have structured the Plan around four core themes, with actions to enable collaborative approaches to reducing air pollution.

- **People:** Protecting the health and well-being of current and future generations
- **Environment:** Taking action to support our natural environment, ecosystems and biodiversity
- **Prosperity:** Working with industry to reduce emissions, supporting a cleaner and more prosperous Wales
- **Place:** Creating sustainable places through better planning, infrastructure and transport.

The themes were designed through the lens of the Well-being of Future Generations Act to enable collaborative and integrated approaches to improving air quality, across a range of policy areas and sectors. The timescales for delivering actions are framed within three Senedd periods, short term: 2020 to 2021, medium term: 2021-26 and longer term: 2026-2031.

11.4.1.3 Legislation, Policy and Guidance

11.4.1.3.1 The Environment (Wales) Act 2016 (Amendment of 2050 Emissions Target) Regulations 2021

The Environment (Wales) Act sets out the approach for the sustainable management of natural resources in Wales, which will help to mitigate for and adapt to the impacts of climate change. This includes strengthening the health of our natural resources to reduce the impacts of climate change on them, considering the services that natural resources provide and identifying opportunities to provide green growth. This new approach also enables resilience of ecosystems to be considered as part of the decision-making process for activities from the outset.

The purpose of Part 2 of the Environment (Wales) Act 2016 (“the Act”) is to require the Welsh Ministers to meet targets for reducing emissions of greenhouse gases from Wales. Section 29 requires that the Welsh Ministers ensure that the net Welsh emissions account for the year 2050 is at a specified percentage lower than the baseline. These Regulations amend section 29 of the Act by altering the percentage amount in subsection (1). Section 29(1) imposes a duty on the Welsh Ministers as to the level of the “net Welsh emissions account” (the amount of Welsh emissions of greenhouse gases for a period adjusted by the amount of Welsh removals of those gases for that period) for the year 2050. The duty is to ensure that the net Welsh emissions account is lower than the “the baseline” (the baseline of net Welsh emissions of greenhouse gases against which the percentage amount in section 29(1) is applied) by a minimum percentage amount.

The amendment in these Regulations has the effect that the minimum percentage by which the net Welsh emissions account for the year 2050 must be lower than the baseline is increased from 80% to 100%.

11.4.1.3.2 The Climate Change (Interim Emissions Targets) (Wales) (Amendment) Regulations 2021

These Regulations make amendments to the Climate Change (Interim Emissions Targets) (Wales) Regulations 2018, which set the interim emissions targets under Part 2 of the Environment (Wales) Act 2016 (“the Act”). The purpose of Part 2 of the Act is to require the Welsh Ministers to meet targets for reducing emissions of greenhouse gases from Wales. Section 29 requires that the Welsh Ministers ensure that the net Welsh emissions account for the year 2050 is at least 100% lower than the baseline. Section 30 of the Act requires that the Welsh Ministers make regulations to set interim emissions targets for the years 2020, 2030 and 2040. These targets are expressed as a percentage below the baseline. Regulation 2 amends the Climate Change (Interim Emissions Targets) (Wales) Regulations 2018. The 2030 and 2040 targets are increased from “45%” to “63%” and “67%” to “89%”, respectively, lower than the baseline. In accordance with section 32(1)(a) of the Act, the Welsh Ministers have satisfied themselves that the interim emissions targets are consistent with meeting the 2050 emissions target.

11.4.1.3.3 The Climate Change (Carbon Budgets) (Wales) (Amendment) Regulations 2021

In March 2021 Senedd Cymru approved a net zero target for 2050. Net zero means balancing the greenhouse gas emissions with the number of gases we're removing from the atmosphere. Wales also has interim targets for 2030 and 2040, and a series of 5-year carbon budgets. The first carbon budget ran from 2016 to 2020. Wales have to set a carbon budget at least five years before the budgetary period begins. The targets and carbon budgets form Wales’s statutory framework. They include Wales’s share of emissions from international aviation and international shipping. For each carbon budget, they have to set a limit on how many international offsets Wales can use. A 0% limit means we must achieve the carbon budget by action taken in Wales.

A summary of the targets and carbon budgets approved by Senedd Cymru in March 2021 is detailed below in Table 11-6.

Table 11-6: Targets and Carbon Budgets¹¹

Budget/target	Amount
Carbon budget 2 (2021-2025)	Average 37% reduction
Carbon budget 2 offset limit	0%
Carbon budget 3 (2026-2030)	Average 58% reduction
2030 target	63% reduction
2040 target	89% reduction

¹¹ <https://www.gov.wales/climate-change-targets-and-carbon-budgets>

Budget/target	Amount
2050 target	At least 100% reduction (net zero)

11.4.1.3.4 Well-being of Future Generations (Wales) Act 2015

The Well-being of Future Generations Act requires public bodies in Wales to think about the long-term impact of their decisions, to work better with people, communities and each other, and to prevent persistent problems such as poverty, health inequalities and climate change.

The Act sets to provide understanding for the challenges that the world will be facing and have a clear picture of where we are heading. To do this, within the twelve months after a Senedd election, Ministers must publish a 'Future Trends Report' containing:

Predictions of likely future trends in social, economic, environmental and cultural well-being of Wales; and

Any related analytical data and information that the Welsh Ministers consider appropriate.

In preparing the report, Ministers must take account of the United Nations' sustainable development goals and the impact of climate change on Wales.

11.4.1.3.5 Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance, 2022

IEMA published this guidance to assist practitioners with addressing greenhouse gas (GHG) emissions assessment and mitigation in statutory and non-statutory EIA. The guidance indicates that a 'good practice' approach is advocated where GHG emissions are always considered and reported but at varying degrees of detail depending on the project.

The guidance sets out several different assessment methods available for measuring and quantifying the GHG emissions associated with the built environment, ranging from general guidance to form standards for the use of an EIA. The guidance recognises that:

'qualitative assessments are acceptable, for example: where data is unavailable or where mitigation measures are agreed early on in the design phase with design and engineering teams.'

The assessment in this chapter presents a qualitative assessments and discussion in terms of GHG emissions.

11.4.1.3.6 Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation, 2020

The Guide to Climate Change Resilience and Adaptation (June 2020) provides an updated framework for the effective consideration of climate change resilience and adaption in the EIA process. This document is a revision of the 2015 IEMA guidance on Climate Change Resilience and Adaption in EIA and reflects on lessons learnt from emerging practice.

A step-by-step method presented within this guidance is set out below and has been given due cognizance within this chapter:

- Step 0 – Building climate resilience into the project by considering incorporating resilience during the design stage and by identifying appropriate mitigation measures.
- Step 1 – Scoping for the EIA; e.g., identify the climate change projections for use in the assessment and identify key climatic variables relevant to the project.
- Step 2 – Defining the future (climate) baseline; define future conditions using selected climate change projections (i.e. increase in rainfall, increase in mean summer temperature and wind strength).
- Step 3 – Identifying and determining sensitivity of receptors.
- Step 4 – Reviewing and determining magnitude of the effect; consider probability and consequence to determine the magnitude of the effect.
- Step 5 – Determination of significance.
- Step 6 – Developing additional adaptation/ EIA mitigation measures.
- Step 7 (Development permitted) – Monitoring and adaptive management by implementing mitigation measures.

EIA Reports produced in line with this guidance are to be proportionate in their approach and not include superfluous assessment that does not address likely material issues.

In lieu of a prescribed methodology, IEMA guidance on Climate Change Resilience and Adaptation (2020) has been prepared to assist practitioners with the effective consideration “of both climate change resilience and adaptation in the EIA process”.

The guidance stresses that climate change should be an integrated consideration within the EIA, by undertaking an assessment that is “proportional to the evidence base available to support any assessment” and focusses on impacts “specific to project.”

11.4.1.4 General Approach

‘Climate’ is generally understood to mean the weather conditions prevailing over a prolonged period of time and climate change refers to changes in recorded long term climate trends. As a topic for the assessment within EIA, climate change is relatively new. Guidance is evolving and there is no prescribed way in which climate change should be incorporated into an ES, however, some guidance has been prepared by IEMA, discussed further below, which sets out the two main approaches that can be taken to determine a project’s climate change impact.

These involve identifying:

- The vulnerability of the Development to climate change; and
- The direct and indirect influence on the Development on climate change.

The vulnerability of the Development to climate change considers effects on the Development as a receptor (this is referred to in IEMA Guidance as Climate Change Resilience and Adaptation¹²). A high-level climate change risk and resilience assessment has been undertaken to identify the potential risks of climate change on the Development and to high design measures to increase its resilience and adaptation to climate hazards, such as extreme hot and cold weather, intense rainfall, high winds and storm events.

Direct and indirect effects that are considered to have an impact on environmental receptors as a result of the Proposed Development can be defined as follows:

- Direct GHG emissions are emissions from sources that are owned or controlled by the operator. Examples include vehicular emissions, plant use (such as generators) and independent onsite energy generation (oil, gas and diesel); and
- Indirect GHG emissions are emissions that are a consequence of the construction of operational activities of the Development but are a result of procurement and / or activities controlled by another entity. Examples include energy generation and the manufacture of materials (known as 'embodied' carbon).

11.5 Preliminary Mitigation Measures

Air Quality

The findings of the air quality assessment will be used to develop relevant mitigation measures as appropriate for the construction phase of the Proposed Development to mitigate any significant adverse impacts.

11.5.1 Construction Phase

A dust and emissions management plan shall be developed for construction phase dust control and mitigation measures to be employed by the construction contractor. The series of mitigation and control measures will help prevent significant air quality and dust impacts during the construction phase. The following are general good practice measures that will be implemented onsite to control dust and vehicle emissions. The IAQM guidance outlines a number of mitigation measures for reducing impacts of fugitive dust from construction sites. Adoption of a number of these measures at the project site will reduce dust impacts to both personnel working at the site and off-site receptors. The mitigation measures are broken down in the following sections.

Communications

With respect to communications, the following will be implemented:

- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary.;
- Appropriate training will be provided to all staff to ensure that they are aware of and understand the dust control and other environmental control measures.

¹² Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation

Site Management

With respect to site management, the following will be implemented:

- Record all dust and air quality complaints, identify cause(s), respond appropriately to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints record available to the relevant regulatory authorities when asked;
- Record any exceptional incidents that cause dust and/or air emissions, either on or offsite, and the action taken to resolve the situation in an environmental log book;
- Avoid site runoff of water or mud.
- Use covered skips; and,
- No bonfires and burning of waste materials on site.

To be implemented during works as required by the appointed contractor.

Demolition

With respect to site management, the following will be implemented:

- Soft strip inside buildings structures before demolition of the “Buffer Dolphin” tower, operations room, existing suspended deck structure, and the Royal National Lifeboat Institution (RNLI) jetty buildings;
- Ensure effective water suppression is used during demolition operations.
- Wet suppression equipment must have an adequate supply of water. The system must operate automatically;
- Bag and remove any biological debris or damp down such material before demolition;
- Boundary screening can be effective at reducing dust dispersion from a site;
- Appropriate shielding/dust suppressant guard on machinery;
- Periodic review of dust repression measures for recycling machinery & adoption into dust monitoring plan.

To be implemented during demolition by the appointed contractor.

Earthworks

With respect to earthworks, the following will be implemented:

- Minimise drop heights from loading or handling equipment/materials and use fine water sprays on such equipment wherever appropriate;
- Methods and equipment will be in place for immediate clean-up of spillages of dusty or potentially dusty materials.

To be implemented during works as required by the appointed contractor.

Construction

With respect to construction, the following will be implemented:

- For smaller supplies of fine power materials will be ensured that bags are sealed after use and stored appropriately to prevent dust;
- Cleaning of hard stand areas by personnel only or if required mechanical road sweepers (with water suppressant fitted) to clean any site hard stand area.

To be implemented during works as required by the appointed contractor.

Vehicle Movement and Vehicle Emissions

As with any construction site, there are associated vehicle movement, emissions and plant use. With respect to vehicle movement and vehicle emissions, the following will be implemented:

- Transportation of aggregates and fine materials will be conducted in enclosed or sheeted vehicles;
- Ensure all vehicles switch off engines when stationary and not in immediate use - no idling vehicles (emissions to air controlled);
- All plant utilised should be inspected weekly (emissions to air controlled);

Visual monitoring of plant will include:

- Ensuring no black smoke is emitted other than during ignition (emissions to air controlled);
- Ensuring exhaust emissions are maintained to comply with the appropriate manufacturer's limits (emissions to air controlled); and
- Vehicle exhausts will be directed away from the ground and other surfaces and preferably upwards to avoid road dust being re-suspended to the air.

To be implemented during works as required by the appointed contractor.

11.5.2 Operation Phase

None required as the operational phase is scoped out of the assessment. No likely significant effects are predicted as a result of the Proposed Development and therefore an assessment on operational air quality is proposed to be scoped out of the EIA in its entirety.

Climate

11.5.3 Construction Phase

As with any construction site, there will be associated vehicle movements (including offshore vessel movements), emissions, and use of materials. With respect to vehicle emissions and materials, the following will reduce the GHG emission to the atmosphere:

- all vehicles switch off engines when stationary and not in immediate use - no idling vehicles (emissions to air controlled);
- all plant utilised will be regularly inspected (emissions to air controlled);

- visual monitoring of plant by operatives to ensure no black smoke is emitted other than during ignition (emissions to air controlled);
- ensuring exhaust emissions are maintained to comply with the appropriate manufacturers' limits (emissions to air controlled); and
- the reuse of soil materials won from excavations.

These measures will be captured in the Construction Environmental Management Plan (CEMP) and implemented throughout by the appointed contractor and the mitigation measures listed are deemed as good site practice.

11.5.4 Operation Phase

No specific mitigation measures are detailed at this point in the project.

11.6 Interactions

All environmental factors are inter-related to some extent. Interactions within the study area can be one-way interactions, two-way interactions and multiple-phase interactions may be influenced by the proposed development.

An assessment of the interaction between environmental factors are required under Article 3(1)(e) of the EIA Directive –1. The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

- Population and human health;
- Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
- Land, soil, water, air and climate;
- Material assets, cultural heritage and the landscape;
- The interaction between the factors referred to in points (a) to (d).

The interactions between impacts on different environmental factors will be considered, addressed and outlined as relevant throughout the EIAR. Air quality is most likely to have an inter relationship with traffic, climate and soils and geology. Climate is most likely to have an inter relationship with traffic, air quality, flood risk, waste and risk of major accidents & disasters.

11.7 Summary of Scoping Exercise

The Proposed Development has the potential to give rise to impacts on air quality and climate and is therefore scoped into the EIA. An Air Quality Impact Assessment (for the demolition and construction phase only) will be undertaken as part of the EIA process. The Proposed Development also has the potential to be impacted

upon by a changing climate and, in particular, more frequent severe weather events. An assessment of these factors will be included in the EIA.

11.8 References

- Air Quality (Wales) Regulations 2000, as amended by the Air Quality (Wales) (Amendment) Regulations 2002
- Air Quality Directive (2008/50/EC)
- Air Quality in Wales 2022 Report
- Air Quality Standards Regulations 2011 (S.I. 180 of 2011)
- Clean Air for Europe (CAFE) Directive (2008/50/EC)
- Environment (Air Quality and Soundscapes) (Wales) Act 2024
- Future Wales The National Plan 2040
- Institute of Environmental Management and Assessment (IEMA), Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance, 2017.
- Institute of Environmental Management and Assessment (IEMA), Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation, June 2020.
- Pembrokeshire County Council 2023 Air Quality Progress Report
- Prosperity for All: A Climate Conscious Wales A climate change adaptation plan for Wales 2019
- The Clean Air Plan for Wales
- The Environment (Wales) Act 2016 (Amendment of 2050 Emissions Target) Regulations 2021
- Wales' Greenhouse Gas Emissions 2021
- Well-being of Future Generations (Wales) Act 2015

12 ARCHAEOLOGY, ARCHITECTURAL & CULTURAL HERITAGE

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development on

the historic environment. Ltd.

12.1 Baseline Scenario

The Fishguard Linkspan lies on the western side of Fishguard Harbour. Protected by the breakwater to the north, it allows loading of vehicles onto Irish Sea ferries.

The modern ferry terminal lies on the western side of Fishguard Bay, to the north east of Goodwick, and some 1km to the north west of the historic port and harbour of Fishguard. Despite this, it lies in a complex historical landscape.

Some 350m to the northwest lies the Pen Gaer: Garn Fawr and Stumble Head Registered Landscape of Special Historic Interest (HLW (D) 11), a prominent coastal headland containing a number of important prehistoric sites. A number of these lie within 2km of the site – notably the Garn Wen Burial Chambers (PE030) some 300m to the northwest and the Pen-Rhiw Burial Chamber (PE033) 1km to the north west, the Parc Hen standing stone (PE518) 1.5km to the north west and the Carn Wnda Burial Chamber (PE031) 1.9km to the north west. It also contains the early medieval Incised Cross at Cemetery Crossroads (PE258), some 1.5km to the north west.

Some 1.5km to the southeast lies the Castle Point Old Fort Scheduled Monument (PE096), which is also a Grade II Listed Building – Fishguard Fort (12331). Built in the late 19th century at the mouth of the harbour in response to the privateer Black Prince bombarding the town, it famously fired its guns in an attempt to deter the French invasion of 1797. It has extensive views of Fishguard Bay, that encompass the ferry terminal and linkspan.

The Grade II Listed Fishguard Bay Hotel (12345). Its grounds are a Grade II Registered Park and Garden (PGW(Dy)63(PEM) with key views across the bay to the east, which partly encompass the ferry terminal and linkspan. A Grade II Listed 19th century villa known as Penrhyn (26066) lies just to the south of the Registered Park and Garden, some 580m from the slipway.

The Grade II Listed Bridge Cottages (12339) lie at the southeastern end of Goodwick Beach, some 1.2km to the south of the linkspan. Their main façade faces to the northwest, and they have limited distant views in the direction of the ferry terminal and linkspan.

Further afield, a grade II Listed farmhouse known as Pen-rhiw (12381) lies 950m to the south west of the linkspan, whilst there are a number of grade II Listed buildings in Goodwick and its environs - Ffynnon Clun farmhouse & adjoining outbuilding (12267), Swansea House (Ty Abertawe, 12315), Berachah Cottage (12323), Church of St Peter (12341), Dyffryn House (12353), Rosslyn (12357), the Goodwick Institute (13084), the Lifeboat Memorial (26968), The Drim (26791) and its outbuilding (26792), the Berachah Presbyterian

Church (22760). All of these lie some distance from the derry terminal and are likely to have limited intervisibility with it.

A number of Listed Buildings within Fishguard and parts of Fishguard Conservation Area lie within 2km of the linkspan – the Grade II Listed 11 Hamilton Street (12262), Sycamore Lodge (12265), Premises occupied by The Dragon House (12266), 5 High Street (12269), 11 High Street (12270), Cartref Hotel (12271), 21, High Street (12272), Hermon Baptist Church including forecourt walls and steps (12273), the Cottage occupied by St John's Fishguard Nursing Division (12275), Bank House (12276), 12 High Street (12283), 14, High Street (12284), 1 Hill (12288), 2 Hill (12289), 4 Hill (12290), Parish Church of St Mary (12299), Inscribed stone in St Mary's churchyard (12300), Railings to churchyard of Church of St Mary (12301), 1, Main Street (12302), 3, Main Street (12303), 5, Main Street (12304), Sally Port (12306), Manor House Hotel (12307), Elm Lodge (12308), Ty Rhos (12309), Sail Cottage (12310), 16, Main Street (12311), 22, Main Street (12312), The Globe Inn (12313), Black Fox Bar (12314), The Town Hall (12316), The Farmer's Arms (12317), 15 and 16 Market Square (12318), 17 and 18 Market Square (12319), 20 Market Square (12320), The Royal Oak (12321), 15 Newport Rd (12325), Bodmor (12329) and wall and railings (12330), Former store building (12332), 37, Quay Street (123501), The Slade (12354), Hill House (12360), Tower House (12361), Talarfor (12362), 19 Quay Street (12347), 21, Quay Street (12348), 33, Quay Street (12349) Court House (12363), Ardwyn (12364), Capel Pentour (12365), Prospect House (12366) 5, West Street (12369), The Old Post Office (12370), Victoria Wine (12373), 39, West Street (12374), Seaways Bookshop (12379), 14 West Street (12380), 32, Main Street (13072), Vincent House (13073), 52, High Street (26026), 35, Quay Street (26029), Solway House (26031), Well Cottage (26036), 2, The Slade (26038), Bryn Haulwen (26040), Moonstone (26041), 8 Hill (26042), The Fishguard Arms (26044), 26, Main Street (26045), 18, Main Street (26046), 20, Main Street (26047), 16, High Street (26048), 11a High Street (26054), 13 High Street (26055), 7 High Street (26056), 9 High Street (26057), 9 Hamilton Street (26059), 13, Hamilton Street (26060), 25, Quay Street (26062) 4, Hamilton Street (26064), 5, Hamilton Street (26065), 5 Hill (26069), 16, West Street (26072), Ty Twt (26073), 37, West Street (26074), 41, West Street (26075), Halifax Building Society (26076), Bennett's Navy Tavern (26078), New Villa (26079) and 7, Main Street (26081). Those towards the northern edge of Fishguard, along Quay Street, may have intervisibility with the Ferry Terminal and linkspan, but it is likely that the majority will be screened by intervening topography, buildings and vegetation.

There are relatively few undesignated assets in the proximity of the ferry terminal and linkspan. Goodwick has its origins in the post medieval period, but is largely modern, and was recorded as moorland in the medieval period. the ferry terminal lies on a strip of reclaimed land and is entirely modern.

A lifeboat station and associated slipway is shown within the site on the first edition Ordnance Survey Map. The lifeboat station is now gone, but the platform on which it stood and the slipway are still extant and are proposed for demolition as part of the works. The remains of this historic structure are of local interest only.

The RCAHMS hold records for numerous shipwrecks in Fishguard Bay, the majority in the vicinity of the historic town and harbour. There are records for at least two known wrecks in the vicinity of the proposed development. The Cristal or Crystal, a 35nt wooden ketch built in Jersey in 1863 sank in the area on 31 December 1905. She was carrying bricks from Cardigan to Holyhead and was caught in a force 8 gale. She was recorded being driven onto rocks close to the quay wall of the new harbour (probably Goodwick jetty).

The second, the Constitution, was a wooden sailing vessel on passage from Galway to Bristol, was recorded as foundering on 12 November 1825 outside the quay at Goodwick. A further 2 wrecks are recorded on the beach at Goodwick to the southwest along with two fish traps.

On this basis it is anticipated that the likelihood that any archaeological remains are present within the site of any period is very low. Any such remains are likely to be of local or regional significance only.

12.2 Proposed Approach

12.2.1 Baseline study

An Historic Environment Desk-based Assessment ('DBA') will be prepared for the scheme. The scope of this DBA will be set out in a Written Scheme of Investigation (WSI) which will be submitted to the curatorial section of Heneb, who advise the Local Planning Authority on heritage issues. This DBA will examine all available sources of information pertaining to the cultural heritage of the site and surrounding area and the historic development and use of the ferry terminal. It will include marine heritage assets as well as a consideration of marine archaeology potential. All designated heritage assets will be clearly identified in the DBA.

The DBA will include the following data sources:

- Evidence held by Heneb on the regional Historic Environment Record (HER)
- Available published and unpublished reports within the relevant Study Areas
- National data sets held by Cadw and the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW)
- Aerial photographs held by the RCAHMW and the Central Registry of Aerial Photographs for Wales (CRAPW)
- Relevant maps and documents held by the Pembrokeshire Archives
- LiDAR data available on Data Map Wales
- Historic maps available online and in local and national archives
- Conservation area character appraisals, where available.

The baseline assessment will identify the presence of both designated and non-designated assets within the study area and will take into account the guidance provided by the Chartered Institute for Archaeologists for the preparation of desk-based assessments (CIfA 2020).

This will include identification of all heritage assets that could be affected by the proposed development, provision of a description of the significance (importance) of those assets, including the contribution made by their setting. Setting assessments for designated heritage assets will follow national guidance contained within the Cadw (2017) document Setting of Heritage Assets in Wales.

In addition, site visits will be undertaken to both the Proposed Development to determine whether it contains hitherto unrecorded historic features and to designated assets within the study area in order to assess intervisibility and potential impacts.

12.2.2 Legislation and Guidance

The DBA would include a review and summary of relevant legislative, planning policy and other guidance documents, insofar as they relate to the cultural heritage and the assessment of impact upon historic assets. This would include the following:

- The Historic Environment (Wales) Act 2016 (whilst it still remains in force)
- The Historic Environment (Wales) Act 2023
- Ancient Monuments and Archaeological Areas Act (1979) amended by the National Heritage Acts (1983 and 2002).
- Planning Policy Wales (Edition 12, February 2024)
- Hedgerow Regulations 1997
- Technical Advice Note (TAN) 12: Design (2016)
- Technical Advice Note (TAN) 24: The Historic Environment (2017)
- Conservation Principles for the Sustainable Management of the Historic Environment in Wales (Conservation Principles (2011)
- Heritage Impact Assessment in Wales (May 2017)
- Setting of Historic Assets in Wales (May 2017)

The Historic Environment (Wales) Act 2023 is intended to replace the Historic Environment (Wales) 2016, and should come in to force late in 2024, but at the time of writing has not yet done so.

12.3 Potentially Significant Effects

The Proposed Development has the potential to physically impact on undesignated archaeological remains within the site during construction, and to impact the significance of designated heritage assets through development within their setting. Residual impacts on the significance of designated heritage assets will continue throughout operations as a result of alteration of their setting. Effects resulting from these impacts can be both negative and positive.

12.3.1 Construction Phase

Dredging proposed as part of the construction phase has the potential to impact upon any archaeological remains within the footprint of those works. There is one historic structure – a platform and slipway once associated with a lifeboat station, now demolished. This platform and slipway would be demolished under

proposals for the new linkspan. This structure is of low value/local interest only, and its loss could be offset by an appropriate recording exercise.

There are no known archaeological assets within the site itself, and the ferry terminal itself sits on reclaimed land created using material blasted from the cliffs to the west. The likelihood of there being any terrestrial archaeological remains within the site is therefore low, although there is a possibility that the site may contain maritime remains. In order to ensure that any archaeological remains encountered during dredging are recorded appropriately, a Protocol for Archaeological Discovery (PAD) will be agreed in advance of any dredging works. It is considered that the effects of any physical impacts on archaeological remains will be not significant in EIA terms.

The construction phase is likely to involve increased vehicular and maritime traffic including dredging. This will have a temporary impact on some designated assets. However, given that it will be occurring in the context of a busy ferry terminal environment, the effects of these impacts are likely to be not significant in EIA terms.

12.3.2 Operation Phase

The proposed linkspan is less visually obtrusive than the current one. During its operational phase, it will therefore slightly improve the settings of some designated assets. The effect of this is likely to be a negligible positive one on the significance on a small number of designated assets. This will be not significant in EIA terms.

12.4 Inclusion or Exclusion from EIA

Cultural Heritage was included as a topic at EIA for a previous application to replace the linkspan, and I would expect it to be included again.

12.5 EIA Assessment Methodology

The assessment of the likely effects on the historic environment will include the following activities:

- Identification of all heritage assets that could be affected by the proposed development, along with provision of a description of the significance (importance) of those assets including the contribution made by their setting;
- Identification of the likely effects of the Proposed Development on heritage assets within the site and an appropriate study area centred on it; and
- Assessment of significance of effects, taking into account measures proposed to avoid, reduce or offset adverse effects.

Assessment will be in the form of a matrix-based approach that examines the importance or value of the heritage asset against the magnitude of impact on that asset, leading to an identified significance of effect. This approach will be underpinned by a suitable narrative that explains how the importance or value of the asset has been appraised and how the magnitude of impact has been assessed.

The Historic Environment DBA will form an appendix to the assessment.

12.6 Preliminary Mitigation Measures

12.6.1 Construction Phase

Dismantling of the existing linkspan and construction activities associated with the construction of the new linkspan should be undertaken in a considerate fashion to minimise disruption to nearby designated assets. Following liaison with the RCAHMW, a Protocol for Archaeological Discoveries (PAD) will be agreed, and the remains of the former lifeboat station and slipway will be recorded prior to their demolition.

12.6.2 Operation Phase

No mitigation measures will be required for the operational phase.

12.7 Interactions

Consultation will be undertaken with Cadw with regards to designated assets and with the archaeological advisors at Heneb and the RCAHMW.

12.8 Summary of Scoping Exercise

This scoping exercise has indicated that there is a potential for the Proposed Development to impact negatively upon the significance of designated assets in the vicinity of the site and potentially upon any archaeological remains during the construction phase of the project, and impact positively upon the significance of designated assets in the vicinity of the site during its operational phase.

It is suggested that the effect of these impacts during the construction phase and operational phase will be not significant in EIA terms.

12.9 References

Cadw, 2017, Setting of Heritage Assets in Wales

Chartered Institute for Archaeologists, 2020, Standard & Guidance for historic environment desk based assessment 2014, updated 2020.

13 SOILS, GEOLOGY & HYDROGEOLOGY

13.1 Baseline Scenario

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development on soils and geology and Hydrogeology.

A desk study of public material was undertaken to provide an initial overview of ground conditions at the site. The following describes the findings of this preliminary research.

13.1.1 Solid Geology

The site is located on a fault line which separates the Penyraber Mudstone Formation to the south east from the Goodwick Volcanic Formation to the north west.

13.1.2 Superficial Geology

Made ground is anticipated to overlie bedrock in the vicinity of the site.

13.1.3 Hydrogeology and Groundwater Vulnerability

The bedrock aquifer underlying the site is categorised as a Secondary B aquifer. This refers to predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water bearing parts of the former non-aquifers.

A superficial aquifer is not considered to be present in the vicinity of the site. No source protection areas were identified within a 1000m buffer of the site.

13.1.4 Hydrology

No inland watercourses are present within 500m of the site.

13.1.5 British Geological Survey Records

British Geological Survey (BGS) have information on two historical boreholes very close to the existing linkspan at Fishguard Port. Both boreholes are off shore and were drilled in 1964 by Foundation Engineering Ltd. Borehole SM93NE14 is located just off-shore from the southern portion of the linkspan and is summarised in Table 13.1.

Table 13-1 Historical borehole SM93NE14

Depth (m bgl)	Strata
0.00 – 0.91	Dense, sandy, silty GRAVEL f.c. and boulders
0.91 – 1.82	BOULDERS
1.82 – 2.44	Hard, light brown, LAVA (believed to be bedrock)

Historical boreholes SM93NE15 is located just north of the linkspan and is summarised in Table 13.2.

Table 13-2 Historical borehole SM93NE14

Depth (m bgl)	Strata
0.00 – 3.43	Dense, sandy GRAVEL c.m.f, cobbles and boulders

13.1.6 Designated Sites

The West Wales Marine Special Area of Conservation is present directly east of the site. Preseli Environmentally Sensitive Area is present directly west of the site. An area of Ancient Woodland is present to the south west of the site, approximately 500m from the site. The Pembrokeshire Coast National Park is present approximately 1km to the north of the site.

13.2 Potentially Significant Effects

13.2.1 Construction Phase

Construction works will involve landside works to adjust traffic and pedestrian routes to service the new floating pontoon. Dredging works are also proposed, these cover maintenance dredging of the berth, capital dredge beneath the pontoon to allow sufficient depth and soft material removal to allow construction of the reclamation area.

There is a potential for contaminated soil/sediment to be encountered during construction works.

13.2.2 Operation Phase

Due to the nature of the Proposed Development the potential for ground contamination from the operational phase is anticipated to be low.

13.3 Inclusion or Exclusion from EIA

Soils, Geology and Hydrogeology should be scoped into the EIA.

13.4 EIA Assessment Methodology

To aid the environmental assessment process, a Preliminary Risk Assessment (PRA) desk study will be prepared to accompany the chapter. The PRA will assess the potential risk from ground contamination and will be written with reference to a number of guidance documents, which deal with the investigation and management of risk associated with contaminated land. A Preliminary Risk Assessment is prepared utilising guidance provided by the UK Environment Agency (EA). The UK technical guidance for assessing and managing risks from contaminated land is detailed in 'Land Contamination Risk Management' (LCRM) - How to assess and manage the risks from land contamination, October 2020'.

Underpinning the guidance within LCRM is a source-pathway-receptor methodology, which is used to identify Significant Pollutant Linkages (SPLs). The following definitions apply:-

EIA SCOPING REPORT

Source: a contaminant or pollutant that is in, on or under the land and that has the potential to cause harm or pollution;

Pathway: a route by which a receptor is or could be affected by a contaminant

Receptor: something that could be adversely affected by a contaminant, for example a person, controlled waters, an organism, an ecosystem, or Part 2A receptors such as buildings, crops or animals

An important thread throughout the overall process of risk assessment is the need to formulate and develop a conceptual model for the site, which supports the identification and assessment of pollutant linkages. Development of the conceptual model forms the main part of the preliminary risk assessment, and the model is subsequently refined or revised as more information and understanding is obtained through the risk assessment process. A risk is present only when a source-pathway-receptor linkage is present and active. Without a pollutant linkage, there is not a risk, even if a contaminant is present.

The Desk Study will examine the potential for sources of contamination and pollutant linkages to be present.

Effects of contaminated land on receptors will be assessed taking into account sensitivity of the receptor and magnitude of the effect. The sensitivity of geological receptors will be determined according to the methodology shown in Table 13.3.

Table 13-3 Sensitivity of Receptor

Sensitivity	Criteria	Typical Examples
High	High importance and rarity, international or national scale and very limited potential for substitution.	Geology: World Heritage Sites or site protected under EU or UK wildlife legislation (SAC, SPA, SSSI, Ramsar site). Soils: Agricultural land of Grade 1 or 2 quality. Controlled Water: Groundwater vulnerability is classified as high; Principal aquifer providing a regionally or locally important resource or supporting site protected under wildlife legislation. Future site users: Sensitive land uses proposed such as residential housing with gardens, allotments, schools. Built Environment: Sites of international Importance, World Heritage Sites, Listed Buildings, and Scheduled Monuments.
Medium	Attribute has a medium quality and rarity on local scale	Geology: Regionally Important Geological Sites (RIGS). Soils: Agricultural land of Grade 3 quality. Controlled Water: Moderate classification of groundwater vulnerability; Secondary aquifer providing water for agricultural or industrial use with limited connection to surface water. Future site users: Moderately sensitive land uses such as residential housing without gardens, commercial developments and open spaces. Built Environment: Sites with local interest for education or cultural appreciation.
Low	Attribute has a low quality and rarity on local scale	Geology: Rock exposures. Soils: Agricultural land of Grade 4&5 quality. Controlled Water: Deep Secondary aquifer with poor water quality not providing baseflow to rivers; Aquifer not used for water supplies (public or private).

Sensitivity	Criteria	Typical Examples
		Future Site Users: Low sensitivity land use such as Industrial Sites, highways and rail. Built Environment: Infrastructure (e.g. Roads, railways, tramways).
Neutral	Very low importance and rarity, local scale.	Geology: No rock exposures. Soils: Urban classified soils. Controlled Water: Non-aquifer/Unproductive Strata Future Site Users: No sensitive land use proposed.

The magnitude of a potential effect is independent of the sensitivity of the feature. The magnitude considers the scale of the predicted change to the baseline condition taking into account its duration (i.e. the magnitude may be moderated by the effects being temporary rather than permanent, short term rather than long term) and whether the effect is direct or indirect. Definitions for impact magnitude are described in Table 13.4.

Table 13-4 Magnitude of Effect

Magnitude	Criteria	Typical Examples
Major adverse	Total loss or major alteration to key features of the baseline conditions such that post development character/composition of baseline condition will be fundamentally changed.	- Irreversible loss of high proportion of local high fertility soils/sediments. - Large loss/ degradation of Agricultural Land Classification ALC Grade 1 or 2 soils; - Pollution of potable sources of water abstraction - Changes to aquifer or unsaturated zone resulting in extensive change to existing water supply springs and wells, river baseflow or ecosystems. - Loss of, or extensive change, to nationally important geological features. - Sterilisation of high quality mineral resource - Long-term (chronic) risk to human health or short-term (acute) risk to human health; - Short- term risk of pollution of sensitive water resources; - Extensive damage to buildings / infrastructure (on or off site); - Generation of significant quantities of waste sediment or soils for landfill; and - Contamination of offsite soils. - Substantial geomorphology changes due to cutting
Moderate adverse	Loss or alteration to one or more key features of the baseline conditions such that post development character/composition of baseline condition will be materially changed.	- Irreversible loss of moderate proportion of local high fertility soils/sediments. - Large loss/ degradation of ALC Grade 3 soils, minor loss/ degradation of ALC Grade 1 or 2 soils

Magnitude	Criteria	Typical Examples
		• Changes to aquifer or unsaturated zone resulting in moderate change to existing water supply springs and wells, river baseflow or ecosystems. • Partial loss or change to an aquifer. • Partial loss of the integrity of groundwater supported designated wetlands. • Permanent loss of, regionally important geological features, or substantial changes to nationally important geological features. • Sterilisation of low quality mineral resources; • Easily preventable, permanent health impacts on humans or medium-term (chronic) risk to human health; • Medium long-term risk of pollution of sensitive water resources; damage to buildings / infrastructure (on or off site); and • Localised damage to buildings/ infrastructure (on or off site).
Minor adverse	Results in some measurable change in attributes quality or vulnerability compared to baseline conditions. Changes arising from the alteration will be detectable but not material; the underlying character/composition of baseline condition will be similar to the pre-development situation.	• Irreversible loss of small proportion of local high fertility soils/sediments and/or high proportion of local low fertility soils/sediments • Moderate loss/ degradation of ALC Grade 4 or 5 soils. Minor or moderate loss/ degradation of ALC Grade 3 soils • Changes to made ground deposits only; • Changes to aquifer or unsaturated zone resulting in minor change to water supply springs and wells, river baseflow or ecosystems. • Minor effects on groundwater supported wetlands. • Loss of, or extensive change, to locally important geological features. • Easily preventable, non-permanent health impacts on humans; • Minor low-level and localised contamination of on-site soils/sediments; • Pollution of non-sensitive water resource or low long term risk of pollution to sensitive water resource; and • Easily repairable damage to buildings / infrastructure.
Neutral	Very little change from baseline conditions. Change is barely distinguishable approximately to a "no change" situation.	• No measurable impact upon surface waters or groundwater.

Magnitude	Criteria	Typical Examples
		- No measurable impact on geological features. - No measurable impact on soils/sediments. - No discernible change with regards to contaminated land
Beneficial	Benefit to, or addition of, key characteristics, features or elements compared to baseline conditions.	- Improvement to geological features. - Remediation of widespread high levels of soil/sediment contamination - Removal of source of groundwater and surface water contamination - Re-use of significant quantities of excavated soils on-site to avoid disposal to landfill

With reference to the above table on Soil Grades, Agricultural Land Classification (ALC) is graded from 1 to 5. Grade 1 being the highest grade given to land which gives a high yield or crop output, has the widest range of versatility and use, produces the most consistent yield and requires less input. A Grade 4 or 5 is classified as being poor or very poor-quality agricultural land. Grade 4 land has limitations which significantly restrict the range of crops or levels of yields. It is mainly suited to grass with occasional arable crops. Within a Grade 5, land is restricted to rough grazing pasture ground. Grades between this such as 2 and grades 3, 3a and 3b are classified as being very good to good quality land, yields are bountiful.

The significance of a specific potential effect is derived from both the sensitivity of the feature and the magnitude of the effect and can be then determined using the matrix presented in Table 13.5. Effects can be beneficial, adverse or neutral and their significance Very Large, Large, Moderate, Slight or Neutral or an intermediary designation as cases dictate based on professional judgement. The significance of an impact should also be qualified based on the likelihood of an effect occurring (using a scale of certain, likely or unlikely) and the confidence in the accuracy of the assessment.

Professional judgement can be used to vary the category where specific circumstances dictate, for example due to the vulnerability or condition of the receptor.

Table 13-5 Assessment of Significance Matrix

		Magnitude of effect			
		Major	Moderate	Minor	Neutral
Sensitivity of attribute	High	Large/very large	Moderate/large	Slight/moderate	Neutral
	Medium	Large	Moderate	Slight	Neutral
	Low	Slight/moderate	Slight	Neutral	Neutral
	Neutral	Neutral	Neutral	Neutral	Neutral

13.5 Preliminary Mitigation Measures

13.5.1 Construction Phase

No preliminary mitigations measures are currently proposed for the construction phase.

13.5.2 Operation Phase

No preliminary mitigations measures are currently proposed for operational phase.

13.6 Interactions

None

13.7 Summary of Scoping Exercise

The scoping exercise has concluded that the potential impacts associated with Soils, Geology and Hydrogeology within the scheme should be scoped into the EIA.

13.8 References

None

14 MATERIAL ASSETS

14.1 Baseline Scenario

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development on material assets. The land use study area within Fishguard Port is dominated by the built form of the two closely associated settlements of Goodwick and Fishguard. Both settlements have a strong coastal and maritime association and character with extensive and elevated views across Fishguard Bay and along the Pembrokeshire Coast. The existing Port at Fishguard lies at the western side of the Harbour and consists of extensive tarmac area used by traffic queuing for ferries. The baseline environment is defined as the existing environment against which future changes can be measured.

The assessment of potential impacts on existing and future land use considers if there will be severance, loss of rights of way or amenities, conflicts, or other changes likely, which may alter the character and use of the surroundings.

The assessment of potential impacts on material assets focuses on resources that are valued and are intrinsic to a place - these may be of either human or natural origin, and the value may arise for either economic or cultural reasons.

The assessment of potential impacts for utilities and services will comprise all areas of proposed construction work including areas where utility and infrastructural diversions are proposed.

The matters assessed within this section of the EIA focus on the environmental effects on the following resources:

- Existing Land Use (e.g. Education / community/ open space);
- Land with development potential and adjoining land use;
- Facilities used by the local community and
- Utilities and services.

The following forms a summary of the data collated, and work undertaken to date.

- Preliminary review of legislative and policy context;
- Review of the land use designations (extant and emerging)
- Initial planning application history search
- Preliminary discussions with utility providers

With regards to existing land uses, consideration will be given to the existing character and type of land use, and the location of any sensitive neighbouring occupied premises likely to be directly affected by the proposed development. This includes educational, community, recreational, health care and those uses related to religious groups / activities. The assessment will focus on direct land take which would occur through the implementation of the proposed development. This will be undertaken following a desktop study, review of aerial photography, and inspection of planning and land registry records.

With respect to land with development potential, future planned changes to land use following the grant of planning permission are relevant to the assessment. A planning history search will be carried out to establish planning applications within and directly adjacent to the study area.

The assessment of material assets will involve a desk study to identify properties, resources, and amenities etc. that may be affected by the proposed development. Consultation will be made with stakeholders in the local area.

Consultation will take place with the relevant utility providers to determine the exact location and depth, prior to commencement of works. Utility providers will be consulted well in advance and provided with design drawings to determine the extent of their utilities. If present, they may be required on site to monitor the works. All proposed designs and diversions will be undertaken in agreement with the service providers to ensure that the network and assets are protected, and customer service is maintained and safeguarded.

14.2 Potentially Significant Effects

14.2.1 Construction Phase

The potential impacts associated with construction phase include:

- Damage to utilities and services during excavation works;
- Disruption to utilities and services: Any diversions or new connections will be planned and accommodated by utility providers to minimise disruption.
- Temporary change of use of land for compounds and working corridors
- Temporarily restricting access to community facilities or land and use of the land

14.2.2 Operation Phase

The potential impacts associated with the operation phase include:

- Changes to land use
- Permanent limitations to land use along cable routes

Effects during decommissioning are assumed similar to construction, however of smaller scale due to cables being left in situ and only the substation being removed.

14.3 Inclusion or Exclusion from EIA

Due to the nature of the Proposed Development and the potential for impacts, it is considered that a Land Use and Materials Assets will be required, and as such, it is scoped into the EIAR.

14.4 EIA Assessment Methodology

The scope for the assessment will be informed by desktop analysis, consultation with statutory consultees, bodies with environmental responsibility and other interested parties at scoping stage and during the pre-application community consultation.

With regards to existing land uses, consideration will be given to the existing character and type of land use, and the location of any sensitive neighbouring occupied premises likely to be directly affected by the proposed development. This includes educational, community, recreational, health care and those uses related to religious groups / activities. The assessment will focus on direct land take which would occur through the implementation of the proposed development. This will be undertaken following a desktop study, review of aerial photography, and review of OS base mapping.

With respect to land with development potential, future planned changes to land use following the grant of planning permission are relevant to the assessment. A planning history search will be carried out to establish planning applications within and directly adjacent to the study area.

14.5 Preliminary Mitigation Measures

14.5.1 Construction Phase

During the construction phase for the Proposed Development, good site management practices and procedures will be carried out, including the provision of high-quality hoarding / signage. Proactive communications and engagement with adjacent landowners, regarding phasing, timing and duration of works will be an important aspect of the construction works.

Safe and appropriate access to the Proposed Development site will be maintained throughout the construction process, and signage will be provided where necessary. This will ensure that no negative effects arise during the construction process.

Mitigation by avoidance will be the primary mitigation measure implemented during the construction and operational phase of the Proposed Development. This will be applied to avoidance of utilities such as underground services and pipelines. Consultation will be made with utility providers to determine the location of services prior to commencement of works.

14.5.2 Operation Phase

There are no preliminary mitigation measures detailed at this early stage. Mitigation opportunities during the construction phase of works will be identified in the Construction Environmental Management Plan (CEMP). The CEMP will seek to stipulate measures to avoid, reduce or offset environmental effects of the construction works.

14.6 Interactions

None

14.7 Summary of Scoping Exercise

The scoping exercise has concluded that as a result of potential effects arising from the Proposed Development during the construction and operational phases that Material Assets & Land Use should be scoped into the EIA.

14.8 References

None

15 TRANSPORT

15.1 Baseline Scenario

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development on transport. Vehicular access to the port is currently provided via a double roundabout at the Harbour Access / A40 The Paraog / A487 Wern Road / Station Hill junction. The eastern roundabout of the double configuration currently serves as the primary port access and access to the adjacent public car park. The western roundabout acts as the main through route connecting to the wider road network and towards Fishguard town centre.

The site is very well located in relation to access to the strategic road network. In the vicinity of the site, the A40 is a single carriageway two-way road, which is subject to a 30mph speed limit. The carriageway is approximately 7.3m wide with footways provided on both sides for the carriageway. As well as provided access to Fishguard Harbour, the A40 The Parrog serves as a link between Fishguard town centre and residential areas to the north and west of the site.

Baseline data, if required, will be obtained to assess the traffic and transport impacts of the proposed development.

- Existing number of vessel sailings and sailing schedule
- Existing traffic volumes at the double access roundabout at the Harbour Access / A40 The Parrog / A487 Wern Road / Station Hill junction.
- Proposed construction programme and associated estimated volumes of construction vehicles.
- Proposed numbers of construction related staff and the associated traffic flows.
- Proposed working hours for the construction of the scheme.

The assessment will take account of the Chartered Institution of Highways and Transportation Guidelines for Traffic Impact Assessments 1994.

15.2 Potentially Significant Effects

15.2.1 Construction Phase

The most onerous construction period will occur during the first 3no. months when ferry services will remain online and therefore there will be a mix of construction and operational related traffic occurring during the day.

During the construction phase, based on the current assumptions, there is an estimated maximum of 27no. construction vehicles per day. This is a low predicted volume of construction traffic and therefore it is unlikely that there will be any significant effects during the construction phase.

15.2.2 Operation Phase

During the operational phase, once the Linkspan has been completed, it is anticipated that the vessel numbers and size are not expected to increase above the existing levels and therefore the traffic volumes are not expected to increase above the current numbers. Therefore, it is anticipated that there will not be a significant impact during the operational phase of the development.

15.3 Inclusion or Exclusion from EIA

Whilst the predicted traffic volumes during construction are not anticipated to be significant it would be proposed to include traffic / transport within the EIA to ensure construction traffic is adequately considered and assessed.

15.4 EIA Assessment Methodology

The EIA methodology will take account of the Chartered Institution of Highways and Transportation Guidelines for Traffic Impact Assessments as well as any response from the Council and highway authority in relation to this scoping chapter.

15.5 Preliminary Mitigation Measures

15.5.1 Construction Phase

It is anticipated at this stage that there will be no mitigation measures associated with the construction phase of the proposal.

15.5.2 Operational Phase

It is anticipated at this stage that there will be no mitigation measures associated with the operational phase of the proposal.

15.6 Interactions

The information contained within the Traffic and Transport chapter could be used within the associated Air and Noise Chapters.

15.7 Summary of Scoping Exercise

It is anticipated that the traffic and transport impacts of the project on the surrounding highway network during the construction phase will not be significant and during the operational phase will be no more onerous than currently occurs at the site.

15.8 References

Chartered Institution of Highways & Transportation Guidelines for Traffic Impact Assessments 1994.

16 SEASCAPE, LANDSCAPE & VISUAL

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development on seascape character, landscape character or visual receptors. within the study area and considers the proposed methodology for assessment.

16.1 Baseline Scenario

The existing baseline seascape and landscape conditions will be established by providing an overview of the seascape character / landscape character within which the Proposed Development sits, or which lies immediately adjacent to the Proposed Development site.

16.2 Potentially Significant Effects

16.2.1 Construction Phase

The construction phase effects associated with the Proposed Development considered to give rise to significant effects include:

- Site preparation/enabling works
- Site infrastructure such as cranes and construction traffic access
- Vehicle and plant movements
- Stockpiling of materials
- Site compound
- Construction Lighting

Within the assessment of seascape, landscape and visual effects an assessment of the potential construction phase impacts will be completed, as construction phase impacts have the potential to be localised in extent, though considered to be of a short-term duration and temporary in nature.

16.2.2 Operation Phase

The operational phase of the Proposed Development includes:

- Additional land reclamation and revetments
- Introduction of new features, such as the replacement linkspan, within the context of the existing seascape, landscape and visual baseline.

The Proposed Development has the potential to give rise to localised, long-term seascape, landscape and visual effects from both the immediate surroundings as well as from the wider setting and a detailed seascape, landscape and visual assessment will be completed.

Viewpoints will be carefully selected to illustrate representative views of the Proposed Development from within the local and wider environs and will be representative of views available from publicly accessible areas such as footpaths.

16.3 Inclusion or Exclusion from EIA

The scoping exercise has concluded that because of potential seascape character, landscape character and visual effects arising from the Proposed Development during the construction and operational phases that the Seascape, Landscape and Visual Assessment should be scoped into the EIAR.

16.4 EIA Assessment Methodology

The methodology and approach to the assessment contained within this chapter will be carried out in accordance with best practice guidance described in the following documents;

- Guidelines for Landscape and Visual Impact Assessment, Third Edition (The Landscape Institute and Institute of Environmental Management & Assessment, 2013) (GLVIA3);
- Technical Guidance Note 06/19 Visual Representation of Development Proposals (The Landscape Institute, 2019).

GLVIA3 recommends that the SLVIA ‘concentrates on principles and process’ and ‘does not provide a detailed or formulaic ‘recipe’ to assess effects, it being the ‘responsibility of the professional to ensure that the approach and methodology adopted are appropriate to the task in hand’ (preface to the third edition).

The effects on the landscape resources and visual receptors (people) will be assessed by considering the proposed change in the baseline conditions (the impact of the development) against the type of landscape resource or visual receptor (including the importance and sensitivity of that resource or receptor). These factors are determined through a combination of quantitative (objective) and qualitative (subjective) assessment using professional judgement.

The assessment methodology is summarised in Figure 16.1.

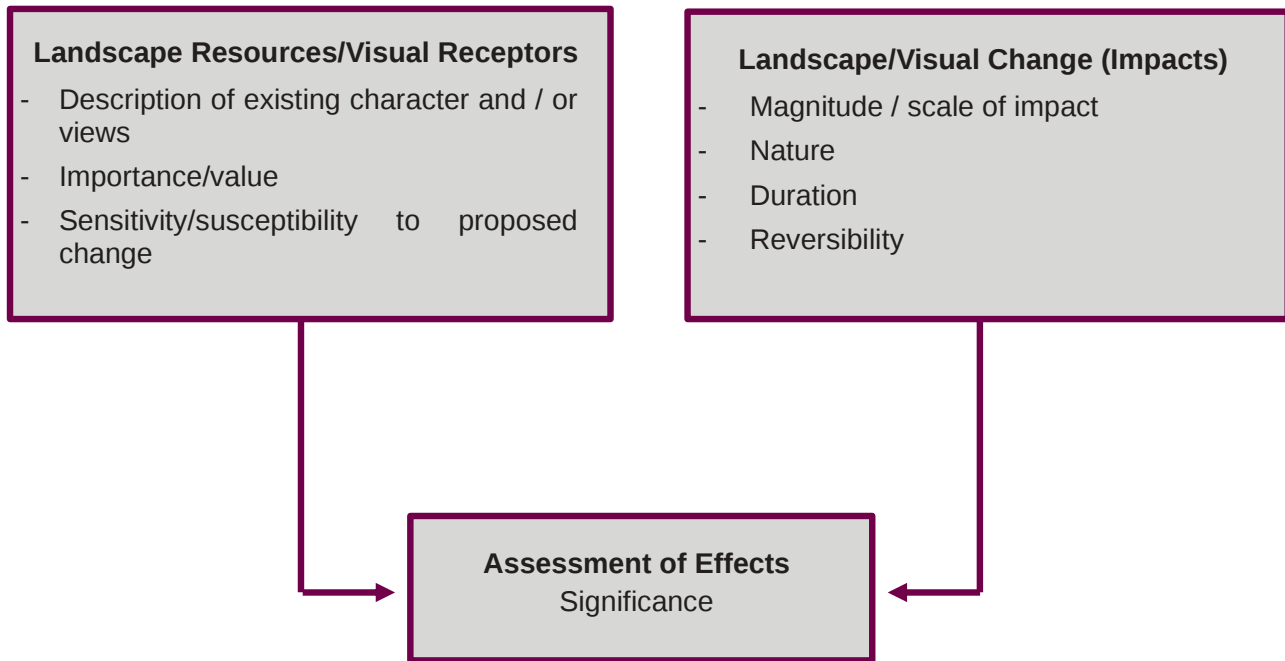


Figure 16.1: Assessment Methodology Summary

The SLVIA will consider the potential effects of the Proposed Development upon:

- Individual landscape features and elements;
- Seascape character;
- Landscape Character, and
- Visual amenity and the people who view the landscape.

The capacity of the seascape and or landscape to accept change of the type proposed by the Proposed Development will be assessed by reviewing the sensitivity of each seascape character and landscape character area.

Overall key landscape components are normally landform, vegetation, historical and townscape components. Landform relates to topography, drainage characteristics and geology. Historical and cultural components include historic landscapes, listed buildings, conservation areas and historic designed landscapes. Vegetation plays an important role in how the landscape and visual resources of an area are viewed and is an integral component of a landscape character.

16.5 Preliminary Mitigation Measures

16.5.1 Construction Phase

Mitigation or monitoring measures, associated with the construction phase of the Proposed Development, will be developed where appropriate to ensure that predicted effects on the seascape/ landscape and visual resources are reduced.

16.5.2 Operation Phase

Mitigation or monitoring measures, associated with the operational phase of the Proposed Development, will be developed where appropriate to ensure that the predicted effects on the seascape/ landscape and visual resources are, where possible, to insignificant levels.

16.6 Interactions

As such the requirement for a Landscape and Visual Impact Assessment has been scoped into the EIAR.

16.7 Summary of Scoping Exercise

The scoping exercise has concluded that because of potential seascape/ landscape and visual effects arising from the Proposed Development during the construction and operational phases that a Seascape, Landscape and Visual Assessment chapter should be scoped into the EIA.

16.8 References

- Guidelines for Landscape and Visual Impact Assessment, Third Edition (The Landscape Institute and Institute of Environmental Management & Assessment, 2013) (GLVIA 3);
- Pembrokeshire Local Development Plan 2013 (2013 – 2021) (Pembrokeshire County Council)
- Pembrokeshire Local Development Plan review 2017 (Pembrokeshire County Council)
- Pembrokeshire Coast National Park Local Development Plan September 2020 (Pembrokeshire Coast National Park Authority)
- Supplementary Planning Guidance: Seascape Character Assessment September 2023

17 WASTE

The purpose of this chapter of the EIA Scoping Report sets out the potential significant effects of the Proposed Development on waste effects, considering the potential effects from the construction and operation phases of the development, along with the datasets to be used, and how potentially significant effects will be assessed for the purpose of the EIA.

17.1 Baseline Scenario

The statutory basis for waste management policy in Wales comes from The Waste (England and Wales) Regulations 2011 (as amended). These Regulations transpose the EU Waste Framework Directive 2008/98/EC into English and Welsh Regulations. They apply the waste hierarchy as a priority order in waste prevention and management policy, whereby waste prevention and re-use is preferable to non-sustainable practices such as disposal to landfill. Waste collection authorities are required to collect waste paper, metal, plastic and glass separately.

The Environmental Permitting (England and Wales) Regulations 2010 as amended imposes obligations on waste operations that the recovery and disposal of waste requires a permit with the objective of preventing harm to human health and the environment. The Landfill Regulations 2002 as amended classifies landfills into hazardous, non-hazardous or inert which can only accept wastes based on their chemical composition.

The revised Towards Zero Waste: Overarching Waste Strategy for Wales 2010 was published on 21 June 2010. The Towards Zero Waste (TZW) strategy document sets out at a high level how waste will be managed in Wales to produce benefits not only for the environment, but also for the economy and social wellbeing. The policies for municipal waste set in TZW are based on those developed in 'Wise About Waste' and take full account of the principles and objectives enshrined in the revised EU Waste Framework Directive with its drive for waste prevention and to make the EU a high recycling society. There has been no change in direction; but ambitions are stretched further in order to deliver sustainable development outcomes. Towards Zero Waste plan delivers ministerial priorities for:

- Developing a circular economy
- The goals of the Wellbeing of Future Generations (Wales) Act 2015
- Green growth
- Resource efficiency
- Tackling poverty
- Increasing resilience for the Welsh economy

The plan sets the following targets:

- Wales has a recycling target of 70% by 2025
- Wales to become a zero waste nation by 2050

Wales Waste Prevention Programme (WPP) was a required of the revised Waste Framework Directive (2008/98/EC). The principles and actions in the WPP makes waste prevention an underpinning consideration across all sectors. The programme ensures that households and businesses in Wales are able to reduce:

- The quantity of waste, including through the reuse of products or extension of the life span of products.
- The adverse impacts of the generated waste on the environment and human health.
- The content of harmful substances in materials and products.

Planning Policy Wales (PPW) Edition 8, 2016 states that developments should maximise the use of renewable resources and the generation of waste should be minimised and where this is not possibly recycling and reuse of material arising from construction and demolition should be maximised.

The source of current waste arising is from the operation of the twice daily ferry service to Rosslare comprising public ferry passengers and accompanied and unaccompanied freight. The berth is also infrequently used by cruise vessels and historic steamboats. Current wastes arising is a typical mix of recyclable and residual material, accompanied by mixed litter generated from passenger footfall. The ferry service is operated by Stena Line who provide recycling facilities at their port locations. The Port implements a Waste Management Plan and the reception and disposal of waste from ships using the port is managed as per this plan. Waste landed by ships is mainly domestic waste (non-hazardous) and some special waste. All waste generated and/or recycled is currently handled, managed and disposed by licenced waste contractors.

17.2 Potentially Significant Effects

17.2.1 Construction Phase

The Proposed Development will generate waste arisings that will require management during the construction and operational phases.

The design of the proposed works involves various activities which are likely to have effects on the environment including. It is anticipated that the following proposed works will produce some quantities of waste during the construction process:

- Construction of a new run-up area built on reclaimed land retained using a rock armour revetment.
- Construction of a reinforced concrete bank seat structure to support the pontoon at the end of the reclamation.
- Relocation and installation of a floating pontoon and its supporting guide pile at Fishguard.
- Civil works will be required to enable access and utilisation of the pontoon for ferry traffic and pedestrian routes. Other works include the relocation of refuelling lines to service ships, drainage provision and ducting for communications.

Removal or existing temporary jack-up barge which will be floated away without the need for demolition. Waste materials will be generated as a result of the proposed demolition of the following structures:

- One of the existing 'buffer dolphin' tower structures and operations room;

- Steel access bridge and suspended concrete deck structure;
- Disused RNLI jetty to enable reclamation works.

Waste arising from the proposed demolition phase will consist of several sub-waste streams, which are often mixed, depending on the amount of selective demolition and separate collection that will take place.

The following dredging works are required:

- Dredging of soft material behind the new berth to facilitate the construction of the reclaimed land for new run up area.
- Dredging to a depth of -9mCD beneath the pontoon to ensure there is sufficient depth for operations.

It is proposed that dredged material will be dumped at sea.

17.2.2 Operation Phase

The Proposed Development consists of the replacement of the linkspan at the Fishguard Terminal so the current use of the site will not change therefore it will have a negligible impact on waste arisings.

Maintenance dredging of the harbour is required to maintain depths of -7.3mCD and -5.5mCD. It is proposed that dredged materials will be dumped at sea.

17.3 Inclusion or Exclusion from EIA

The effect of the construction phase and operational phase to waste arisings associated with the Proposed Development should be included in the EIA.

17.4 EIA Assessment Methodology

A quantitative assessment of the potential effects in relation to waste will be undertaken. The assessment comprises the following stages:

- A review of applicable legislation and policy;
- A review of the Proposed Development design, undertaken in consultation with the project design team to estimate the waste generation during the various phases of construction;
- Determining waste arisings from the development once operational;
- Consideration of potential interactions between proposals and the current site conditions;
- Identification of possible impacts;
- Assessment of impacts;
- Identification of measures and solutions to avoid, reduce or remedy potential impacts; and,
- Assessment of residual impacts, taking account of mitigation measures.

An assessment will be made of the potential environmental effects that are associated with the production, movement, transport, processing, and disposal of arisings from site during the construction phase of the Proposed Development.

17.4.1 Assessment Criteria

The Institute of Environmental Management and Assessment (IEMA) published guidance in March 2020 which sets out criteria for determining the value (sensitivity) of material resources and waste (including waste infrastructure).

The determination of significance, in most cases, will be the product of professional judgement of the Waste Topic Lead and EIA Co-ordinator, with specific regard to the sensitivity or importance (value) of receptors and the magnitude of impact on these receptors; and the extent to which primary, secondary and tertiary measures are expected to minimise impacts and effects.

Table 17.1 Importance or Sensitivity Matrix Definitions¹³

Importance / Sensitivity of Resource or Receptor

Across construction and or/operation phases, the baseline/future baseline (i.e., without development) or regional inert and non-hazardous landfill void capacity is expected to...

Negligible	Low	Medium	High	Very High
Remain unchanged or is expected to increase through a committed change in capacity.	Reduce minimally: by <1% as a result of wastes forecast.	Reduce noticeable: by 1-5% as a result of wastes forecast.	Reduce considerably: by 6-10% as a result of wastes forecast.	Reduce very considerably (by >10%); end during construction or operations; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.

17.4.2 Assignment of Magnitude

Where the construction phase is being assessed, the magnitude of impact is considered from the point at which the site access is gained, through site remediation, enabling works, and construction, to development commissioning.

Where the operational phase is being assessed, the magnitude of impact is assessed over the course of any one full and justifiably representative year within the first three years of commissioning.

Table 17.2 Magnitude of Impacts Definition

Assessment of Magnitude

<i>Inert and Non-Hazardous Void Capacity</i>				
No change	Negligible	Minor	Moderate	Major

¹³ Assessing sensitivity of waste (Section 10.2.2) IEMA Guide to Materials and Waste Environmental Impact Assessment, March 2020.

EIA SCOPING REPORT

Zero waste generation and disposal from the development	Waste generated by the development will reduce regional landfill void capacity baseline by <1%	Waste generated by development will reduce regional landfill void capacity baseline by 1-5%	Waste generated by the development will reduce regional landfill void capacity baseline by 6-10%.	Waste generated by the development will reduce landfill void capacity baseline by >10%.
---	--	---	---	---

Hazardous Void Capacity

No change	Negligible	Minor	Moderate	Major
Zero waste generation and disposal from the development	Waste generated by the development will reduce national landfill void capacity baseline by <0.1%	Waste generated by development will reduce national landfill void capacity baseline by <0.1-0.5%	Waste generated by the development will reduce national landfill void capacity baseline by >0.5-1%	Waste generated by the development will reduce national landfill void capacity baseline by >1%.

17.4.3 Significance of Effects

The assessment of significance will be based on the matrix outlined in Table 17.3 below.

Table 17.3 Assessment of Significance Matrix¹⁴

		Magnitude of Impacts				
Sensitivity (or value) of receptor		No Change	Negligible	Minor	Moderate	Major
	Very high	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

17.4.4 Determining whether an effect is significant, or not

Once the effect threshold has been determined, Table 17.4 provides how the Waste Topic Leads may determine whether environmental effects are potentially significant, or not.

Where a threshold is 'slight of moderate', i.e., transcends the significant – or not- effect boundary, professional judgement is used in combination with documented justification, to determine a final outcome. The cautious significant boundary applied responds to the need to developers and EIA practitioners to – in unison – continue to take an increasing responsibility for managing materials and wastes sustainably, with a view to incentivising sustainable resource management and (ultimately) a circular economy.

Table 17.4 Overall Significance of Effect¹⁵

¹⁴ IEMA Guide to Materials and Waste Environmental Impact Assessment, March 2020.

¹⁵ IEMA Guide to Materials and Waste Environmental Impact Assessment, March 2020.

Effect	Waste
Neutral	Not significant
Slight	
Moderate	Significant
Large	
Very Large	

17.5 Preliminary Mitigation Measures

17.5.1 Construction Phase

In relation to construction related waste, proposed preliminary mitigation measures will include the development of an onsite Construction Environmental Management Plan (oCEMP). The oCEMP will include a Site Waste Management Plan (SWMP) to manage all waste materials generated on site. The SWMP will be site-specific and prepared by the appointed contractor. The SWMP will be prepared in line with the waste management hierarchy with waste reduction and re-use on site being of primary focus. The appointed contractor for the site preparation, earthworks and construction phases of the works will be contractually obliged to follow the SWMP and all relevant legislation.

Where practicable, onsite reuse of dredged material and materials arising will be prioritised. Mitigation measures will require that waste is re-used, recycled, or recovered and to generally increase resource efficiency and ensure that all waste generated will be managed in accordance with the principles of the waste hierarchy, project and site management plans and relevant statutory requirements.

17.5.2 Operation Phase

In relation to operational related waste, the operational phase of the Proposed Development is likely to have a negligible impact on waste arisings as the current use of the site is not anticipated to change. It is proposed that operational preliminary measures will include the continued management of waste arisings from the ferry service by Stena Line. Waste management and disposal activities would be carried out by appropriately permitted organisations.

Where practicable, onsite reuse of dredged material will be prioritised. Dredge material should be managed in accordance with the relevant statutory requirements.

17.6 Summary of Scoping Exercise

The impact of waste arising from the construction and operational phase of the Proposed Development should be scoped into the assessment.

17.7 References

HEMA guide to: Materials and Waste in EIA Guidance for a proportionate approach, March 2020.

18 RISK OF MAJOR ACCIDENTS & DISASTERS

18.1 Baseline Scenario

The purpose of this chapter of the EIA Scoping Report sets out the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU(c) of the European Parliament UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.

18.2 Potentially Significant Effects

18.2.1 Construction Phase

Major accidents and natural disasters to which the Proposed Development may be vulnerable during construction and the outcomes of the assessment are set out in this section. All risk events identified have been considered and are presented in Table 18.1.

The table also includes the management and mitigation measures embedded in the Proposed Development to reduce these risks to as low as reasonably practicable.

Table 18.1: Construction Phase Screening, Risk Events and Mitigation and Management Measures

Feature	Source of Hazard	Consequence	Embedded Mitigation & Risk Management	Additional recommendation to reduce risk further
Building Infrastructure	Construction plant collision risk or incidents during the process	Potential for injuries / fatality	Follow appropriate health and safety construction method statements. Employment of approved contractor (s).	Further assessment
Additional HGV traffic on road network	Additional HGV traffic mixing with other road users.	Potential injury or fatality to a member of the public	Traffic Management Plans if required for specific busy times during delivery or other site activities.	Further assessment
Flood Risk	Presence of construction materials, equipment and potential contaminants.	Potential release of contaminants onto environmental receptors (for instance surface water (rivers) or ground water) outside construction site	Mitigation measures will be adopted as set out in the Outline CEMP. An emergency response plan for the construction phase to minimise the consequences should the risk occur – this is set out in the CEMP and will be adopted by the appointed contractor.	Further assessment

18.2.2 Operation Phase

Major accidents and natural disasters to which the Proposed Development may be vulnerable during operation (and maintenance) and the outcomes of the assessment are summarised in Table 18.2. Each specific "area" of the Proposed Development has been considered.

The table also includes the management and mitigation measures embedded in the Proposed Development to reduce these risks to as low as reasonably practicable. In all cases, compliance with legal and regulatory requirements is assumed.

Table 18.2: Construction Phase Screening, Risk events and Mitigation and Management Measures

Feature	Source of Hazard	Consequence	Embedded Mitigation	Additional recommendation to reduce risk further
Flood Risk	Extreme Weather	Potential damage to asset	Maintenance will also be required to ensure structural integrity.	Further assessment
Flood Risk	Land use change has potential to increase flood pattern in area.	Potential secondary effects on offsite environmental or anthropogenic receptors.	Maintenance will also be required to ensure structural integrity.	Further assessment
Fire risk	Operations within industrial land use facilities	Potential risk to human health/loss of life	All materials will be suitably fire rated in accordance with regulations and guidance. All operations will be undertaken in accordance with regulatory requirements.	Further assessment
Accident	Rail or Road accident	Potential risk to human health/loss of life and environmental damage	All operations will be undertaken in accordance with regulatory requirements	Further assessment
Accident	Creation of new Outfall	Potential risk to human health/loss of life and environmental damage	All operations will be undertaken in accordance with regulatory requirements	Further assessment

18.3 Inclusion or Exclusion from EIA

It is proposed to include a chapter specific to Accidents and Major Disasters for the proposed development.

18.4 EIA Assessment Methodology

18.4.1 The EIA Directive 2014/EU

The requirement to consider the vulnerability of a project (or Scheme) to either major accidents or disasters or both results from the 2014 amendment to the EIA Directive (2014/52). The Directive requires:

“a high level of protection of the environment, precautionary actions need to be taken for certain projects which, because of their vulnerability to major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes) are likely to have significant adverse effects on the environment.”

Reg 5(2) and (3) of the EIA Regs:

5(2) The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of the Proposed Development on the following factors—

(a) population and human health;

(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC(16) and Directive 2009/147/EC(17);

(c) land, soil, water, air and climate;

(d) material assets, cultural heritage and the landscape ; and

(e) the interaction between the factors referred to in sub-paragraphs (a) to (d).

(3) The effects referred to in paragraph (2) on the factors set out in that paragraph shall include—

(a) the operational effects of the proposed development, where the Proposed Development will have operational effects; and

(b) the expected effects deriving from the vulnerability of the Proposed Development to risks of major accidents or disasters that are relevant to the proposed development.

Schedule 4 para 5 of the EIA Regs –

5. A description of the likely significant effects of the development resulting from, inter alia:...

(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);...

The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development...

Schedule 4 para 8 of the EIA Regs:

8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks to major accidents and/or disasters which are relevant to the development concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of the Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.

18.4.2 European Union Guidance 2017 - Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)

The 'European Union Guidance 2017 - Environmental Impact Assessment of Projects, Guidance on the preparation of the Environmental Impact Assessment Report' provides useful guidance on the key changes from Directive 2011/92/EU as amended by Directive 2014/52/EU. It states that two key considerations relating to major events emerge under the new directive:

- The Project's potential to cause either accidents or disasters or both; and,
- The vulnerability of the Project to either potential disasters or accidents or both.

The guidance goes on to state that, after risks have been identified and assessed, measures to control and manage their significant impacts should then be taken, to ensure compliance with existing minimum prevention standards, safety requirements, building codes and improved land use planning, as well as others. It also states that measures should be captured in a coherent risk management plan that also includes sufficient preparedness and emergency planning measures.

18.4.3 Institute of Environmental Management and Assessment (IEMA), Major Accidents and Disasters in EIA: A Primer, September 2020

This primer from IEMA aims to increase appreciation of the major accidents and/or disasters EIA topic and its application. The document suggests an assessment methodology based on known current practice within the UK to date and identifies key terminology that can be used. It has been structured around a typical assessment approach and offers a proportionate method for considering major accidents and/or disasters through screening, scoping, and assessment. Reference has been made to this document and the advice contained within in it in this Chapter.

18.5 Preliminary Mitigation Measures

18.5.1 Construction Phase

Embedded mitigation with construction methods will be detailed in the OCEMP for the project. To be further defined at EIA stage.

18.5.2 Operation Phase

Not detailed at this stage, to be further refined at EIA stage and during development design.

18.6 Interactions

Not known

18.7 Summary of Scoping Exercise

Based on professional judgement, accidents or major disasters are events or situations that have the potential to affect the Proposed Development causing immediate or delayed serious damage to one or more of the following: human health; welfare; and the environment. In the context of this section, major events are events which rarely occur due to the mitigation, management or regulatory controls implemented to prevent them. By definition, if a major event were to occur the likely worst case would always be a major adverse effect.

The OCEMP produced for the Proposed Development will highlight emergency procedures. The OCEMP describes the arrangements in place to manage the potential environmental impacts of construction and identifies measures to be taken to avoid and / or in the event of an environmental incident or emergency. All construction staff, including sub-contractors, will receive structured training on the requirements of the OCEMP and final CEMP and the associated environmental control plans, as developed. They will also be required to attend a site induction which will include the key environmental issues identified for the Proposed Development. The briefing will emphasise the methods and working practices which must be employed to protect the environment, including emergency clean up procedures for reporting and dealing with environmental incidents. A standalone accidents and major disasters chapter is scoped in to the EIAR.

18.8 References

None

19 CONCLUSION

This EIA Scoping Report has been prepared by RPS on behalf of Stena Line in respect of the proposed Linkspan at Fishguard, Pembrokeshire. It provides a robust roadmap for the preparation of an EIA Report and will inform a future application for marine consent.

The Scoping Report has identified potentially significant environmental effects which require detailed examination as part of EIA, and those topics which can be scoped out of a future EIA.

Table 19-1 below outlines those potential environmental effects which have been scoped in or out of the EIA, based on the analysis within this report.

Table 19-1: Summary of EIA Scoping

Report Section	Environmental Effect	Scoped In
3	Population & Human Health	✓
4	Biodiversity – Aquatic	✓
5	Biodiversity – Terrestrial	✓
6	Coastal Processes	✓
7	Water Resources and WFD	✓
8	Flood Risk	✓
9	Noise and Vibration	✓
10	Underwater Acoustics	✓
11	Air Quality and Climate	✓
12	Archaeology, Architectural & Cultural Heritage	✓
13	Soils, Geology and Hydrogeology	✓
14	Material Assets	✓
15	Transport	✓
16	Seascape, Landscape & Visual	✓
17	Waste	✓
18	Risk of Major Accidents & Disasters	✓