NPWS
An tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra
National Parks and Wildlife Service

Application for Derogation

Under Regulation 54 & 54A of the European Communities (Birds and Natural Habitats) Regulations 2011, as amended

Revision 2.0 – July 2025

- This form can be used by any individual or Company applying for a derogation under Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011 ("the Regulations") **or** any individual applying on behalf of the Minister for Housing, Local Government and Heritage under Regulation 54(A) of the Regulations.

- Note this application form is not for Domestic Dwelling Derogations (bats within private homes) which can be found here > (3D Application Form)

- Please ensure that you answer questions fully in order to avoid delays and/or your application being rejected on the basis that it does not contain sufficient information and detail for the application to be considered further.

- Please read and familiarise yourself with the NPWS Guidance on Applications for Regulation 54 Derogations for Annex IV species: Guidance for Applicants

- Please read and familiarise yourself with the European Commission's Guidance document on the strict protection of animal species of Community interest under the Habitats Directive

- Please also note that the responses to these questions are supplementary to the documentation required for the NPWS to be in a position to consider your application. A complete application should include both the application form and an associated report. Failure to supply either will result in your application being returned and/or refused.

- In circumstances in which a derogation is given on foot of this application, the Applicant is responsible for ensuring compliance with the conditions of any such derogation, even though they may employ another person to act on their behalf. To carry out any activity without, or not in accordance with, a derogation granted under regulation 54 or 54A of the Regulations constitutes a criminal offence, subject to prosecution.

- If you experience any problems filling in this form, please contact the Wildlife Licensing Unit: reg54derogations@npws.gov.ie

- Please note – applications, associated reports and derogations will be published on the NPWS website and/or the Department's Open Data website.

- Where any applicant is applying for a derogation to carry out surveys, please ensure to list all qualified ecologists and trainees under their supervision. See section 1(c) of Part A.

Part A: The Applicant - Personal Details

These questions relate to the person responsible for any proposed works and who will be the **Applicant**. **If this application is being submitted on behalf of a third party, please also complete Part B below.**

1. (a) Name of Applicant

Title (Mr/Mrs/Miss/Ms/Dr)	Forename(s)	Surname
N/A	Erlend	Christiansen
(b) Company Name, if applicable	Codling Wind Park Limited	
(c) Address Line 1	Five South County	
Address Line 2	2nd Floor, South County Business Park	
Town	Leopardstown,	
County	Dublin	
Eircode	D18 H5H9	
(d) Contact number	086 8474000	
(e) Email address	erlend.christiansen@codlingwindpark.ie	
(f) Address where works are to be carried out if different from (b) above.		
Address Line 1	Off the coasts of Co. Wicklow and Co. Dublin. Refer to Figure 1.1 in Annex IV Risk Assessment	
Address Line 2		
Town		
County		
Eircode		

Details of Person Submitting Application on Behalf of Applicant/Derogation Holder

Information relating to the person (e.g. ecologist) responsible for submitting the application on behalf of the applicant should be entered below:

1. (b) Name of Person/Ecologist

Title (Mr/Mrs/Miss/Ms/Dr)	Forename(s)	Surname
	n/a	
(b) Company Name		
Address Line 1		
Address Line 2		
Town		
County		
Eircode		
(c) Contact number		
(d) Email address		

(e) Relationship to Applicant	

For Survey Derogations Only

1. (c) Please Indicate the Names to Appear on the Derogation Along with the Position Held e.g. Supervisor/Trainee

Forename(s)	Surname	Supervisor or Trainee
n/a		

Part B: Species covered by the Derogation

1. **Species of Animal:** Please indicate which species is/are the subject of the application:

- Bat ☐
- Otter ☐
- Kerry Slug ☐
- Natterjack Toad ☐
- Dolphin ☒
- Whale ☒
- Turtle ☐
- Porpoise ☒

2. Please detail the exact species (scientific name): *Harbour Porpoise (Phocoena phocoena), Bottlenose Dolphin (Tursiops truncates), Common Dolphin (Delphinus delphis), Risso's dolphin (Grampus griseus), Minke Whale (Balaenoptera acutorostrata)*

3. Please provide the maximum number of individuals affected* Please refer to Section 6 below

4. Please provide the maximum number of breeding or resting sites affected* Please refer to Section 6 below

5. Please provide the maximum number of eggs to be taken* n/a

6. Please provide the maximum number of eggs to be destroyed* n/a

*If no figures can be provided for the maximum number of individuals, breeding sites, resting places and eggs to be covered by the derogation please provide reasons why.

Please refer to the Annex IV Risk Assessment (Document Number: CWP-CWP-CON-08-05-REP-0002)

7. **Species of Plant:** Please indicate which species is/are the subject of the application:

- Killarney Fern ☐
- Slender Naiad ☐
- Marsh Saxifrage ☐

8. If you previously received a derogation for any species of animal or plant, please state derogation number and confirm that you have made a return to NPWS on the numbers actually affected by that derogation.

N/A

9. **Proposed Dates for Activities:** Please indicate the timeframe that you propose to carry out the activities. Dates set by NPWS may differ from dates proposed here. *A derogation will only be issued with a start and end date within a calendar year.*

Start Date - Subject to obtaining planning permission
End Date - Subject to obtaining planning permission

Part C: Nature of the Derogation.

1. Please tick which prohibition(s) the application for a derogation relates to:

Regulation 51	
Deliberately capture or kill any specimen of the relevant species in the wild	☐
Deliberately disturb these species particularly during the period of breeding, rearing, hibernation and migration	☒
Deliberately take or destroy eggs of the relevant species in the wild	☐
Damage or destroy a breeding or resting place of such an animal, or	☐
Keep, transport, sell, exchange, offer for sale or offer for exchange any specimen of the relevant species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive.	☐
Regulation 52	
Deliberately pick, collect, cut, uproot or destroy any specimen of these species in the wild, or	☐
Keep, transport, sell, exchange, offer for sale or offer for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 13(1)(b) of the Habitats Directive.	☐

Further information should be provided in the format set out in Part E: Template for Supporting Information

Part D: Derogation Tests

Note: The following <u>summary</u> information must be provided by the applicant in all cases, and will be used to determine if a derogation can be provided. Further information must be provided in the format set out in Part E: Template for Supporting Information

Test 1: Reason for the Derogation

1. Please tick which reason(s) below explains how this application qualifies under Regulation 54(2)(a-e) or Regulation 54A(2)(a-e) of the European Communities (Birds and Natural Habitats) Regulations: Please provide a summary of how the application meets the 3 conditions required to provide a derogation. Note that in all cases additional information must be provided (see Part E).

a.	In the interests of protecting wild flora and fauna and conserving natural habitats **(proceed to 2a)**	☐
b.	To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property **(proceed to 2b)**	☐
c.	In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment **(proceed to 2c)**	☒

d.	For the purpose of research and education, of re-populating and re-introducing these species and for the breeding operations necessary for these purposes, including artificial propagation of plants **(proceed to 2d)**	☐
e.	To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species to the extent specified therein, which are referred to in the First Schedule **(proceed to 2e)**	☐

2a. In the interests of protecting wild flora and fauna and conserving natural habitats:

i) Please state the wild flora, fauna or habitats that require protection and /or conservation.

n/a

ii) Please summarise how the interests of protection and conservation of the species/habitat concerned justify affecting another species under strict protection.

n/a

2b) To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property:

i) Please summarise the nature of the potential damage, why it is considered “serious” and how this outweighs the conservation interest of the species under strict protection.

n/a

2c) In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment:

i) Where the reason is for public health and public safety, summarise the evidence provided to support this reason (e.g. documentary evidence of the risk from a chartered structural engineer, tree surgeon, Garda Síochána, qualified health professional etc.)

n/a

ii) Where the reason is for “other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment”, summarise the nature of the public interest and how this outweighs the conservation interest of the species under strict protection.

Please refer to the following assessment: Annex IV Risk Assessment (Document Number: CWP-CWP-CON-08-05-REP-0002

2d) For the purpose of research and education, of re-populating and re-introducing these species and for the breeding operations necessary for these purposes, including artificial propagation of plants:

i) Please summarise the objective(s) of the proposed activities making reference to those listed above and how the the purpose of such activities overrides the interests of strict protection of the species. [1]

n/a

2e) To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species to the extent specified therein, which are referred to in the First Schedule

i) Please clearly state the objective of the activity and verify that this reason is being chosen as the objective of the activity does not match reasons a-d listed above.

n/a

ii) Please summarise how the activity will result in the taking or keeping of limited numbers of specimens of the species, how it will be applied on a selective basis and to a limited extent, and how it will be done under strictly supervised conditions.

[1] Note that this reason may be appropriate for when research involves surveys that may cause disturbance of species under strict protection. But the sole purpose of the surveys should be for research and education or the other reasons listed above under 1d.

n/a

Test 2: Absence of Alternative solutions

2. Please summarise the alternative solutions that have been considered and why these solutions are deemed unsatisfactory. This must include the option of the "do-nothing" alternative and evidence should be objective and robust. Note that in all cases further information must be provided in the format set out in Part E: Template for Supporting Information.

Alternative Solution	Reasons for "Unsatisfactory"
Do-Nothing Please refer to the following assessment: Annex IV Risk Assessment (Section 6) (Document Number: CWP-CWP-CON-08-05-REP-0002	

* Please insert additional rows above if needed

Test 3: Impact of a Derogation on Conservation Status

3. Please summarise the possible impacts on the population of the species that is subject to this application, taking into account all the mitigation and/or compensation measures that are to be undertaken. Evidence that such mitigation has been successful elsewhere should be provided where relevant. Mitigation measures being relied upon must ensure that the derogation will not be detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range. Note that in all cases further information must be provided in the format set out in Part E: Template for Supporting Information.

Please refer to the following assessment: Annex IV Risk Assessment (Section 6) (Document Number: CWP-CWP-CON-08-05-REP-0002

Part E: Template for Supporting Information

This application form should provide a summary of the evidence that the applicant has provided. In all cases, it is necessary to provide separate supporting information so that the assessment of the application can be undertaken in a robust and comprehensive manner. Applicants should refer to guidance provided by the NPWS and the European Commission whilst preparing this application form and the supporting information.

It is essential that supporting information is prepared in a consistent manner using the template below so that NPWS officials assessing the application can locate the relevant evidence to determine if the three Tests can be met. Failure to provide sufficient evidence will result in the application being refused.

The structure of the Supporting Information should be as follows:

1) Table of Contents

2) Introduction
    a. Objective of the proposed works (for example, as part of construction of a national road, repair of roofing, undertaking surveys etc.)
    b. Name, qualifications and relevant experience of scientific staff, including trainees, (e.g. ecologist) involved in the preparation of the application and those responsible for carrying out the proposed activity.
    c. If this application is for the carrying out of surveys that may cause disturbance, qualifications of all involved must be provided and trainees must be clearly identified.

3) Background to proposed activity including location, ownership, type of and need for the proposed activity, planning history, policy context, zoning in relevant Development plan (or equivalent), etc.

4) Full details of proposed activity to be covered by the derogation (including a site plan). The site may be inspected by an NPWS representative, so the details given should clearly reflect the extent of the project. This information will be used to compare site conditions with the Method Statement.

5) Ecological Survey and site assessment (Not required for applications to carry out surveys)
    a. Pre-existing information on species at location and environs.
    b. Status of the species in the local/regional area (relevant to the consideration of the impact on the population at the relevant geographic scale (Test 3))
    c. Objective(s) of survey
    d. Description of Surveys Area
    e. Survey methodology (including evidence as to how the methodology represents best practice and is appropriate to the Objective). Methodology should include survey maps, details of timing, climate, equipment used and identify any uncertainties or difficulties encountered.
    f. Survey results including raw data, any processed or aggregated data, and negative results as appropriate. Photographs and maps must be provided where site-specific features are referred.
    g. Population size class assessment.

6) Evidence to support the Derogation Tests

    a. Test 1 - Reason for Derogation:
        i. There should be a clear explanation as to why a specific reason(s) has been selected in the application form.

ii. Applicants are advised to read the guidance published by the NPWS 'Guidance on Applications for Regulation 54 Derogations for Annex IV species: Guidance for Applicants" with specific reference to Section 3.1.

b. Test 2 - Absence of Alternative Solutions
   i. Applicants must list the alternatives to the proposed activity that have been considered, including the do-nothing alternatives in a clear and objective manner. A basic requirement is that these alternatives should be compared in terms of their impact on the species subject to strict protection. It should be clear to NPWS officials as to why the chosen approach has been selected.
   ii. Applicants are advised to read the guidance published by 'Guidance on Applications for Regulation 54 Derogations for Annex IV species: Guidance for Applicants" with specific reference to Section 3.2.

c. Test 3 - Impact of a derogation on Conservation Status
   i. Applicants should include details of the population at the appropriate geographic scale and an evaluation of how the proposed activity will affect the conservation status both before and after mitigation measures have been applied.
   ii. Full and detailed descriptions of proposed mitigation measures that are relevant to the potential impact on the target species. Evidence that such mitigation has been successful elsewhere should be provided, where available.
   iii. Applicants are advised to read the guidance published 'Guidance on Applications for Regulation 54 Derogations for Annex IV species: Guidance for Applicants" with specific reference to Section 3.3.

7) Monitoring the impacts of the derogations
   a. Applicants must include details of how they propose to verify whether the derogations have been implemented correctly and whether they achieved their objective, using scientifically based evidence, and, if necessary, how the applicant will take corrective measures where required.
   b. Applicants should provide details of proposed reports to be submitted to the NPWS including the results of monitoring.
   c. Applicants are advised to read the guidance published by the European Commission "Guidance document on the strict protection of animal species of Community interest under the Habitats Directive" with specific reference to Section 3.4.

Part F. Declaration

I declare that all of the foregoing particulars are, to the best of my knowledge and belief, true and correct. I understand that the deliberate killing, injuring, capturing or disturbing of protected species, or damage or destruction of their breeding sites or resting places or the deliberate taking or destroying of eggs is an offence without a derogation and that it is a legal requirement to comply with the conditions of any derogation I may be granted following this application. I understand that NPWS may visit to check compliance with a derogation.

Please note that under Regulation 5 of the European Communities (Birds and Natural Habitats) Regulations 2011-2021 an authorised officer may enter and inspect any land or premises for the purposes of performing any of their functions under these Regulations or for obtaining any information which they may require for such purposes.

Signature of the Applicant  **Date** 19/02/2026

Name in BLOCK LETTERS Erlend Christiansen

PRIVACY STATEMENT

See Privacy Statement at www.npws.ie/licences

npws.ie

Department of Housing, Local Government and Heritage

An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

Annex IV Risk Assessment

Document Number: CWP-CWP-CON-08-05-REP-0002

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Document Classification n/a

Codling Wind Park
Annex IV Risk Assessment

Document No.	CWP-CWP-CON-08-05-REP-0002
Date:	[18/02/2026]

Prepared by:	Tamsin Watt and Sean Leake	Codling Wind Park Limited
Approved by:	Lis Royle	Codling Wind Park Limited

Revision	Document date	Purpose of revision
Rev A	February 2026	Final draft

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Abbreviations

Abbreviation	Term in Full
ADD	Acoustic Deterrent Device
BCT	Bat Conservation Trust
BEIS	Department for Business Energy and Industrial Strategy
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CPOD	Cetacean Porpoise Detector
CSIP	Cetaceans Strandings Investigation Programme
CTV	Crew Transfer Vessel
CWP	Codling Wind Park
DAHG	Department of Arts, Heritage and the Gaeltacht
DAS	Digital Aerial Surveys
dB	Decibel
DEFRA	Department for Environment Food and Rural Affairs
EC	European Commission
ECC	Export Cable Corridor
ECoW	Ecological Clerk of Works
EDR	Effective Deterrent Range
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMF	Electro Magnetic Field
EPA	Environmental Protection Agency
EPS	European Protected Species
EU	European Union
EVMP	Ecological Vessel Management Plan
FCS	Favourable Conservation Status
GHG	Greenhouse Gas
GW	Gigawatt
HF	High Frequency Cetacean
HWM	High Water Mark
Hz	Hertz
IAC	Inter Array Cable

IAMMWG	Inter-Agency Marine Mammal Working Group
IMO	International Maritime Organisation
INNS	Invasive non-native species
IPCoD	Interim Population Consequences of Disturbance
IR	Infrared.
IROPI	Imperative Reasons of Overriding Public Interest
IWDG	Irish Whale and Dolphin Group
JNCC	Joint Nature Conservation Committee
JUV	Jack Up Vessel
kHz	Kilohertz
kJ	Kilojoule
km	Kilometre
kV	Kilovolt
LED	Light Emitting Diode
LoD	Limit of Deviation
LF	Low Frequency Cetacean
MAGIC	Multi-Agency Geographic Information for the Countryside
MAP	Maritime Area Planning
MARPOL	The International Convention for the Prevention of Pollution from Ships
MBES	Multi-Bean Echo Sounder
MICE	Mammals in a Sustainable Environment
MMMP	Marine Mammal Mitigation Protocol
MMO	Marine Mammal Observer
MNR	Marine Noise Registry
MU	Management Unit
MW	megawatts
NIS	Natura Impact Statement
NISA	North Irish Sea Array
nm	Nautical Mile
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NPWS	National Parks and Wildlife Services
NRA	National Roads Authority
NRA	Navigation Risk Assessment

OECC	Offshore Export Cable Corridor
OfTI	Offshore Transmission Infrastructure
ORE	Offshore Renewable Energy
OTI	Onshore Transmission Infrastructure
OWF	Offshore wind farm
O&M	Operations and maintenance
OSS	Offshore substation structure
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
Pa	Pascal
PAM	Passive Acoustic Monitoring
PCW	Phocid Carnivores in Water
PEA	Preliminary Environmental Appraisal
PTS	Permanent Threshold Shift
SAC	Special Area of Conservation
SBI	Sub Bottom Imager
SBP	Sub Bottom Profiler
SCANS	Small Cetaceans in European Atlantic Waters and North Sea
SEL	Sound Exposure Level
SNCB	Statutory Nature Conservation Body
SOV	Service Operation Vessel
SPL	Sound Pressure Level
SSC	Suspended Sediment Concentration
SSS	Side Scan Sonar
TJB	Transition joint bay
TTS	Temporary Threshold Shift
UK	United Kingdom
UV	Ultraviolet
UHRS	Ultra-high Resolution Seismic Surveys
USBL	Ultra-short Base Line
UWN	Underwater Noise
UXO	Unexploded Ordnance
VHF	Very High Frequency Cetacean
WTG	Wind turbine generator
UXO	Unexploded Ordnance

Definitions

Glossary	Meaning
Array site	The area within which the wind turbine generators (WTGs), inter-array cables (IACs) and the offshore substation structures (OSSs) are proposed.
Codling Wind Park (CWP) Project	The proposed development as a whole is referred to as the Codling Wind Park (CWP) Project, comprising of the offshore infrastructure, the onshore infrastructure and any associated temporary works.
Codling Wind Park Limited (CWPL)	A joint venture between Fred. Olsen Seawind (FOS) and Électricité de France (EDF) Renewables, established to develop the CWP Project.
Environmental Impact Assessment (EIA)	A systematic means of assessing the likely significant effects of a proposed project, undertaken in accordance with the EIA Directive and the relevant Irish legislation.
Environmental Impact Assessment Report (EIAR)	The report prepared by the Applicant to describe the findings of the EIA for the CWP Project.
Export cables	The cables, both onshore and offshore, that connect the offshore substations with the onshore substation.
Generating station	Comprising the wind turbine generators (WTGs), inter array cables (IACs) and the interconnector cables.
High water mark (HWM)	The line of high water of ordinary or medium tides of the sea or tidal river or estuary.
Inter-array cables (IACs)	The subsea electricity cables between each WTG between and the OSSs.
Interconnector cables	The subsea electricity cables between OSSs
Landfall	The point at which the offshore export cables are brought onshore and connected to the onshore export cables via the transition joint bays (TJB). For the CWP Project The landfall works include the installation of the offshore export cables within Dublin Bay out to approximately 4 km offshore, where water depths that are too shallow for conventional cable lay vessels to operate.
Maritime Area Planning (MAP) Act 2021	An Act to regulate the maritime area, to achieve such regulation by means of a National Marine Planning Framework, maritime area consents for the occupation of the maritime area for the purposes of maritime usages that will be undertaken for undefined or relatively long periods of time (including any such usages which also require development permission under the Planning and Development Act 2000) and licences for the occupation of the maritime area for maritime usages that are minor or that will be undertaken for relatively short periods of time
Offshore development area	The total footprint of the offshore infrastructure and associated temporary works including the array site and the OECC.
Offshore export cables	The cables which transport electricity generated by the wind turbine generators (WTGs) from the offshore substation structures (OSSs) to the TJBs at the landfall.

Glossary	Meaning
Offshore export cable corridor (OECC)	The area between the ~~A~~rray ~~S~~ite and the landfall, within which the offshore export cables will be installed along with cable protection and other temporary infrastructure for construction.
Offshore infrastructure	The permanent offshore infrastructure, comprising of the WTGs, IACs, OSSs, interconnector cables, offshore export cables and other associated infrastructure such as cable and scour protection.
Offshore substation structure (OSS)	A fixed structure located within the array site, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore.
Operations and maintenance (O&M) activities	Activities (e.g., monitoring, inspections, reactive repairs, planned maintenance) undertaken during the O&M phase of the CWP Project.
Parameters	Set of parameters by which the CWP Project is defined, and which are used to form the basis of assessments.
Planning application boundary	The area subject to the application for development consent, including all permanent and temporary works for the CWP Project.
Wind turbine generator	All the components of a wind turbine, including the tower, nacelle, and rotor.
Zone of Influence (ZoI)	Spatial extent of potential impacts resulting from the project.

1 INTRODUCTION

1.1 The CWP Project

1. Codling Wind Park Limited (CWPL) is proposing to develop the Codling Wind Park (CWP) Project, an offshore wind farm (OWF) located in the Irish sea approximately 13 - 22 kilometre (km) off the east coast of Ireland, at County Wicklow.
2. The CWP Project has an expected generating capacity of 1,300 megawatts (MW). A ten year planning permission is sought, with an operation lifetime of 25 years. The 25 year operational lifetime shall commence on full commercial operation of the project.
3. This document provides information to support a risk assessment for Annex IV species under Article 12 of the Habitats Directive (92/43/EEC), to determine whether a derogation licence is required for the CWP Project and if so, whether the criteria for derogation are met.

1.2 Purpose and objective of this Document

4. A number of plant and animal species are legally protected in Ireland. Some of these species are included in a system of strict protection under the requirements of Articles 12, 13 and 16 of the Habitats Directive (92/43/EEC) and are referred to as 'Annex IV species'. The list of Annex IV species which occur in Ireland and its waters includes all cetaceans (whales, dolphins and porpoises), marine turtles, otter and all bat species.
5. The Habitats Directive also contains obligations in relation to the strict protection of Annex IV species wherever they occur, which are set out in Article 12 and Article 13 of the Directive. These obligations require each Member State to establish a system of strict protection for the species listed in Annex IV of the Directive. Derogations from these strict protection requirements can only occur in certain circumstances, and a derogation licence must be applied for under Regulation 54 of the EC (Birds and Natural Habitats) Regulations 2011.
6. The granting of another statutory consent (e.g., a maritime usage licence or planning permission) does not remove the obligation to obtain a derogation licence, under Regulation 54 of the EC (Birds and Natural Habitats) Regulations 2011. In Ireland applications for a derogation licence are made to the National Parks and Wildlife Service (NPWS) on behalf of the Minister. If satisfied that an application meets the criteria for derogation, the Minister may grant a derogation licence, which may be subject to certain conditions, restrictions, limitations, or requirements as the Minister considers appropriate.
7. This document has been prepared to provide the necessary information to NPWS to assist them in making an informed decision on the likely impact of the CWP Project on Annex IV species, to determine whether a derogation licence is required, and if the derogation licence can be granted.
8. This document is informed by and uses information from the CWP Project planning application, specifically the information contained within the Environmental Impact Assessment Report (EIAR), Natura Impact Statement (NIS), the Planning Report and supporting documentation. The following chapters form the basis of the information presented in this document, and this document should be read in conjunction with:
    - CWP Project Planning Report (CWP Project Planning Documents);
    - EIAR Volume 3, Chapter 3 Site Selection and Alternatives;
    - EIAR Volume 3, Chapter 4 Project Description;
    - EIAR Volume 3, Chapter 9 Fish, Shellfish, and Turtles Ecology;

- EIAR Volume 4, Appendix 9.4 Underwater Noise (UNW) Assessment;
- EIAR Volume 3, Chapter 11 Marine Mammals;
- EIAR Volume 4, Appendix 11.3 Baseline Technical Report;
- EIAR Volume 3, Chapter 13 Offshore Bats ;
- EIAR Volume 3, Chapter 21 Onshore Biodiversity;
- EIAR Volume 3, Chapter 24 Noise and Vibration;
- NIS Volume 4, Assessment of Implications for Special Areas of Conservation;
- NIS Volume 7, Appendices;
- CWP Marine Mammal Mitigation Protocol (CWP Project Supporting Documents);
- CWP Project Rehabilitation Schedule (CWP Project Supporting Documents); and
- CWP Decommissioning Programme (CWP Project Support Documents).

1.3 Structure of this Document

9. The structure of this document is set out as follows:

- Section 2 sets out the legislation and guidance relevant to the protection of Annex IV species and the requirements for an application for a derogation licence.
- Section 3: sets out the scope of the assessment including, the Annex IV species identified, and potential impact pathways assessed. This section also signposts to where information to support the assessment and derogation licence application is located.
- Section 4: provides an overview of the CWP Project, a description of the project design parameters relevant to the Annex IV risk assessment and a summary of the mitigation measures relevant to Annex IV species identified.
- Section 5: presents the Annex IV risk assessment for the species and impacts identified.
- Section 6: presents a summary of derogation licence requirements, including imperative reasons of overriding public interest and assessment of alternatives.
- Section 7: provides a summary of the assessment undertaken and conclusions.

1.4 Experience and Qualifications

This document has been prepared by CWPL with support and input from environmental specialists and ecologists including the Sea Mammals Research Unit (SMRU) and Natural Power Consultants (NPC). SMRU is one of the foremost institutions carrying out research on marine mammals in the World and provides the UK's main science capability in the field of marine mammal biology. NPC is a leading independent, international renewable energy consultancy and service provider with over 30 years of experience. They provide comprehensive, 360-degree technical and environmental support for onshore/offshore wind, solar, and battery storage projects, covering the entire lifecycle from feasibility and development to construction and operations.

2 PLANNING HISTORY AND POLICY CONTEXT

10. This section sets out the planning history, key legislation and guidance relevant to the strict protection of Annex IV species, the requirement for derogation and the conditions that must be met to enable a derogation licence to be granted. Signposting to the specific regulation requirements, based on the relevant legislation and guidance described in this section is provided in Table 3-1, Section 3.

2.1 Planning and Legislative Context

11. All cetaceans (whales, dolphins and porpoises), marine turtles, otter and all bat species are listed under Annex IV of the Habitats Directive (Council Directive 92/43/EEC) which covers animal and plant species of community interest in need of strict protection.
12. The Habitats Directive has been transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations, 2011-2021 (the Regulations).
13. Regulation 51 of the Regulations provides for the strict protection of Annex IV species. The aim of the strict protection measures is that the species in question will reach and remain at favourable conservation status (FCS). FCS is defined in the Habitats Directive as when:
    a) Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable element of its natural habitats;
    b) The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
    c) There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.
14. Under Regulation 51 it is an offence to do any of the following without first obtaining a derogation licence from the Minister in accordance with Regulation 54:
    a) Deliberately capture or kill any specimen of these species in the wild;
    b) Deliberately disturb these species particularly during the period of breeding, rearing, hibernation and migration;
    c) Deliberately take or destroys eggs of those species from the wild;
    d) Deterioration, or destruction of a breeding site or resting place of such an animal; or
    e) Keep, transport, sell, exchange, offer for sale or offer for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive.
15. The following definition and commentary apply to use of the word 'deliberately'[1]:

    "Deliberate actions are to be understood as actions by a person who is aware that these actions will lead to capturing or killing a species listed in Annex IV, or consciously accepts the possibility of such an offence.

    In other words, the provision applies not only to a person who fully intends to capture or kill a specimen of a protected species but also to a person who is sufficiently informed and aware of the consequences his

[1] https://op.europa.eu/en/publication-detail/-/publication/bbc7ace0-27e2-11ec-bd8e-01aa75ed71a1/language-en

or her action will most likely have and nevertheless still performs the action, which leads to the capturing or killing of specimens (e.g., as an unwanted but accepted side effect)."

16. With reference to disturbance, under the terms of Article 12, relevant guidance describes it as constituting:

> "Any activity that deliberately disturbs a species to the extent that it may affect its chances of survival, reproductive ability or breeding success, or that leads to a reduction in the area occupied by the species or to its relocation or displacement."

17. A case-by-case approach is required to determine whether certain actions are causing deliberate disturbance, particularly during the period of breeding, rearing, hibernation and migration. This will vary according to the species in question and its sensitivity. It will also depend on the duration, intensity and frequency of the action. Both direct and indirect impacts resulting in disturbance should also be considered. An assessment of the potential for activities associated with the CWP Project to cause disturbance to Annex IV species during construction, operation and maintenance or decommissioning is provided in Section 5 of this report.

18. Derogation licences for Annex IV species may be granted by the Minister, which would allow otherwise illegal activities to go ahead, provided that the following key conditions can be met:

    1. A reason, or reasons, listed in Regulation 54 applies as follows;
        a) In the interests of protecting wild flora and fauna and conserving natural habitats;
        b) To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property;
        c) In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment;
        d) For the purpose of research and education, of re-populating and re-introducing these species and for the breeding operations necessary for these purposes, including artificial propagation of plants; or
        e) To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species to the extent specified therein, which are referred to in the First Schedule.
    2. No satisfactory alternatives exist; and
    3. Derogation would not be detrimental to the maintenance of a population(s) at a FCS.

19. The legislation that is applicable to the assessment of Annex IV species is summarised below:

    - Council Directive on the Conservation of Natural Habitats and Wild Flora and Fauna 1992 (92/43/EEC) (Habitats Directive) - Annexes II, IV and V;
    - Council Directive on the Conservation of Wild Birds (2009/147/EC) (The Birds Directive);
    - Council Regulation (EU) 2022/2577 of 22 December 2022 laying down a framework to accelerate the deployment of renewable energy as amended by Council Regulation (EU) 2024/223;
    - European Communities (Birds and Natural Habitats) Regulations 2011 to 2015; and
    - Wildlife Act (1976) and amendments (2000, 2005, 2010, 2012 and 2023) for protected species.

20. In addition, many of the species in this assessment are animals listed in the Fifth Schedule to the Wildlife Act 1976. Under section 23 of the Wildlife Act 1976, it is an offence to injure a protected wild animal otherwise than while hunting it, except under and in accordance with a licence granted by the Minister under the Wildlife Act 1976.

21. It is worth noting that the Third Renewable Energy Directive (EU) 2023/2413 (RED III) introduces a presumption under EU law that, where a renewable energy project applies the necessary mitigation measures, any resulting killing or disturbance of species protected under the Birds and Habitats Directives will not be regarded as "deliberate". Ireland has partially transposed RED III, however, several provisions still require transposition - specifically, the derogation exemptions which are provided for in Articles 15b and 16b. These exemptions apply to two categories of development: (1) Renewable Acceleration Areas (RAAs) and (2) areas outside RAAs (non-RAAs). Under Article 15b, Member States must complete a coordinated mapping exercise to identify RAAs by 21 May 2025 and adopt the relevant plans by 21 February 2026. For RAAs, competent authorities are required to prepare a mitigation "rule book" identifying, in advance, the measures typically necessary within those areas. Projects that comply with this rule book will benefit from a presumption of compliance with EU environmental law. For projects located outside RAAs, Article 16b provides that where the required mitigation measures have been implemented, any incidental killing or disturbance of protected species will not be considered "deliberate", effectively removing the need for a derogation licence for such incidental effects.

22. Furthermore, RED III introduces the presumption that the planning, construction and operation of renewable energy plants is in the overriding public interest and serving public health and safety for these purposes (see Article 16f). Recital 44 explains that "*Member States should presume those renewable energy plants and their related infrastructure to be of overriding public interest and serving public health and safety, except where there is clear evidence that those projects have significant adverse effects on the environment which cannot be mitigated or compensated for, or where Member States decide to restrict the application of that presumption in duly justified and specific circumstances, such as reasons related to national defence*."

23. While RED III has not yet been fully transposed into Irish law, it is clear that, once implemented, disturbance arising from a renewable project will not be treated as deliberate where appropriate mitigation measures have been applied. Accordingly, where the relevant provisions are transposed and the requirement for a derogation licence no longer applies, CWP will consider its derogation position once RED III is fully implemented.

24.

2.2 Guidance

2.2.1 Principal Guidance

25. NPWS Guidance on the Strict Protection of Certain Animal and Plant Species under the Habitats Directive in Ireland (2021) sets out a four stage process to assist developers and decision makers in determining if a project is compliant with the requirements of Regulation 51 of the Habitats Directive. This is summarised below:

    - **Stage 1**: Using existing information to determine the probability of the protected species being present in the area affected by the works.
    - **Stage 2**: Ecological survey to confirm presence. Surveys must use suitable methods for the species being investigated, be of an adequate duration and must take place at an appropriate time of year.
    - **Stage 3**: Examination of impacts and satisfactory alternatives, to understand if impacts can be avoided, through the design of the works, or if there are any satisfactory alternatives so that works will not occur in a place where they might impact on the Annex IV species.
    - **Stage 4**: Application for Regulation 54 Derogation Licence.

26. In 2007, NPWS of the Department of Arts, Heritage and the Gaeltacht (DAHG) produced a Code of Practice for the Protection of Marine Mammals during Acoustic Seafloor Surveys in Irish Waters (DAHG, 2007).

These were subsequently reviewed and amended to produce 'Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (DAHG, 2014).

27. The guidelines recommend that listed coastal and marine activities undergo a risk assessment for anthropogenic sound-related impacts on relevant protected Annex IV species to address any area-specific sensitivities, both in timing and spatial extent, and to inform the consenting process. The guidance states that an evidence-based risk assessment for each Annex IV species that occurs in the study area needs to consider the nature of the sound source, its likely and / or potential effects on individuals and / or populations and on their likely habitats, and could usefully address the following questions where appropriate:

    - Do individuals or populations of Annex IV species occur within the proposed area?
    - Is the plan or project likely to result in death, injury or disturbance of individuals?
    - Is it possible to estimate the number of individuals of each species that are likely to be affected?
    - Will individuals be disturbed at a sensitive location or sensitive time during their life cycle?
    - Are the impacts likely to focus on a particular section of the species' population, e.g., adults vs. juveniles, males vs. females?
    - Will the plan or project cause displacement from key functional areas, e.g., for breeding, foraging, resting or migration?
    - How quickly is the affected population likely to recover once the plan or project has ceased?

28. The approach to assessment taken within this document considers both the key guidance provided by DAHG (2014) and NPWS (2021), the former of which has been widened to consider non-sound based impacts on Annex IV species potentially impacted by the CWP Project. The questions set out within this guidance are considered within the context of the Habitats Regulations, Regulation 51 on the strict protection of Annex IV species and Regulation 54 on the requirements for obtaining a derogation licence. The scope of this document is structured accordingly, as set out in Section 3.

2.2.2 Additional guidance

29. Additional guidance and best practice documents referred to in drafting the risk assessment of Annex IV species is set out below:

    - Assessment and Monitoring of Ocean Noise in Irish Waters. STRIVE Report Series No. 120; (EPA 2011);
    - Code of Practice for the Protection of Marine Mammals during Acoustic Seafloor Surveys in Irish Waters (NPWS, 2007);
    - Conservation Plan for Cetaceans in Irish Waters (DAHG, 2009);
    - EU Commission's Guidance document on the strict protection of animal species of Community interest under the Habitats Directive (EU, 2021);
    - Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales and Northern Ireland). JNCC Report No. 654 (JNCC, 2020);
    - Guidance on the Strict Protection of Certain Animal and Plant Species under the Habitats Directive in Ireland (NPWS, 2021);
    - Guidance on the Strict Protection of Animal Species. Guidance for Public authorities on the Application of Articles 12 and 16 of the EU Habitats Directive to development/works undertaken by or on behalf of a public authority (NPWS, 2021);
    - IWDG Policy on Offshore Windfarm Development (IWDG, 2020);

- Marine mammal noise exposure criteria: Initial scientific recommendations (Southall et al., 2007);
- Marine mammal noise exposure criteria: Updated scientific recommendations for residual hearing effects (Southall et al., 2019);
- Policy on the effects of noise pollution on cetaceans (IWDG, 2015);
- Technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing (version 2.0) (National Oceanic and Atmospheric Administration (NOAA), 2016);
- The protection of marine European Protected Species (EPS) from injury and disturbance: Guidance for the marine area in England and Wales and the UK offshore marine area (2010). Joint Nature Conservation Committee (JNCC), Natural England and Countryside Council for Wales. This document has been used to supplement the DAHG (2014) guidance in the absence of Irish guidance which interprets what constitutes disturbance.

3 REQUIREMENT AND SCOPE OF THE ANNEX IV RISK ASSESSMENT

30. This section presents the requirement, scope and structure of the Annex IV risk assessment to understand the potential risks to Annex IV species from the CWP Project, the requirement for obtaining a derogation licence and if the conditions for a derogation licence can be met. The assessment is structured in line with both the NPWS (2021) and DAHG (2014) guidance, within the context of Regulation 51 on the strict protection of Annex IV species and Regulation 54 on the requirements for obtaining a derogation licence.

31. Table 3-1 sets out the structure for the remainder of this document and highlights where specific information relevant to the Regulation requirements is located. The table also provides reference to relevant supporting documentation where this contains necessary information to support the assessments.

Table 3-1 Structure of this Annex IV Risk Assessment

Legislation and Guidance	Questions used to address guidance and wider regulatory requirements	Where in this document response is provided	Further information in the planning application (EIAR, NIS, Planning Report or management plans)
NPWS (2021) Stage 1 and Stage 2 DAHG (2014)	Do individuals or populations of Annex IV species occur within the proposed area?	Section 3 – Scope of the Assessment	- Chapter 9 Fish, Shellfish, and Turtles Ecology - Appendix 9.4 UWN Assessment - Chapter 11 Marine Mammals - Appendix 11.3 Baseline Technical Report - Chapter 13 Offshore Bats - Chapter 21 Onshore Biodiversity - Marine Mammal Mitigation Protocol
NPWS (2021) Stage 3 DAHG (2014)	Is the plan or project likely to result in death, injury or disturbance of individuals?	Section 5 – Annex IV Risk Assessment	- Chapter 9 Fish, Shellfish, and Turtles Ecology - Appendix 9.4 UWN Assessment - Chapter 11 Marine Mammals - Appendix 11.3 Baseline Technical Report - Chapter 13 Offshore Bats - Chapter 21 Onshore Biodiversity - Chapter 24 Noise and Vibration - Marine Mammal Mitigation Protocol - Decommissioning Programme
	Is it possible to estimate the number of individuals of each species that are likely to be affected?		
	Will individuals be disturbed at a sensitive location or sensitive time during their life cycle?		
	Are the impacts likely to focus on a particular section of the species population?		
	Will the plan or project cause displacement from key functional areas?		
	How quickly is the affected population likely to recover once the plan or project has ceased?		

Legislation and Guidance	Questions used to address guidance and wider regulatory requirements	Where in this document response is provided	Further information in the planning application (EIAR, NIS, Planning Report or management plans)
NPWS Stage 3 Regulation 54 Condition 1	Imperative Reasons of Overriding Public Interest (IROPI)	Section 6 – Derogation Licence Requirements	- CWP Project Planning Report
NPWS Stage 3 Regulation 54 Condition 2	Assessment of alternatives	Section 6 – Derogation Licence Requirements	- Chapter 3 Site Selection and Alternatives and Alternative designs - Chapter 4 Project Description – mitigation measures
NPWS (2021) Stage 4 Regulation 54 Condition 3	Will the project adversely affect the favourable conservation status of the species: - Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable element of its natural habitats; - The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and - There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.	Section 6 – Derogation Licence Requirements	- The Annex IV Risk Assessment presented herein - Chapter 9 Fish, Shellfish, and Turtles Ecology - Appendix 9.4 UWN Assessment - Chapter 11 Marine Mammals - Appendix 11.3 Baseline Technical Report - Chapter 13 Offshore Bats - Chapter 21 Onshore Biodiversity - Chapter 24 Noise and Vibration - Marine Mammal Mitigation Protocol - Decommissioning Programme

3.1 Annex IV Species

32. Annex IV species identified as occurring within the vicinity of the CWP Project are presented in Table 3-2. In line with NPWS guidance Stages 1 and 2, this considers likely species presence within the Offshore and Onshore Development Areas and wider species study areas, as defined within the CWP EIAR. Where species are identified as present these are scoped in for further assessment. Consideration of species presence is based on site specific survey data, supported by a range of wider data sources as presented within **Chapter 11, Marine Mammals, Chapter 9, Fish and Shellfish Ecology, Chapter 13, Offshore Bats, Chapter 21** and **Onshore Biodiversity** of the CWP EIAR.

33. Site specific survey data, that is supported by wider survey data and comprehensive desk study of information sources provides for a robust characterisation of the CWP Project environment and potential Annex IV species identified. This provides baseline information that is fit for purpose to support a comprehensive assessment in line with Annex IV applications and is in line with best practice. For completeness, data sources used, including site specific survey data, wider survey data, supporting information and references are detailed within Table 3-2. The Applicant would note that further survey data

has since been collected, and this data will accompany the submission of Further Information requested by An Coimisiún Pleanála as a validation of the baseline characterisation presented within the application documents. For all receptors the data validate the existing data, as such the information presented within this application is both robust and valid.

Table 3-2 Annex IV species identified as occurring within the vicinity of the CWP Project

Annex IV species identified	Summary of likely presence	Data sources	Species Scoped in / out of further assessment
Cetaceans (marine mammals)	More than 24 marine mammal species have been recorded in Irish waters; five of which are regularly found in the Irish Sea. Of these, four species are thought to be present year-round, harbour porpoise (*Phocoena phocoena*), bottlenose dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphis*), and Risso's dolphin (*Grampus griseus*), with Minke whales (*Balaenoptera acutorostrata*) considered seasonal visitors.	- Chapter 11 Marine Mammals, CWP EIAR - Appendix 11.3 Baseline Technical Report, CWP EIAR Site specific project surveys: - Marine mammal surveys: Boat based: April 2013 to March 2014 (13 months) and October 2018 to January 2020 (12 months) - Digital Aerial Surveys (DAS): May 2020 to April 2022 (24 months) Wider data sources: - IWDG Irish Sea Cetacean Surveys: visual and acoustic: 2 surveys in August 2011 (Berrow et al., 2011) - IWDG, Irish Coastal Water Surveys for harbour porpoise: visual and acoustic: 6 survey days between July – September 2008 (Berrow et al,. 2008) - IWDG Special Area of Conservation (SAC) Surveys: visual and acoustic: 1 survey in 2013, 4 surveys in 2016, 6 surveys in 2021 (Berrow and	Scoped in Harbour porpoise Bottlenose dolphin Common dolphin Risso's dolphin Minke Whale
Harbour porpoise	Site specific surveys indicate harbour porpoise was the most commonly sighted cetacean species with potential for harbour porpoise presence year round at the CWP Project. Highest density and abundance was recorded during March and August and the lowest during February. Wider data sources indicate the potential for harbour porpoise year round with the highest density and abundance recorded during summer months, potentially coinciding with the breeding season which typically occurs between June and September (Lockyer, 1995, Berrow et al., 2008, Rogan et al., 2018). Harbour porpoise will be most vulnerable to disturbance during this time due to reduced food intake (Harwood, et al,. 2020). Based on survey data and wider data sources, harbour porpoise are present within the offshore CWP Project area. The overall conservation status of harbour porpoise in Ireland is assessed as Favourable (NPWS, 2019).		
Bottlenose dolphin	No bottlenose dolphins were recorded during any of the aerial or boat-based CWP Project site-specific baseline surveys. Wider data for this area demonstrate recorded densities are relatively low (SCANS III, Evans and Waggit, 2023). Wider sources for Irish		

Annex IV species identified	Summary of likely presence	Data sources	Species Scoped in / out of further assessment
	waters demonstrate that bottlenose dolphins are sighted year round, with generally consistent distribution patterns across seasons (Berrow et al., 2012, Rogan et al., 2018, ObSERVE, Evans and Waggitt, 2023). However, mother and calf pairs are primarily recorded during the summer months (Berrow et al., 2012). Based on survey data and wider data sources, bottlenose dolphin are likely present within the offshore CWP Project area. The overall conservation status of bottlenose dolphin in Ireland is assessed as Favourable (NPWS, 2019).	O'Brien, 2013, O'Brien and Berrow, 2016, Berrow et al., 2021) - IWDG Greater Dublin Drainage Project Surveys: land based, vessel based and CPoD acoustic monitoring: 24 surveys March 2015 – March 2017 (Meade et al., 2017) - ObSERVE (Stratum 5): visual aerial surveys: 4 surveys summer and winter 2015 and 2016 (Rogan et al., 2018) - SCANS III and IV: Aerial and vessel visual surveys Block E Western Irish Sea (SCANS III), Block CS-D (SCAN IV) (Hammond et al., 2016, Hammond et al., 2021, Lacey et al., 2022, Gilles et al., 2023) - Distribution and abundance of cetaceans Wales and its adjacent waters: Aerial and vessel survey data: 1990-2020 (Evans and Waggitt, 2023) - MERP maps European and Atlantic Waters: JCP data, aerial and vessel surveys: 1980 and 2018 (Waggitt et al., 2020, Waggitt et al., 2019) - Atlas of the distribution and relative abundance of marine mammals in Irish offshore waters: 2005 - 2011 (Wall et al., 2013)	
Common dolphin	During 2013-2014 site specific boat-based surveys, no common dolphins were sighted, whilst during the 2018-2020 boat-based surveys, six common dolphins were recorded. By comparison, during the 2020-2022 aerial surveys, 82 common dolphins were recorded. Across site specific surveys common dolphin were most frequently recorded during spring and autumn months. Wider data sources indicate common dolphin are the most frequently recorded dolphin species in Irish waters with year round presence and higher densities recorded late spring to autumn, with the species becoming largely absent during winter (Wall et al., 2013, NPWS, 2019). This may coincide with common dolphin breeding season where calves are typically born during the summer months from May to August (Robinson et al., 2010). Based on survey data and wider data sources, common dolphin are present within the offshore CWP Project area. The overall conservation status of common dolphin in Ireland is assessed as Favourable (NPWS, 2019).		
Risso's dolphin	No Risso's dolphins were recorded during any of the aerial CWP Project site-specific surveys, however, two sightings of Risso's dolphin were observed in the 2013-2014 boat-based surveys (May		

Annex IV species identified	Summary of likely presence	Data sources	Species Scoped in / out of further assessment
	and July 2013). Wider data sources indicate Risso's dolphin occurrence is wide and frequent throughout Irish waters (NPWS, 2019), with individuals sighted from April to November and with peak sightings during the summer months (Wall et al., 2013). Sightings of young calves in some groups suggest that calving may also be occurring in Irish waters. The knowledge of the reproduction and breeding of Risso's dolphins is limited, however, studies in other regions have indicated it is typically during the summer and autumn months (Chen et al., 2011). Based on survey data and wider data sources, Risso's dolphin are likely present within the offshore CWP Project area. The overall conservation status of Risso's dolphin in Ireland is assessed as Favourable (NPWS, 2019).	- NISA offshore wind farm (OWF): Visual boat based and DAS: 29 aerial surveys May 2020 – October 2022 (ARUP, 2021) - Dublin Array: Visual boat-based surveys: 19 surveys June 2019 – January 2020, May 2020 – September 2020 and December 2020 – April 2021 (SLR et al., 2020) - Arklow Bank Wind Park: Visual boat based, July 1996 – March 1997 and June 2000 – June 2009. DAS, March 2018 and February 2020 (RPS, 2020)	
Minke Whale	No minke whale were recorded during any of the site-specific aerial surveys, however, during 2013-2014 boat-based surveys, two minke whales were sighted and during the 2018-2020 boat-based surveys, three minke whales were sighted. Wider data sources indicate that Minke whales are observed throughout Ireland's coastal waters and both the continental slope and shelf, with the majority of sightings occurring in shallow waters (<200m). Minke whale are known to exhibit a high degree of seasonal variation in their presence in the Irish Sea, due to seasonal migration patterns, with sightings occurring more frequently during the summer months (Rogan *et al.*, 2018, Risch et al., 2014). Based on survey data and wider data sources, minke whale are likely present within the offshore CWP Project area at lower densities. The overall conservation status of minke whale in Ireland is assessed as Favourable (NPWS, 2019).		

Annex IV species identified	Summary of likely presence	Data sources	Species Scoped in / out of further assessment
Marine Turtles	No marine turtles were recorded during the CWP Project's site-specific surveys. Two sightings of leatherback turtle (*Dermochelys coriacea*) off the counties of Cork and Clare were recorded within the last 12 months on the Irish Whale and Dolphin Group (IWDG) citizen science recording scheme. Wider data sources indicate that six species of marine turtle have been recorded in UK and Irish waters. Of these, the leatherback turtle is recorded most frequently and is the only species that is considered a regular summer visitor, with recordings along the entirety of the Irish coastline between May and November (Botterell *et al*, 2020). It has been estimated that 0.06 leatherbacks are found per 100 km^2 in the Celtic and Irish seas, indicating low density of this species (Doyle et al., 2008). The overall conservation status of Leatherback turtles in Ireland is assessed as Unknown (NPWS, 2019).	- Chapter 9 Fish and Shellfish Ecology - Any observations from site-specific marine mammal boat based and aerial surveys recorded (as above) - TURTLE database – opportunistic sightings, strandings and bycatch in UK and Ireland	Scoped In Leatherback turtle
Otters	The Eurasian otter (*Lutra lutra*) is geographically widespread in Ireland and is found within a diverse range of aquatic habitats. The adult population of otters is thought to be 12,000 to 15,000 individuals (Reid et al., 2013). Site-specific otter surveys were conducted for the CWP Project to ascertain presence and abundance of this species. Surveys took place in February 2023 in line with relevant guidance and advice received during consultation. Upon completing surveys, no otters were identified, and no otter holts or resting sites / couches were recorded. The absence of otters in site specific surveys indicates there is no immediate habitat or population in the vicinity that could be affected by the CWP Project. In line with standard practice, a pre-construction survey will be carried out that will ensure that appropriate mitigation measures are adopted, and licences sought in the unlikely event that otters or otter habitats are discovered.	- Chapter 21 Onshore Biodiversity Site specific project surveys: - Preliminary Ecological Appraisal (PEA) – desktop review and verification February 2021 - Otter surveys undertaken within the onshore development area plus a 150 m buffer, following methodologies outlined within NRA (2006) and Chanin (2003) - Camera trap (Bushnell trial camera) deployed in February 2023 for 48 hours (Licence 32/2023) to record	Scoped Out

Annex IV species identified	Summary of likely presence	Data sources	Species Scoped in / out of further assessment
	The overall conservation status of otter in Ireland is assessed as Favourable (NPWS, 2019)	otter activity at onshore substation site	
Bats	Bat species recorded as present in Ireland and Wales are: - Common pipistrelle (*Pipistrellus pipistrellus*) - Soprano pipistrelle (*Pipistrellus pygmaeus*) - Nathusius' pipistrelle (*Pipistrellus nathusii*) - Leisler's bat (*Nyctalus leislers*) - Whiskered (*Myotis mystacinus*) - Daubenton's (*Myotis daubentoniid)* - Natterer's (*Myotis nattereri)* - Lesser horseshoe (*Rhinolophus hipposideros)* and - Brown long-eared *(Plecotus auratus)* Based on site specific surveys and wider data sources, only the three pipistrellus species and Leisler's are considered to migrate through the CWP Project area, while Daubenton's are considered to forage offshore. Therefore these five species are considered as potentially present offshore within the CWP Project area. The overall conservation status of common pipistrelle, soprano pipistrelle, Daubenton's bat and Leisler's bat in Ireland is assessed as Favourable. The overall conservation status of Nathusius pipistrelle in Ireland is assessed as Unknown (NPWS, 2019).	- Chapter 13 Offshore Bats, CWP EIAR Site specific project surveys: - Bat spring and autumn migration surveys at landfall locations (Ireland and Wales): 12 week deployments at four locations in Ireland and Wales (eight total), 20 April to 4 July 2022 and 21 August to 14 November 2022 - Dublin Array offshore wind farm static detector surveys. Four detectors deployed, 27/28 May 2021 to 4 November 2021 Wider Data Sources: - Bat records within 10 km of the Welsh Coast – 15 years of data – Cofnod North Wales Environmental Service - Bat records within 10 km of the Irish coast – 15 years of data – Bat Conservation Ireland and Biodiversity Ireland maps (2022) - Multi-Agency Geographic Information for the Countryside (MAGIC) database – DEFRA	Scoped in Common pipistrelle Soprano pipistrelle Nathusius pipistrelle Leislers's bat Daubenton's bat

Annex IV species identified	Summary of likely presence	Data sources	Species Scoped in / out of further assessment
		- Mammals in a Sustainable Environment (MISE) Project (MISE, 2019) - Irish Bat Monitoring Programme 2018 – 2022 (Aughney, Roche and Langton, 2022) - North Sea Ferries Bat Migration Research Report (BSG Ecology, 2014) - Bat Migration Project Report (2017 to 2018) - Bat Migration Literature Review (Fleming, 2019)	

3.1.1 Species Density Estimates

34. Table 3-2 provides a summary of Annex IV species identified as present within the vicinity of the CWP Project and wider area, and consideration as to whether these species are scoped into further assessment. Consideration of species presence is derived through site specific survey data, wider survey data and additional information sources.

35. A range of density estimates were derived for the marine mammal species identified as present across the CWP Project and wider area. These were derived through site specific survey data, wider survey data and supporting studies. Table 3-3 presents the density estimates and Management Units (MUs) (reference population) selected as the most appropriate to be used for each marine mammal species. For bottlenose dolphin some incompatibility was identified between density estimates derived and the current Irish Sea MU, and therefore, assessments utilised a range of population estimates as appropriate. Further details of marine mammal baseline characterisation, including density and abundance estimates are provided in **Appendix 11.3, Baseline Technical Report** and **Chapter 11, Marine Mammals** of the CWP EIAR.

Table 3-3 Table of MUs and density estimates for each species

Species	MU	Density (#/km^2)
Harbour porpoise	Celtic and Irish Seas MU 62,517 porpoise (IAMMWG, 2023)	0.1225 (CWP Project site specific surveys)
		Grid cell specific densities (SCANS III density surface, Lacey et al., 2022)
		0.2803 (SCANS IV block CS-D, Gilles et al., 2023)
		Grid cell specific densities (Irish Sea density surface, Evans and Waggitt, 2023)
Bottlenose dolphin	Irish Sea MU 1,069 dolphins	Grid cell specific densities (SCANS III density surface, Lacey et al., 2022)
	Irish Sea MU 496 dolphins	Grid cell specific densities (Irish Sea density surface, Evans and Waggitt, 2023)
	Irish Sea MU 8,236 dolphins	0.2352 (SCANS IV block CS-D, Gilles et al., 2023)
Common dolphin	Celtic and Greater North Seas MU 102,656 dolphins (IAMMWG, 2023)	0.2810 (CWP Project site specific DAS)
		Grid cell specific densities (SCANS III density surface, Lacey et al., 2022)
		Grid cell specific densities (Irish Sea density surface, Evans and Waggitt, 2023)
		0.0272 (SCANS IV block CS-D, Gilles et al., 2023)
Minke whale	Celtic and Greater North Seas MU 20,118 whales (IAMMWG, 2023)	0.0019 (CWP Project site specific surveys)
		Grid cell specific densities (SCANS III density surface, Lacey et al., 2022)
		Grid cell specific densities (Irish Sea density surface, Evans and Waggitt, 2023)
		0.0137 (SCANS IV block CS-D, Gilles *et al.,* 2023)
Risso's dolphin	Celtic and Greater North Seas MU 12,262 dolphins (IAMMWG, 2023)	0.0008 (CWP Project site specific surveys)
		Grid cell specific densities (Irish Sea density surface, Evans and Waggitt, 2023)
		0.0022 (SCANS IV block CS-D, Gilles et al., 2023)

36. No marine turtles were recorded during the CWP Project's site-specific surveys. Review of wider data sources indicates the leatherback turtle is the only species that is considered a regular summer visitor to Irish waters. Density estimates for Leatherback turtles are derived from Doyle, et al., 2008 which estimates 0.06 leatherbacks per 100 km^2 in the Celtic and Irish seas, indicating low density of this species. Further details of leatherback turtle baseline characterisation, including density and abundance are provided in **Chapter 9, Fish, Shellfish and Turtle Ecology** of the CWP EIAR.

37. Bat activity at the CWP Project was assessed using site specific and wider survey data and information sources, to determine both the number of bat passes and proportion of migratory bat passes between Ireland and Wales, in the vicinity of the CWP Project. Review of data sources indicates that four bat species including, common pipistrelle, soprano pipistrelle, Nathusius pipistrelle, and Leisler's bat are considered to migrate through the CWP Project area, while Daubenton's bat are considered to forage offshore. Of these five species the greatest numbers recorded were of the common pipistrelle with Daubenton's the least prevalent. Full details of bat passes, and proportion of migratory passes are provided in **Chapter 13, Offshore Bats** of the CWP Project EIAR.

3.2 Impacts Identified

38. Potential impacts identified to Annex IV species as a result of the construction or operation and maintenance (O&M) of the CWP Project are presented in Table 3-4.

39. As noted previously, Regulation 51 of the Habitats Directive states that it is an offence to do any of the following without first obtaining a derogation licence from the Minister in accordance with Regulation 54:

    a) Deliberately capture or kill any specimen of these species in the wild;

    b) Deliberately disturb these species particularly during the period of breeding, rearing, hibernation and migration;

    c) Deliberately take or destroys eggs of those species from the wild;

    d) Deterioration, or destruction of a breeding site or resting place of such an animal; or

    e) Keep, transport, sell, exchange, offer for sale or offer for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive.

40. The CWP Project will not involve the taking or destruction of eggs of Annex IV species, or the keeping, transportation sale or exchange of any specimen of those species. Therefore the assessment presented below considers those impacts assessed within the CWP Project EIAR, and supporting documentation with the potential to result in mortality, injury or disturbance of individuals or the deterioration or destruction of breeding sites or resting places.

41. Impacts identified for the purposes of this risk assessment are taken from those identified within the CWP EIAR, supported by wider data sources as presented within the CWP EIAR. Where impacts were scoped out of the CWP EIAR there was considered to be no meaningful pathway for impact on environmental receptor groups including Annex IV species. Therefore, impacts scoped out of the CWP EIAR are not considered within this risk assessment.

Table 3-4 Potential impacts identified as a result of the construction or O&M of the CWP Project

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
Marine Mammals			
Construction			
Auditory injury (Permanent Threshold Shift (PTS)) from pre-construction surveys	Pre-construction survey equipment operate at frequencies with the potential to cause auditory injury (PTS) to marine mammals (Sub bottom profiler (SBP), Ultra high resolution seismic surveys URHS)). Marine mammal presence is confirmed in the CWP Project area and wider Irish sea throughout the year. This presents a potential risk of auditory injury and therefore disturbance to marine mammal species and the impact is scoped in for further assessment.	- Chapter 11 Marine Mammals, CWP EIAR - Appendix 11.3 Baseline Technical Report, CWP EIAR - Appendix 9.4 UWN Assessment - Marine Mammal Mitigation Protocol - Chapter 11 Marine Mammals, CWP EIAR - Appendix 11.3 Baseline Technical Report, CWP EIAR Site specific project surveys: - Marine mammal surveys: Boat based: April 2013 to March 2014 (13 months) and October 2018 to January 2020 (12 months) - Digital Aerial Surveys (DAS): May 2020 to April 2022 (24 months)	Scoped in Reference to Regulation 51(b)
Disturbance from pre-construction surveys	Pre-construction survey equipment operate at frequencies with the potential to cause disturbance to marine mammals (Sub bottom profiler (SBP), Ultra high resolution seismic surveys URHS)). Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year. This presents a potential risk of disturbance to marine mammal species and therefore, the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)
Auditory injury (PTS) from unexploded ordnance (UXO) clearance	Detonation of UXO has the potential to cause auditory injury (PTS) to marine mammals due to the sound levels generated. Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year. This presents a potential risk of auditory injury and therefore disturbance to marine mammal species and the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
Disturbance from UXO clearance	Detonation of UXO has the potential to cause disturbance to marine mammals due to the sound levels generated. Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year. This presents a potential risk of disturbance to marine mammal species and therefore, the impact is scoped in for further assessment.	Wider data sources: - IWDG Irish Sea Cetacean Surveys: visual and acoustic: 2 surveys in August 2011 (Berrow et al., 2011) - IWDG, Irish Coastal Water Surveys for harbour porpoise: visual and acoustic: 6 survey days between July – September 2008 (Berrow et al,. 2008) - IWDG SAC Surveys: visual and acoustic: 1 survey in 2013, 4 surveys in 2016, 6 surveys in 2021 (Berrow and O'Brien, 2013, O'Brien and Berrow, 2016, Berrow et al., 2021) - IWDG Greater Dublin Drainage Project Surveys: land based, vessel based and CPOD acoustic monitoring: 24 surveys March 2015 – March 2017 (Meade et al., 2017) - ObSERVE (Stratum 5): visual aerial surveys: 4 surveys summer and winter 2015 and 2016 (Rogan et al., 2018) - SCANS III and IV: Aerial and vessel visual surveys Block E Western Irish Sea (SCANS III),	
Auditory injury (PTS) from piling – WTGs and OSS	Impact piling associated with the installation of WTGs and OSS has the potential to cause auditory injury (PTS) to marine mammals due to sound levels generated (both instantaneous and cumulative). Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year. This presents a potential risk of auditory injury and therefore disturbance to marine mammal species and the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)
Disturbance from piling – WTGs and OSS	Impact piling associated with the installation of WTGs and OSS has the potential to cause disturbance to marine mammals due to the sounds levels generated (both instantaneous and cumulative). Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year. This presents a potential risk of disturbance to marine mammal species and therefore, the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)
Auditory injury (PTS) from piling – onshore substation revetment	Impact piling associated with the installation of the onshore substation revetment has the potential to cause auditory injury (PTS) to marine mammals due to sound levels generated (both instantaneous and cumulative). Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year. This presents a potential risk of auditory injury and		Scoped in Reference to Regulation 51(b)

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
	therefore disturbance to marine mammal species and the impact is scoped in for further assessment.	Block CS-D (SCAN IV) (Hammond et al., 2016, Hammond et al., 2021, Lacey et al., 2022, Gilles et al., 2023) - Distribution and abundance of cetaceans Wales and its adjacent waters: Aerial and vessel survey data: 1990-2020 (Evans and Waggitt, 2023) - MERP maps European and Atlantic Waters: JCP data, aerial and vessel surveys: 1980 and 2018 (Waggitt et al., 2020, Waggitt et al., 2019) - Atlas of the distribution and relative abundance of marine mammals in Irish offshore waters: 2005 - 2011 (Wall et al., 2013) - NISA OWF: Visual boat based and DAS: 29 aerial surveys May 2020 – October 2022 (ARUP, 2021) - Dublin Array: Visual boat-based surveys: 19 surveys June 2019 – January 2020, May 2020 – September 2020 and December 2020 – April 2021 (SLR et al., 2020)	
Disturbance from piling – onshore substation revetment	Impact piling associated with the installation of the onshore substation revetment has the potential to cause disturbance to marine mammals due to the sound levels generated (both instantaneous and cumulative). Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year. This presents a potential risk of disturbance to marine mammal species and therefore, the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)
Auditory injury (PTS) from other construction related activities	Sound levels generated through other construction activities (e.g. boulder clearance, cable laying etc.) has the potential to cause auditory injury (PTS) to marine mammals. Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year. This presents a potential risk of auditory injury and therefore disturbance to marine mammal species and the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)
Disturbance from other construction related activities	Sound levels generated through other construction activities (e.g. boulder clearance, cable laying etc.) has the potential to cause disturbance to marine mammals. Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year. This presents a potential risk of disturbance to marine mammal species and therefore, the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)
Vessel collision (injury / mortality)	Marine mammals have the potential to collide with vessels associated with construction activities of the CWP Project. Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year indicating a potential impact		Scoped in

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
	pathway. Collision with vessels may result in mortality or injury to marine mammals. This presents a potential risk of injury or mortality to marine mammal species and therefore disturbance and the impact is scoped in for further assessment.	- Arklow Bank Wind Park: Visual boat based, July 1996 – March 1997 and June 2000 – June 2009. DAS, March 2018 and February 2020 (RPS, 2020)	Reference to Regulation 51(b)
Vessel disturbance	Increased vessel activity associated with construction activities of the CWP Project has the potential to disturb marine mammals. Marine mammal presence is confirmed in the CWP Project area and wider Irish sea throughout the year. This presents a potential risk of disturbance to marine mammal species and therefore, the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)
Indirect effects due to changes in prey	Marine mammals are dependent on fish prey and there is potential for indirect effects on marine mammal species as a result of impacts to fish species or the habitats that support them, due to the construction of the CWP Project. However, while certain fish species may comprise the main part of a marine mammals diet, all marine mammals are considered to be generalist feeders and are not sensitive to changes in prey abundance or distribution (Booth, 2020, Carmen et al., 2021, Eerkes-Medrano et al., 2021). Marine mammals are also highly mobile species, capable of foraging over wide areas to avoid impact. Indirect, effects due to changes in prey species are unlikely to be of an extent that would affect marine mammals chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this does not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.		Scoped out

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
Operation and Maintenance			
Auditory injury (PTS) from operational noise	Operational noise associated with the WTGs of the CWP Project has the potential to cause auditory injury (PTS) to marine mammals due to the sounds levels generated. Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year. This presents a potential risk of auditory injury and therefore disturbance to marine mammal species and the impact is scoped in for further assessment.	As for construction	Scoped in Reference to Regulation 51(b)
Disturbance from operational noise	Operational noise associated with the WTGs of the CWP Project has the potential to cause disturbance to marine mammals due to the sounds levels generated. Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year. This presents a potential risk of disturbance to marine mammal species and therefore, the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)
Vessels collision (injury / mortality)	Marine mammals have the potential to collide with vessels associated with O&M of the CWP Project. Marine mammal presence is confirmed in the CWP Project area and wider Irish sea throughout the year indicating a potential impact pathway. Collision with vessels may result in mortality or injury to marine mammals. This presents a potential risk of injury or mortality to marine mammal species and therefore disturbance and the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)
Disturbance from vessels	Increased vessel activity associated with O&M of the CWP Project has the potential to disturb marine mammals. Marine mammal presence is confirmed in CWP Project area and wider Irish sea throughout the year indicating a potential impact		Scoped in

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
	pathway. This presents a potential risk of disturbance to marine mammal species and therefore, the impact is scoped in for further assessment.		Reference to Regulation 51(b)
Indirect effects due to changes in prey	The risk of indirect effects on marine mammals as a result of impacts to fish species during O&M of the CWP Project will be reduced compared to construction, due to reduced activities, noise generation, and vessel requirements. All marine mammals are considered to be generalist feeders and are not sensitive to changes in prey abundance or distribution. Marine mammals are also highly mobile species, capable of foraging over wide areas to avoid impact. Indirect, effects due to changes in prey species are unlikely to be of an extent that would affect marine mammals chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this does not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.		Scoped out
Decommissioning			
It is recognised that legislation and industry best practice change over time. However, for the purposes of the CWP EIAR, it was assumed that at the end of the operational lifetime of the CWP Project, all offshore infrastructure will be removed where practical to do so. In this regard, for the purposes of a representative scenario for decommissioning impacts, the following assumptions were made: • The WTGs and OSS topsides will be completely removed. • Following WTG and OSS topside decommissioning and removal, the monopile foundations will be cut below the seabed level, to a depth that will ensure the remaining foundation is unlikely to become exposed. This is likely to be approximately one metre below seabed, although the exact depth will depend upon the seabed conditions and site characteristics at the time of decommissioning.			Impacts scoped in: - Auditory injury (PTS) from geophysical surveys - Disturbance from geophysical surveys - Auditory injury (PTS) from other

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
• All cables and associated cable protection in the offshore environment will be wholly removed. It is likely that equipment similar to that which is used to install the cables may be used to reverse the burial process and expose them. Therefore, the area of seabed impacted during the removal of the cables is anticipated to be the same as the area impacted during the installation of the cables. • Generally, decommissioning is anticipated to be a reverse of the construction and installation process for the CWP Project and the assumptions around the number of vessels on site and vessel round trips is therefore the same as described for the construction phase of the offshore components. Given the above it is anticipated that for the purposes of this Annex IV Risk Assessment, the impacts during decommissioning will be no greater than those identified for the construction phase. Where impacts scoped in and assessed during construction are also relevant during decommissioning this is highlighted.			decommissioning activities - Disturbance from other decommissioning activities - Vessel collision (injury/mortality) - Vessel disturbance
Marine Turtles			
Construction			
Temporary habitat disturbance/loss	Habitat disturbance / loss may result from construction activities associated with the CWP Project e.g. seabed preparation and installation activities. However, the impact will be temporary, short term (no more than three years in duration) and spatially limited to the project area. Marine turtles are a mobile species with a large natural range and high capacity (adaptability) to avoid the impact by moving away from the area of disturbance. Sightings and corresponding density of marine turtles within the CWP Project area and wider Irish sea is also very low, indicating a low likelihood of presence. Any habitat disturbance/loss is unlikely to be of an extent that it may affect marine turtles chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this does not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.	- Chapter 9 Fish, Shellfish, and Turtles Ecology - Appendix 9.4 UWN Assessment - Chapter 11 Marine Mammals - Appendix 11.3 Baseline Technical Report - Marine Mammal Mitigation Protocol Wider data sources: - Any observations from site-specific marine mammal boat based and aerial surveys recorded (as above)	Scoped out

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
Disturbance due to construction noise and vibration	Marine turtles may be affected by underwater noise and vibration arising from construction activities. While there is a low likelihood of presence of marine turtles in the CWP Project area and wider Irish sea, construction noise may result in auditory injury or disturbance to marine turtles. This presents a potential risk of disturbance to marine turtles and therefore, the impact is scoped in for further assessment.	- TURTLE database – opportunistic sightings, strandings and bycatch in UK and Ireland	Scoped in Reference to Regulation 51(b)
Temporary disturbance to the seabed leading to increased suspended sediment concentration (SSC)	Seabed disturbance and increased SSC may result from construction activities e.g. seabed preparation and installation activities associated with the CWP Project. However, the impact will be temporary, short term and spatially limited (modelling predicts a maximum increase in SSC of 150 mg/L over a maximum distance of 10 km, over no more than 15 days). Marine turtles are a mobile species with a large natural range and high capacity (adaptability) to avoid the impact by moving away from the area of disturbance. In addition, marine turtles are able to tolerate a degree of SSC owing to natural variations within marine waters. Sightings and corresponding density of marine turtles within the CWP Project area and wider Irish sea is also very low, indicating a low likelihood of presence. Disturbance due to SSCs is unlikely to be of an extent that it may affect marine turtles chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this does not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.		Scoped out

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
Vessel collision (injury / mortality)	Marine turtles have the potential to collide with vessels associated with construction activities of the CWP Project. While there is a low likelihood of presence of marine turtles in the area, collision with vessels may result in mortality or injury to marine turtles through blunt trauma from impact or lacerations from propellers. This presents a potential risk of injury or mortality and therefore disturbance to marine turtles and the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)
Accidental pollution events	Construction vessels and equipment have the potential to give rise to pollution events from substances such as hydraulic oil, gear oil, diesel fuel or drill fluid etc. This may result in illness, reduction in prey availability or loss of habitat / avoidance for marine turtles. However, the probability of a pollution event occurring is highly unlikely due to the application of standard mitigation and best practice measures (OSPAR, IMO and MARPOL guidelines). Marine turtles are a mobile species with a large natural range and high capacity (adaptability) to avoid impacts by moving away from the area. Sightings and corresponding density of marine turtles within the CWP Project area and wider Irish Sea is also very low, indicating a low likelihood of presence. Any disturbance caused by accidental pollution events is unlikely to be of an extent that it may affect marine turtles chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this does not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.		Scoped out

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
Invasive non-native species (INNS)	There are no known INNS in the CWP Project area and therefore the risk of INNS relates to potential transference from construction vessels. INNS have the potential to impact marine turtles by reducing available habitat or foraging opportunities and outcompeting marine turtles in the area. However, the likelihood of the impact occurring is low due to the application of standard mitigation and best practice measures, including the production of a biosecurity plan by all vessels working on the CWP Project (IMO, 2019). Marine turtles are a mobile species with a large natural range and high capacity (adaptability) to avoid such impacts by moving away from the area. Sightings and corresponding density of marine turtles within the CWP Project area and wider Irish Sea is also very low, indicating a low likelihood of presence. Any disturbance caused by INNS is unlikely to be of an extent that it may affect marine turtles chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this does not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.		Scoped out
Operation and maintenance			
Long term habitat loss	There will be some long term habitat loss as a result of the O&M of the CWP Project. However this will be reversible upon decommissioning and will be spatially limited to the area of the CWP Project. Marine turtles are a mobile species with a large natural range and high capacity (adaptability) to avoid the impact by moving away from the area. Sightings and corresponding density of marine turtles within the CWP Project area and wider	As for construction	Scoped out

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
	Irish sea is also very low, indicating a low likelihood of presence. Any habitat disturbance/loss during O&M is unlikely to be of an extent that it may affect marine turtles chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this does not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.		
Disturbance from operational noise	Operational noise associated with the WTGs of the CWP Project has the potential to cause disturbance to marine turtles due to the sounds levels generated. While there is a low likelihood of presence of marine turtles in the CWP Project area and wider Irish sea, operational noise may result in disturbance to marine turtles and therefore, the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)
Temporary disturbance to the seabed leading to increased suspended sediment concentration	The risk of temporary seabed disturbance and increased INNS to marine turtles during O&M of the CWP Project will be reduced compared to construction. Marine turtles are a mobile species with a large natural range and high capacity (adaptability) to avoid the impact by moving away from the area of disturbance. In addition, marine turtles are able to tolerate a degree of SSC owing to natural variations within marine waters. Sightings and corresponding density of marine turtles within the CWP Project area and wider Irish sea is also very low. Disturbance due to SSCs is unlikely to be of an extent that it may affect marine turtles chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this does		Scoped out

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
	not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.		
Vessel collision (injury / mortality)	Marine turtles have the potential to collide with vessels associated with O&M of the CWP Project. While there is a low likelihood of presence of marine turtles in the area, collision with vessels may result in mortality or injury to marine turtles. This presents a potential risk of injury or mortality and therefore disturbance to leatherback turtles and the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(a)
Electromagnetic Field (EMF) effects from cables	Cables associated with the CWP Project have the potential to produce EMF. Standard cables include shielding which prevents the passage of electrical fields, however, magnetic fields may be present which has the potential to affect migration behaviours in marine turtles (Snoek et al., 2016). All cables for the CWP Project will be buried wherever possible, and where burial is not possible, cable protection will be applied, reducing the potential for EMF. Modelling for the CWP Project indicates that EMF levels fall to near zero within 2 m of the cable. Marine turtles breathe air and therefore surface regularly reducing time spent at or close to the seabed. They are also a mobile species with a large natural range and high capacity (adaptability) to avoid EMF. Sightings and corresponding density of marine turtles within the CWP Project area and wider Irish sea is very low. Any disturbance due to EMF is unlikely to be of an extent that it may affect marine turtles chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this		Scoped out

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
	does not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.		
Accidental pollution events	The risk of accidental pollution events to marine turtles during O&M of the CWP Project will be reduced compared to construction due to the reduced number of vessels and reduced requirement for equipment. Mitigation and best practice measures will be employed throughout O&M of the CWP Project as for construction. Any disturbance due to accidental pollution events is unlikely to be of an extent that it may affect marine turtles chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this does not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.		Scoped out
Invasive Non-Native Species (INNS)	The risk of INNS to marine turtles during O&M of the CWP Project will be reduced compared to construction due to the reduced number of vessels and reduced requirement for equipment. Mitigation and best practice measures will be employed throughout O&M of the CWP Project as for construction. Any disturbance due to INNS is unlikely to be of an extent that it may affect marine turtles chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this does not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.		Scoped out

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
Decommissioning			
For the purposes of the CWP EIAR, it was assumed that at the end of the operational lifetime of the CWP Project, all offshore infrastructure will be removed where practical to do so. The representative scenario for decommissioning impacts for marine turtles is as presented for marine mammals. It is anticipated that for the purposes of this Annex IV Risk Assessment, the impacts during decommissioning will be no greater than those identified for the construction phase. Where impacts scoped in and assessed during construction are also relevant during decommissioning this is highlighted.			Impacts scoped in: - Disturbance due to noise and vibration - Vessel collision (injury / mortality)
Bats			
Construction			
Disturbance due to offshore roosting	There is some potential for disturbance to bat species if roosting occurs on partially completed structures or vessels. Such disturbance can also make them vulnerable to predation. However the extent to which bats may roost on vessels or other offshore infrastructure is considered to be low, based on current evidence, and impacts will be short term and temporary lasting for the duration of the construction period (three years). The potential for bat migration across the CWP Project area was also found to be low indicating low likelihood of presence. Any disturbance due to offshore roosting is unlikely to be of an extent that it may affect bats chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this does not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.	- Chapter 13 Offshore Bats - Chapter 21 Onshore Biodiversity - Chapter 24 Noise and Vibration Site specific project surveys: - Bat spring and autumn migration surveys at landfall locations (Ireland and Wales): 12 week deployments at four locations in Ireland and Wales (eight total), 20 April to 4 July 2022 and 21 August to 14 November 2022 - Dublin Array offshore wind farm static detector surveys.	Scoped out

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
		Four detectors deployed, 27/28 May 2021 to 4 November 2021 Wider Data Sources: - Bat records within 10 km of the Welsh Coast – 15 years of data – Cofnod North Wales Environmental Service - Bat records within 10 km of the Irish coast – 15 years of data – Bat Conservation Ireland and Biodiversity Ireland maps (2022) - Multi-Agency Geographic Information for the Countryside (MAGIC) database – Defra - Mammals in a Sustainable Environment (MISE) Project (MISE, 2019) - Irish Bat Monitoring Programme 2018 – 2022 (Aughney, Roche and Langton, 2022) - North Sea Ferries Bat Migration Research Report (BSG, 2014)	
Disturbance due to artificial lighting	There is the potential for bat species to be disturbed by artificial lighting associated with the construction of the CWP Project. Certain species may be attracted to lighting due to attraction of insects while light shy species may avoid the area for foraging. While impacts will be short term and the potential for bat migration across the CWP Project area was found to be low, this presents a potential risk of disturbance to bat species and therefore, the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
		- Bat Migration Project Report (2017 to 2018) - Bat Migration Literature Review (Fleming, 2019)	
Operation and maintenance			
Disturbance due to offshore roosting	There is some potential for disturbance to bat species if roosting occurs on partially completed structures or vessels. Such disturbance can also make them vulnerable to predation. However the extent to which bats may roost on vessels or other offshore infrastructure is considered to be low, based on current evidence. The potential for bat migration across the CWP Project area was also found to be low, indicating low likelihood of presence. Any disturbance due to offshore roosting is unlikely to be of an extent that it may affect bats chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Therefore, this does not amount to disturbance for the purposes of Regulation 51 and this impact is scoped out of further assessment.	As for construction	Scoped out
Disturbance due to artificial lighting	There is the potential for bat species to be disturbed by artificial lighting associated with the O&M of the CWP Project. Certain species may be attracted to lighting due to attraction of insects while light shy species may avoid the area for foraging. While impacts will be short term and the potential for bat migration across the CWP Project area was found to be low, this presents a potential risk of disturbance to bat species and therefore, the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(b)

Impact identified	Summary of Impact pathway identified / likely effects	Data Sources	Impact Scoped in / out of further assessment
Collision risk (injury / mortality)	Bat species have the potential to collide with the operating blades of the CWP Project. Collision with blades may result in blunt trauma or barotrauma impacts. While there is a low likelihood of presence of bat species in the CWP Project area, collision with turbine blades may result in injury or mortality to bats. This presents a potential risk of injury or mortality and therefore disturbance to bat species and the impact is scoped in for further assessment.		Scoped in Reference to Regulation 51(a)
Decommissioning			
For the purposes of the CWP EIAR, it was assumed that at the end of the operational lifetime of the CWP Project, all offshore infrastructure will be removed where practical to do so. The representative scenario for decommissioning impacts for offshore bats is as set out for marine mammals and marine turtles. It is anticipated that for the purposes of this Annex IV Risk Assessment, the impacts during decommissioning will be no greater than those identified for the construction phase. Where impacts scoped in and assessed during construction are also relevant during decommissioning this is highlighted.			Impacts scoped in: - Disturbance due to artificial lighting

42. The following sections present a description of the CWP Project including those parameters with the potential to generate mortality, injury or disturbance to Annex IV species, a description of the proposed mitigation and management measures to be employed by the Project and an assessment of whether there are any impacts requiring a derogation licence under Regulation 54.

4 DESCRIPTION OF DEVELOPMENT

43. **Chapter 4, Project Description** of the CWP Project EIAR provides a detailed description of the CWP Project. An overview description of the main offshore and onshore components of the CWP Project are as follows:

    - The Generating Station which comprises the wind turbine generators (WTGs), inter array cables (IACs) and interconnector cables;
    - The offshore transmission infrastructure (OfTI) which comprises the offshore substation structures (OSSs) and offshore export cables ;
    - The landfall which describes the point at which the offshore export cables are brought onshore; and
    - The onshore transmission infrastructure (OTI), which comprises the onshore export cables, the onshore substation and associated infrastructure.

44. Plate 4-1 illustrates these project components and how they relate to each other.

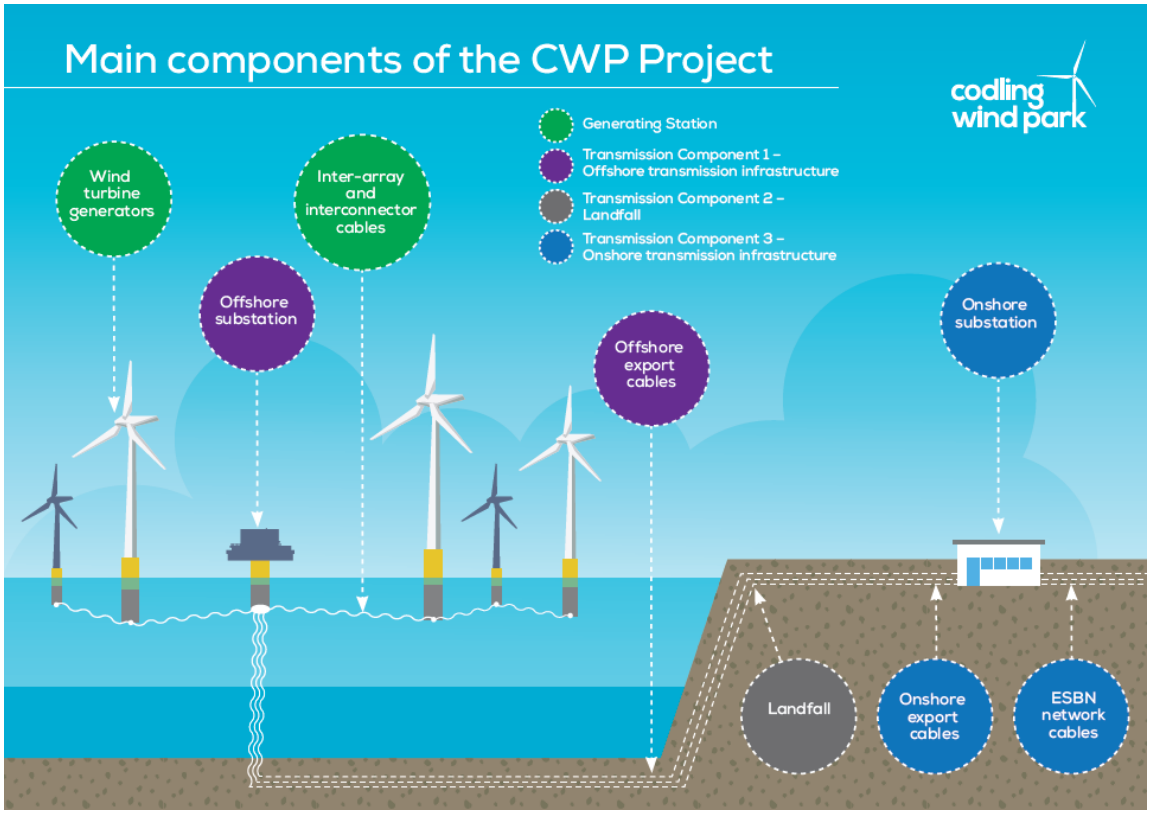

Plate 4-1 CWP Project components

45. The CWP Project consists of a single array site, within which the WTGs, IACs, interconnector cables and the OSSs are proposed. An offshore export cable corridor (OECC) connects the array site to the landfall location at Poolbeg and represents the area below the high water mark (HWM) within which the offshore export cables will be installed.

46. At the landfall the offshore export cables are connected to the onshore export cables in transition joint bays (TJBs). This marks the termination of the OfTI and the start of the OTI. The onshore export cables are then

routed north, across Poolbeg Peninsula, to an onshore substation located on the south bank of the River Liffey.

47. For the purposes of this document the boundary between offshore and onshore project infrastructure is defined by the HWM. The offshore development area includes infrastructure seawards of the HWM, including all components of the Generating Station and OSS. The onshore development area includes infrastructure landward of the HWM, including all components of the OTI. The landfall includes works that span the HWM.

48. **Chapter 4, Project Description** of the EIAR describes the above project components in detail, the construction methods that may be used for installation and the O&M processes and procedures.

4.1 Construction programme

49. The construction programme for the CWP Project is dependent on a number of factors which may be subject to change, including the determination of the application for development consent and the availability and lead in times associated with procurement and installation of project components.

50. An indicative construction programme for the CWP Project is presented in Plate 4-2, which assumes a total construction duration of four years, including commissioning.

Indicative construction programme	Year 1		Year 2		Year 3		Year 4		Year 5	
Onshore substation construction and commissioning		■	■	■	■	■	■			
Landfall works (Phase 1)			■	■						
Landfall works (Phase 2)					■	■				
Onshore export cable installation			■	■	■	■				
WTG and OSS foundation installation (incl. scour protection)			■	■						
WTG installation					■	■				
OSS topside installation and commissioning						■				
IAC and interconnector cable installation				■						
Offshore export cable installation					■	■				
WTG commissioning						■	■			

Plate 4-2 Indicative construction programme

4.2 Project Design Parameters

51. This section presents the project design parameters of the CWP Project for those impacts identified as having the potential to generate mortality, injury or disturbance to Annex IV species.

52. Wherever possible the location and detailed parameters of the CWP Project components are identified and described in full within **Chapter 4, Project Description** of the CWP Project EIAR in support of the planning application. However, certain design decisions and installation methods are required to be confirmed post-consent, to enable the best available technology to be constructed, to ensure the project is able to adapt to changing supply chain, policy or environmental conditions and to promote environmentally sound and sustainable development. This requires a degree of flexibility in the planning consent sought including:

- Up to two options for certain permanent infrastructure details and layouts such as the WTG layouts.
- Dimensional flexibility; described as a limited parameter range i.e., upper and lower values for a given detail such as cable length.
- Locational flexibility of permanent infrastructure, described as a Limit of Deviation (LoD) from a specific point or alignment.

53. Where the planning application seeks options or dimensional flexibility for infrastructure or installation methods, the impacts on the environment have been assessed using a representative scenario approach. A 'representative scenario' is a combination of options and dimensional flexibility that represents all of the likely significant effects of the project on the environment.

54. Where the planning application seeks locational flexibility for infrastructure, the impacts on the environment are assessed using a LoD. The LoD is the furthest distance from the location shown in the plans and particulars that a specified element of the CWP Project can be constructed.

55. In addition, the planning application relies on standard flexibility for the final choice of construction methodologies, subject to whatever limit values, mitigation measures, monitoring and other requirements are provided for in the planning permission. A range of different installation methods are assessed and the final methods selected by contractors will have no different or greater effects than those assessed.

56. This risk assessment is based on the project design parameters selected within the topic assessments of the CWP Project EIAR as having the potential to give rise to the greatest environmental effects.

57. Table 4-1 presents the project design parameters of the CWP Project for those impacts scoped into the Annex IV risk assessment.

Table 4-1 Project design parameters for those impacts scoped into assessment

Impact No.	Impact Description	Representative Scenario
Marine Mammals		
Construction / Decommissioning		
1	Auditory injury (PTS) from pre-construction / decommissioning surveys	<u>Array Site and OECC Geophysical Survey</u> Multi-Beam Echo Sounder (MBES); Sub-Bottom Imager (SBI); Side Scan Sonar (SSS); Sub Bottom Profiler (SBP) – pinger; Ultra-High Resolution Seismic (UHRS) – sparker; Ultra-Short Base Line (USBL) system; and Magnetometer. Survey duration = within construction timescale (3 years)
2	Disturbance from pre-construction / decommissioning surveys	

Impact No.	Impact Description	Representative Scenario
3	Auditory Injury (PTS) from UXO (construction only)	No. UXO = 10 Maximum charge weight = 525 kg
4	Disturbance from UXO clearance (construction only)	
5	Auditory injury (PTS) from piling – WTGs and OSS (construction only)	<u>WTGs</u> No. monopile foundations = 75 Pile diameter = 9.5 m Hammer energy = 4,400 kJ No. piles installed per day = 2 Hours of piling per day = 6.3 Total piling days (assuming 1 pile per day) = 75 Piling period = April – October inclusive No concurrent piling <u>OSS</u> No. monopile foundations = 3 Pile diameter = 9.5 m Hammer energy = 4,400 kJ No. piles installed per day = 2 Hours of piling per day = 6.3 Total piling days (assuming 1 pile per day) = 3 Piling period = April – October inclusive No concurrent piling
6	Disturbance from piling – WTGs and OSS (construction only)	
7	Auditory injury (PTS) from piling – onshore substation revetment (construction only)	Hammer energy = 440 kJ Hours piling per day = 8 Total duration of piling = 20 weeks Potential for concurrent piling
8	Disturbance from piling – onshore substation revetment (construction only)	
9	Auditory injury (PTS) from other construction / decommissioning related activities	<u>Construction / decommissioning related activities</u> Boulder clearance (plough or sub-sea grab); Pre-lay grapnel run; IAC and interconnector cable installation; Offshore export cable installation; Sandwave clearance (dredger or mass flow excavation); IAC burial (jetting, trenching or ploughing); Drilling / pile cutting; and Use of Acoustic Deterrent Devices (ADDs)
10	Disturbance from other construction / decommissioning related activities	
11	Vessel collision (injury / mortality)	<u>No. Vessels on site (round trips)</u> WTG and OSS foundation vessels = 24 (213) WTG and OSS installation vessels = 8 (70)

Impact No.	Impact Description	Representative Scenario
12	Vessel disturbance	Cable installation vessels = 35 (748) Commissioning vessels = 2 (48) Support vessels = 6 (1,330) Total construction vessels = 75 (2,409) Indicative peak vessels on site simultaneously = 38 Note: decommissioning vessel requirements will be reduced compared to construction
Operation and maintenance		
13	Auditory injury (PTS) from operational noise	Operational noise output associated with 75 WTG of 250 m rotor diameter
14	Disturbance from operational noise	
15	Vessels collision (injury / mortality)	<u>No. vessels on site (round trips) throughout operation</u> Jack up vessel (JUV) = 2 (3) Service operation vessel (SOV) = 1 (26) Crew transfer vessel (CTV) = 6 (1,152) Cable maintenance vessel = 2 (1) Auxiliary vessel = 3 (27) Total O&M vessels = 14 (1,209) Indicative peak vessels on site simultaneously = 14
16	Disturbance from vessels	
Marine Turtles		
Construction / decommissioning		
1	Disturbance due to construction / decommissioning noise and vibration	As for marine mammals - Noise generated from: Pre-construction / decommissioning surveys; UXO clearance (construction only); WTG and OSS impact piling (construction only); Onshore substation revetment piling (construction only); and Other construction activities.
2	Vessel collision (injury / mortality)	As for marine mammals: Total construction vessels = 75 (2,409) Indicative peak vessels on site simultaneously = 38 Note: decommissioning vessel requirements will be reduced compared to construction
Operation and maintenance		
3	Disturbance due to operational noise and vibration	Operational noise output associated with 75 WTG of 250 m rotor diameter Vessel noise associated with: Total O&M vessels = 14 (1,209) Indicative peak vessels on site simultaneously = 14

Impact No.	Impact Description	Representative Scenario
4	Vessel collision (injury / mortality)	As presented for marine mammals: Total O&M vessels = 14 (1,209) Indicative peak vessels on site simultaneously = 14
Bats		
Construction / decommissioning		
1	Disturbance due to artificial lighting	Structures: No. of WTGs = 75 No. of OSS = 3 Vessels as presented for marine mammals: Total construction vessels = 75 (2,409) Indicative peak vessels on site simultaneously = 38 Number of vessels simultaneously within the nearshore = 17 Note: decommissioning vessel requirements will be reduced compared to construction
Operation and maintenance		
2	Disturbance due to artificial lighting	Lighting on artificial structures: No. WTGs = 75 No. of OSS = 3 Lighting on vessels: Annual vessel trips for maintenance = 1,209
3	Collision risk (injury / mortality)	Number of WTGs = 75 Total rotor swept area = 3,681,554 m^2

4.3 Mitigation and Management Measures

58. Throughout the development of the CWP Project, measures have been adopted as part of the evolution of the project design parameters and approaches to construction and O&M, to avoid or otherwise reduce adverse impacts on the environment. These mitigation measures are referred to as 'primary mitigation' and they are an inherent part of the CWP Project, effectively 'built in' to the impact assessment. Where additional mitigation measures are proposed, these are referred to as 'additional mitigation'. Additional mitigation includes measures that are not incorporated into the design of the CWP Project and require further activity to secure the required outcome of avoiding or reducing the risk of impact.

59. Primary and additional mitigation measures relevant to the assessment of Annex IV species are set out in Table 4-2. These measures are considered within the Annex IV risk assessment presented in Section 5 of this report.

Table 4-2 Mitigation measures

Receptor	Mitigation Type	Project element	Mitigation measure
Cetaceans Marine Turtles Bats	Primary	All offshore infrastructure	A **Construction Environmental Management Plan** (CEMP) has been prepared to provide a management framework, to ensure appropriate controls are in place to manage environmental risks associated with the construction of the CWP Project. It outlines environmental procedures that require consideration throughout the construction process, in accordance with legislative requirements and industry best practice. In summary, the CEMP includes details of: • The Environmental Management Framework for the CWP Project including environmental roles and responsibilities (i.e., ecological clerk of works) and contractor requirements (i.e., method statements for specific construction activities); • Mitigation measures and commitments made within the EIAR, Natura Impact Statement (NIS) and supporting documentation for the CWP Project; • Measures proposed to ensure effective handling of chemicals, oils and fuels including compliance with the MARPOL convention; • A Marine Pollution Prevention and Contingency Plan to address the procedures to be followed in the event of a marine pollution incident originating from the operations of the CWP Project; • An Emergency Response Plan adhered to in the event of discovering unexploded ordnance; • Offshore biosecurity and invasive species management detailing how the risk of introduction and spread of invasive non-native species will be minimised; and • Offshore waste management and disposal arrangements. The CEMP will be implemented by the Applicant and its appointed contractor(s) and will be secured through conditions of the development consent. It will be a live document which will be updated and submitted to the relevant authority, prior to the start of construction.
Cetaceans Marine Turtles	Primary	All onshore infrastructure	The Applicant's contractors will adopt specific measures relevant to the prevention of contaminant supply to water bodies. These are secured in the CEMP and will prevent immediate discharge of contaminated water and sediment from the onshore construction works into adjacent water bodies and / or the surface drainage network. The measures include: • Situating concrete and cement mixing and washing areas at least 10 m away from the nearest water body. These areas will incorporate settlement and recirculation systems to allow water to be re-used. All

Receptor	Mitigation Type	Project element	Mitigation measure
			washing out of equipment would take place in a contained area and the water collected for disposal offsite. • Storing all fuels, oils, lubricants and other chemicals in impermeable bunds with at least 110% of the stored capacity, with any damaged containers being removed from site. Refuelling would take place in a dedicated impermeable area, using a bunded bowser, located at least 10 m away from the nearest water body, where practicable to do so. • Ensuring that spill kits are available on site at all times as well as sandbags and stop logs for deployment on the outlets from the site drainage system in case of emergency spillages. • Foul drainage (e.g. from construction welfare facilities) will be collected through mains connection to an existing mains sewer (if such a connection is available) or collected in an alarmed holding tank located within the planning application boundary and transported off site for disposal at a licensed facility with appropriate treatment capacity within its existing permit. In the event of a widespread leak or spill, the following measures shall be implemented in addition to the most up to date standard practices at the time of the event: • The source of the leak or spill shall be cut off as soon as possible; • Fuel/ oil shall be bunded immediately to prevent further spread; • The relevant authorities shall be contacted including those who will be able to assist in the clean-up of the leak or spill; and A remediation plan shall be implemented to monitor and remediate the leak or spill.
Cetacean Marine Turtles	Primary	All offshore infrastructure	A **Marine Mammal Mitigation Protocol** (MMMP) has been prepared to outline the mitigation requirements for minimising the impacts on marine mammals during the construction of the CWP Project. The MMMP will be implemented by the Applicant and its appointed contractor(s) and will be secured through conditions of the development consent. It will be a live document which will be updated and submitted to the relevant authority, prior to the start of construction. Primary mitigation measures in the MMMP include: • Implementation of Noise Abatement Systems (NAS) in the event of high order UXO detonation,

Receptor	Mitigation Type	Project element	Mitigation measure
			• Pre geophysical survey visual watch by a Marine Mammal Observer (MMO) (and Passive Acoustic Monitoring (PAM) if required); • Pre UXO detonation visual watch by an MMO; and • Pre UXO detonation PAM (if required to supplement to visual observations).
Cetacean Marine Turtles	Primary	WTGs OSSs	A **Marine Mammal Mitigation Protocol** (MMMP) has been prepared to outline the mitigation requirements for minimising the impacts on marine mammals during the construction of the CWP Project. The MMMP will be implemented by the Applicant and its appointed contractor(s) and will be secured through conditions of the development consent. It will be a live document which will be updated and submitted to the relevant authority, prior to the start of construction. Primary mitigation measures in the WTG/OSS Piling MMMP (section 8 of the MMMP) • CWP has committed to a limit on underwater noise of 169 dB $L_{E,p,ss,05}$ at 750m; • Pre-piling visual watch by an MMO; and • Pre-piling PAM (if required to supplement to visual observations). and the Onshore Substation Piling MMMP (section 9 of the MMMP): • Pre-piling visual watch by an MMO; and • Pre-piling PAM (if required to supplement to visual observations).
Cetacean Marine Turtles	Primary	Vessel collisions and vessel disturbance	An **Ecological Vessel Management Plan** (EVMP) has been prepared to determine vessel routing to and from construction sites and ports and to include a code of conduct for vessel operators. The EVMP includes details of: • The types and specifications of vessels for the CWP Project; • How vessels will be monitored and coordinated; and • The use of defined transit routes to site from key construction and operation ports, where practicable to do so. The EVMP will be implemented by the Applicant and its appointed contractor(s) and will be secured through conditions of the development consent. It will be a live document which will be updated and submitted to the relevant authority, prior to the start of construction.
Cetaceans	Primary	WTGs	Zonation of WTG pile driving parameters to restrict piling parameters used to minimise potential impacts.

Receptor	Mitigation Type	Project element	Mitigation measure
Marine Turtles	Primary	All offshore infrastructure	Bedform clearance operations will be undertaken only where necessary, thereby minimising sediment disturbance and alteration to seabed morphology.
Marine Turtles	Primary	Offshore cables	Cables will be suitably buried or protected by other means where burial is not practicable. This will reduce the potential for effects relating to the presence of EMF.
Cetacean Marine Turtles Bats	Primary	All offshore infrastructure All onshore infrastructure	A **Rehabilitation Schedule** is provided as part of the planning application. This has been prepared in accordance with the MAP Act (as amended by the Maritime and Valuation (Amendment) Act 2022) to provide information on the approaches to decommissioning the offshore and onshore components of the CWP Project.
Bats	Primary	All offshore infrastructure Offshore construction vessels	A CEMP has been prepared to provide a management framework, to ensure appropriate controls are in place to manage environmental risks associated with the construction of the CWP Project. The CEMP shall include the responsibilities of an experienced Ecological Clerk of Works (ECoW), to be appointed throughout the construction phase of the project. Though considered to be of low likelihood, it is possible that bats will roost the construction vessels, the WTGs or OSSs during construction. As such, the ECoW will be available for advice should any bats be seen resting or otherwise stopping on the vessels or infrastructure. Guides on how to identify the different bats, with life size photos, will also be available to the construction personnel to aid with identification of any bats which are seen. If bats are seen this will be logged, with the date, location and weather conditions recorded to aid future research into bat movements within the area.
Bats	Primary	All onshore infrastructure	Measures to avoid or otherwise minimise disturbance to ecological receptors are included in the CEMP. With regards to the protection of bats, to reduce disturbance, all temporary lighting associated with the onshore construction works will be placed strategically by the appointed contractor following consultation with the appointed ECoW to ensure that illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay. No light will be directed toward the vegetated berm at the landfall site.
Bats	Additional	All onshore infrastructure	The replanting of vegetation (ca. 9753 m^2) will be undertaken at the proposed landfall site following the completion of the works. A mix of native tree species will be planted at the landfall location which will increase the natural diversity of plant species within the area, which will be beneficial to protected mammal species.
Bats	Primary	All onshore infrastructure	Measures to avoid or otherwise minimise disturbance to both human and ecological receptors are included in the CEMP. The CEMP outlines a series of noise abatement measures that will be adopted by the Applicants contractors in accordance

Receptor	Mitigation Type	Project element	Mitigation measure
			with British Standard BS 5228 1:2009 to reduce the level of noise during the construction phase.
Bats	Additional	Onshore substation	All new lighting at the substation site will be designed following regard of the Bat Conservation Trust Guidelines (2018) and will include the following: • All luminaires used will lack UV/IR elements. • LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability. • A warm white spectrum (<2700 Kelvins, i.e. 2200 Kelvins) will be used to reduce the blue light component of the LED spectrum). • Luminaires will feature peak wavelengths higher than 550 nm to avoid the component of light most disturbing to bats. • Column heights will be carefully considered to minimise light spill and the shortest column height allowed should be used where possible. • Only luminaires with an upward light ratio of 0% and with good optical control will be used. • Luminaires will be mounted on the horizontal, i.e. no upward tilt. • Any external security lighting will be set on motion-sensors and short (1 min) timers. - As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.
Bats	Primary	All onshore infrastructure Landfall	Construction noise will be managed in accordance with British Standard BS 5228 1:2009 'Code of Practice for Noise and Vibration Control on Construction and Open Sites –Part 1: Noise'. The appointed contractor will put in place the most appropriate noise control measures to ensure that the works in each area comply with the limits detailed in **Chapter 24 Noise and Vibration** and so that minimisation of noise is achieved by best means practicable. Measures to control noise from construction activities are described in **Chapter 24 Noise and Vibration** and the CEMP.
Bats	Additional	All onshore infrastructure Landfall	To reduce the level of artificial lighting, all temporary lighting associated with the construction works will be placed strategically by the appointed Contractor following consultation with the appointed ECoW. This will ensure that illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay.
Bats	Additional	All offshore infrastructure	The impact of light associated with offshore construction works shall be reduced through proper placement of light sources in addition to using lights with high directionality. The amount of lighting should be targeted to achieve minimum required or necessary light levels, by reducing the number of lights or by moving from general area lighting to specifically focused task-based lighting.

Receptor	Mitigation Type	Project element	Mitigation measure
Bats	Additional	WTGs OSSs	As bats will have had a minimum of 25 years to find roosting opportunities within the offshore infrastructure, should any gaps, expansion joints, or other crevices be present these will be noted and infrared cameras (or similar) used to check for evidence of potential bat roosting. Any such features will be dismantled carefully, by hand where possible, to ensure that if there are bats roosting within the structures (considered highly unlikely at this time) any risks to them are minimised. An appropriately experience ecologist would be available for contact regarding any bats found resting during this phase.
Bats	Additional	All onshore infrastructure Landfall	Where possible, vegetation clearance will be kept to a minimum. The proposed construction work areas will be demarcated prior to the construction works commencing. No clearance of vegetation will be undertaken outside of the demarcated areas within the CWP Project. Construction vehicles will be restricted to designated areas and access tracks to avoid impacting adjacent habitats and to ensure that soil compaction is restricted to these areas. All disturbed ground will be fully reinstated following the completion of the works.
Bats	Additional	Landfall	The berm at the landfall will be reinstated once the construction works are completed at this location. This will incorporate the replanting of vegetation at the landfall site following the completion of the works, including a mix of native trees (see **Figure 23.7** in **Chapter 23 Landscape and Visual Impact** Assessment). The mix of native trees species will include bat friendly scented species such as dog rose, guilder rose and hazel, which will attract and benefit bat species. Four bat boxes (Schwegler Woodcrete 1FF bat box or equivalent) will be erected on mature trees within the Irishtown Nature Reserve. The bat boxes will be erected prior to the construction works commencing and the exact siting of the bat boxes will be undertaken in consultation with a bat specialist. The bat boxes will be installed in line with the following guidelines: • Straight limb trees (or telegraph pole) with no crowding branches or other obstructions for at least 1 m above and below position of bat box. The diameter of tree should be wide and strong enough to hold the required number of boxes. • The bat boxes will be installed in areas where bats are known to forage or adjacent to suitable foraging habitats. • The bat boxes must be installed in locations sheltered from prevailing winds. The bat boxes will be erected at a height of 4-5 m, to avoid predation and vandalism.

5 ANNEX IV RISK ASSESSMENT

60. The following sections present the necessary information to allow the regulatory authority to establish if an offence under Regulation 51 of the Regulations would be committed during the construction or O&M of the CWP Project in the absence of a derogation licence.

61. The assessment considers whether the CWP Project will result in the mortality, injury or disturbance to Annex IV species identified as a result of the potential impacts identified in Section 4 of this document.

62. In line with NPWS guidance (2014), the assessment considers the following key questions to conclude whether the impact is likely to affect the FCS of the species:

- Is it possible to estimate the number of individuals of each species that are likely to be affected?
- Will individuals be disturbed at a sensitive location or sensitive time during their life cycle?
- Are the impacts likely to focus on a particular section of the species' population, e.g., adults vs. juveniles, males vs. females?
- Will the plan or project cause displacement from key functional areas, e.g., for breeding, foraging, resting or migration?
- How quickly is the affected population likely to recover once the plan or project has ceased?

5.1 Marine Mammal Risk Assessment

5.1.1 Construction

Impact 1: Auditory injury (PTS) from pre-construction / decommissioning surveys

63. The pre-construction / decommissioning geophysical survey equipment for the CWP Project may utilise a range of different survey equipment including; multibeam echo sounders (MBES), sub bottom imager (SBI), side scan sonar (SSS), sub bottom profiler (SBP), ultra-high resolution seismic (UHRS) (sparker), ultra short baseline (USBL) systems, and magnetometers.

64. The potential for effects on marine mammal species relates to auditory sensitivities in terms of both hearing range and hearing sensitivity to noise sources and is species specific. For the assessment of geophysical surveys, this relates to equipment that may be used and the noise levels generated by that equipment. Exposure to loud sounds can lead to a reduction in hearing sensitivity of marine mammals (a shift in hearing threshold). This threshold shift results from physical injury to the auditory system and may be temporary (TTS) or permanent (PTS).

65. TTS-onset measures the minimum threshold shift outside of normal day to day variation in an animals hearing ability. Recovery to such small threshold shifts is expected to be less than an hour and is, therefore, unlikely to cause any major consequences for an animal (Finneran, 2015). There is currently no set threshold for the onset of a biologically meaningful TTS. PTS-onset provides a measure at which an animals hearing sensitivity will be permanently reduced (a permanent threshold shift), indicating a level of biologically significant auditory injury. Therefore, to assess potential impacts of auditory injury on marine mammals and the likely consequences for individuals and ultimately populations, PTS onset is used as this is a permanent effect from which a measurable change can be taken.

66. Table 5-1 is taken from **Chapter 11, Marine Mammals** of the CWP EIAR and provides a comparison of the operating characteristics of typical noise emitting survey equipment used in offshore wind farms and overlap with estimated hearing range of different marine mammal functional hearing groups. Where there is no overlap between hearing capability and operating characteristics there is no potential for PTS to occur.

Table 5-1 Comparison of typical noise emitting survey equipment operating characteristics and overlap with the estimated hearing range of different marine mammal functional hearing groups

Equipment	Estimated sound source pressure level (dB re 1 µPa)	Expected Sound Frequency	LF	HF	VHF	PCW
MBES	210 – 240 dB re 1 µPa (SPL_{peak}) for multiple beams* (Lurton and Deruiter, 2011) 197 dB re 1 µPa (SPL_{peak}) for a single beam at an operational frequency of 200 kHz (Risch *et al.*, 2017)	200 – 400 kHz (Hartley Anderson Ltd, 2020)	Above all hearing ranges			
SSS	210 dB re 1 µPa (SPL_{peak}) (Crocker and Fratantonio, 2016, Crocker *et al.*, 2019)	300 & 900 kHz (Crocker and Fratantonio, 2016, Crocker *et al.*, 2019)	Above all hearing ranges			
USBL	187 – 206 dB re 1 µPa (SPL_{RMS}) (Jiménez-Arranz *et al.*, 2020)	19 – 34 kHz (Jiménez-Arranz *et al.*, 2020)	Yes	Yes	Yes	Yes
SBI[2]	192 dB re 1 µPa (SPL_{peak})	4.5 – 12.5 kHz band width	Yes	Yes	Yes	Yes
SBP pinger	210 – 220 dB re 1 µPa (SPL_{peak}) (Hartley Anderson Ltd, 2020)	Frequency selectable. Typically 2 – 15k Hz with a peak frequency of 3.5 kHz (Hartley Anderson Ltd, 2020)	Yes	Yes	Yes	Yes
UHRS sparker	215 - 225 dB re 1 µPa (SPL_{peak}) (Hartley Anderson Ltd, 2020)	100 Hz – 5 kHz (Hartley Anderson Ltd, 2020)	Yes	Yes	Yes	Yes

LF – Low frequency cetacean (minke whale), HF – High frequency Cetacean (dolphin), VHF – Very High Frequency Cetacean (Harbour porpoise), PCW – Phocid carnivores in water (seal)

Summary of EIAR findings

67. MBES and SSS operate at high frequencies and are unlikely to cause auditory injury (PTS) onset to cetaceans as the frequency range used is above the hearing capabilities of marine mammal species; JNCC guidance (JNCC *et al.*, 2010) for use of SSS states that *"this type of survey is of a short-term nature and results in a negligible risk of an injury or disturbance offence (under the Regulations).* Sound source levels of SBI equipment are below the injury (PTS-onset) thresholds for all species and as such there is no risk of auditory injury to any species identified. Magnetometers are a passive system and therefore do not emit any noise. However, USBL, SBP, and URHS (sparkers) can exceed auditory injury thresholds for marine mammals.

68. A comprehensive assessment of the characteristics of acoustic survey sources is set out within **Chapter 11, Marine Mammals**, of the CWP EIAR. This concluded that USBL systems have sound levels that decrease rapidly with distance, and the risk of auditory injury to cetaceans is considered to be very low. SPB and UHRS are below the level of injury (PTS) onset thresholds for dolphins but may present a risk to harbour porpoise and mink whale.

69. Studies show that for PTS-onset to occur to harbour porpoise, sound sources from SBP and URHS systems would need to be considerably louder than those proposed for the CWP Project and therefore there is very

[2] https://pangeosubsea.com/wp-content/uploads/2017/10/RPT-07641-1-Technical-Description-SBI-Data-Processing.pdf

low potential for auditory injury to this species (BEIS, 2019, BEIS 2020). For minke whale, only the upper levels of predicted sound source levels have the potential to exceed PTS thresholds. It is possible that minke whale may be sensitive to the use of SPB and UHRS systems at the CWP Project, however, sightings of minke whale during project specific and wider surveys, and corresponding densities and abundance were low. In addition, PTS is only expected for minke whales within 5 m of the source for SBPs when SBP pingers operate with a sound source of 220 dB re 1 µPa (SPL_{peak}) (Shell, 2017). Therefore, there is a low likelihood of presence and low risk of auditory injury for this species.

Mitigation measures

70. Mitigation measures to reduce the risk of auditory injury to marine mammals from geophysical surveys includes the preparation of a MMMP. This will include the provision of pre-survey watch of a 500 m mitigation zone by a qualified MMO, in line with DAHG guidance (2014), and the use of PAM if required. Following the application of mitigation, there is considered to be very low risk of auditory injury to marine mammals from pre-construction surveys.

Conclusion

71. Auditory injury from pre-construction / decommissioning surveys has the potential to give rise to deliberate disturbance of the marine mammal species identified. While some degree of disturbance is expected, **it is not predicted to be of such an extent that it may affect chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species**. Therefore, auditory injury from pre-construction surveys does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not considered necessary.

72. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures, as required, to ensure that there are no significant adverse impacts on the population of the species concerned.

Impact 2: Disturbance from pre-construction / decommissioning surveys

73. As set out for Impact 1, the risk of disturbance to marine mammals as a result of geophysical surveys relates to the overlap between typical survey equipment operating characteristics and marine mammal functional hearing capability. Where there is overlap there is a potential risk of disturbance to marine mammal species known to be present in the area.

Summary of EIAR findings

74. MBES and SSS operate at high frequencies that are above the hearing frequency range of marine mammals likely to present during surveys. Therefore there is no risk of disturbance as a result of MBES or SSS.

75. There are currently no empirical data on the behavioural responses of marine mammals to USBL, SBP, URHS or SBI sound sources. However, the noise emitted from these sources will rapidly attenuate with distance from the source, and noise levels at which behavioural disturbance would be anticipated to occur will be of small spatial extent. In particular, equipment with higher source levels (SBP, URHS), along with the SBI, are highly directional, with noise levels outside of the main beam considerably lower and with limited horizontal propagation. JNCC et al., (2010) note that the use of SPBs in geophysical surveys "*could, in a few cases, cause localised short-term impacts on behaviour such as avoidance. However, it is unlikely that this would be considered as disturbance in the terms of the Regulations.*" Any disturbance from USBL will also be very localised and will likely be similar to noise levels generated by survey vessels (Rutenko and Ushchipovskii, 2015).

76. Therefore, while marine mammals may be exposed to sound sources from geophysical survey equipment, it is expected that any disturbance impact range will be small, highly localised and highly directional, and will be short term in nature, lasting for the duration of survey activity.

Mitigation Measures

77. Mitigation measures to reduce the risk of disturbance to marine mammals from geophysical surveys will be the same as those applied to manage the risks of auditory injury (PTS). Following the application of mitigation, there is considered to be a very low risk of disturbance to marine mammals from pre-construction / decommissioning surveys.

Conclusion

78. Pre-construction / decommissioning surveys have the potential to give rise to deliberate disturbance of the marine mammal species identified. While some degree of temporary disturbance is expected, **it is not predicted to be of such an extent that it may affect chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species**. Therefore, disturbance from pre-construction surveys does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not considered necessary.

79. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned..

Impact 3: Auditory injury (PTS) from UXO clearance

80. The potential for PTS to occur in marine mammals species as a result of UXO clearance relates to noise levels generated by UXO clearance activities and hearing sensitivity of marine mammals.

81. To understand the potential risk of auditory injury (PTS) to marine mammals from UXO clearance at the CWP Project, underwater noise propagation modelling was undertaken by Subacoustech Environmental Limited. This modelled the potential PTS-onset impact areas and ranges for the different marine mammals assessed, based on a range of UXO charge weights, with a maximum charge weight of 525 kg plus a donor charge. In each case, modelling assumed that the maximum explosive charge in each device was present and undergoes a full explosive detonation (a 'high-order' event). Additionally, a low-order clearance scenario was also modelled. Full details of the underwater noise modelling and the resulting PTS-onset impact areas and ranges are provided in **Appendix 9.4 UWN Assessment** of the CWP Project EIAR.

82. Impact areas generated were then combined with the density and abundance estimates of marine mammal species across the CWP Project and wider area, to provide an estimate of the number of individuals of a species likely to be at risk. Full details of the density estimates used and number of marine mammals assessed as potentially at risk of PTS from UXO clearance are presented in **Chapter 11, Marine Mammals** of the CWP EIAR.

83. Current practice is that Southall et al., (2019) criteria should be used to calculate PTS-onset impact ranges to assess the impacts from UXO detonation on marine mammals. UXO clearance is defined as a single pulse and therefore both a weighted sound exposure level (single strike) (SEL_{ss}) criteria and unweighted (SPL_{peak}) criteria are used.

84. Auditory injury (PTS-onset) impact ranges for marine mammals from UXO detonation at the Codling Wind Park are presented in Table 5-2.

Table 5-2 Summary of the auditory injury (PTS-onset) impact ranges for UXO detonation using the impulsive, weighted SEL and unweighted SPL_{peak} noise criteria from Southall et al., (2019) for marine mammals

Southall et al. (2019)	PTS (weighted SEL_{ss})			PTS (unweighted SPL_{peak})		
	LF 183 dB	HF 185 dB	VHF 155 dB	LF 219 dB	HF 230 dB	VHF 202 dB
Low order (0.25 kg)	230 m	<50 m	80 m	170 m	60 m	990 m
25 kg + donor	2.2 km	<50 m	570 m	820 m	260 m	4.6 km
55 kg + donor	3.2 km	<50 m	740 m	1.0 km	340 m	6.0 km
120 kg + donor	4.7 km	<50 m	950 m	1.3 km	450 m	7.8 km
240 kg + donor	6.5 km	<50 m	1.1 km	1.7 km	560 m	9.8 km
525 kg + donor	9.5 km	50 m	1.4 km	2.2 km	730 m	12 km

85. It should be noted that modelling outputs are likely an overestimate of PTS-onset impact ranges for marine mammals, as modelling undertaken does not consider any degradation of explosive material over time within the marine environment.

Summary of EIAR Findings

86. Modelling demonstrates that estimated auditory injury (PTS-onset) impact ranges increases with the size of the charge weight used for all marine mammal species.

87. Bottlenose dolphins, common dolphins and Risso's dolphins are predicted to have ≤1 individual experience auditory injury (PTS-onset) from UXO clearance activities under both SPL_{peak} and SEL_{ss} scenarios for all UXO charge sizes modelled. For harbour porpoise, up to 127 individuals (SPL_{peak}, using SCANS IV Block CS-D uniform density estimate) are predicted to experience auditory injury from UXO clearance at the largest charge weight. This represents 0.20% of the Celtic and Irish Sea Management Unit (MU) for this species. For minke whale, up to five individuals (SEL, using the SCANS III Block E density estimate) are predicted to experience auditory injury (PTS-onset) from UXO clearance at the largest charge weight. This represents 0.02% of the Celtic and Greater North Seas MU for this species.

88. It has been shown that most of the acoustic energy produced by a high order detonation is below a few hundred Hz and that there is a pronounced drop off in energy levels above 5 – 10 kHz from UXO clearance (Von Benda-Beckmann et al., 2015, Salomons et al., 2021). Therefore, the primary acoustic energy from a high-order UXO detonation is below the region of greatest sensitivity for the majority of marine mammal species potentially at risk (harbour porpoise and dolphins). However minke whale may be more sensitive, as recent studies show that there is more energy at lower frequences from UXO detonation (Robinson et al., 2022).

89. If UXO are identified across the array site or OECC of the CWP Project, a risk assessment will be undertaken and items of UXO will be either avoided by equipment micro-siting, moved, or detonated *in situ*. Recent advancements in the commercial availability of methods for UXO clearance mean that high-order detonation may be largely or completely avoided and low order detonation (deflagration) is likely to be employed and is shown to be effective (Abad Olivia *et al* 2024). For low order detonation modelling demonstrates that only one harbour porpoise, no dolphin species and no minke whale are predicted to experience auditory injury (PTS-onset). Following the formal application the Applicant has committed to, in instances where high order detonation cannot be avoided, the the implementation of NAS.

90. Therefore the likelihood of high order detonation taking place at the CWP Project, and the resulting risk to marine mammals identified is very low.

Mitigation Measures

91. Mitigation measures to reduce the risk of auditory injury to marine mammals from UXO clearance includes the preparation of a MMMP. This will include the provision of pre-detonation watch of a 1 km mitigation

zone by a qualified MMO and the use of pre-detonation PAM if required. Additional mitigation includes the potential for pre-detonation acoustic deterrent devices (ADDs), the implementation of a soft-start approach and / or the sequencing of detonations, and consideration of removal / relocation. Deflagration rather than high-order detonation will be used wherever possible and where high order detonation cannot be avoided the CWP Project has committed to the implementation of NAS.

92. Following the application of mitigation, there is considered to be a very low risk of auditory injury to marine mammals from UXO detonation.

Conclusion

93. Auditory injury from UXO clearance has the potential to give rise to deliberate disturbance of the marine mammal species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species**. Therefore, whilst auditory injury from UXO clearance does not amount to disturbance for the purposes of Regulation 51, the possibility of an impact on marine mammal species cannot be ruled out, and accordingly a derogation licence is being sought.

94. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned.

Impact 4: Disturbance from UXO clearance

95. There is no guidance available from NWPS on the methodology that should be used to assess disturbance from high order detonation UXO clearance. It is advised by UK statutory nature conservation bodies (SNCBs) that an Effective Deterrence Range (EDR) of 26 km around the source location is used to determine the impact area from UXO clearance with respect to disturbance of harbour porpoise in SACs (JNCC, 2020). In line with this guidance and the JNCC Marine Noise Registry (MNR) disturbance tool[3], the assessment of disturbance from UXO clearance for the CWP Project used an EDR of 26 km around the sound source location, to determine the impact area from a high-order UXO detonation (Tougaard et al., (2013)). Impacts from a low order detonation were assessed using an EDR of 5 km (JNCC et al 2023). These impact areas were then combined with the density and abundance estimates of marine mammal species across the CWP Project and wider area, to provide an estimate of the number of individuals of a species likely to be at risk.

96. The JNCC guidance is derived from evidence of harbour porpoise response to pile driving and it is acknowledged that there is little evidence to support the assumption that marine mammal species respond the same way to a high order UXO clearance (Dahne et al., 2013). Therefore, an alternative approach using TTS onset as a proxy for disturbance to UXO was also modelled using the criteria presented in Southall (2019). Full details of the underwater noise modelling and the resulting TTS-onset impact areas and ranges are detailed in **Appendix 9.4 UWN Assessment**. Full details of the density estimates used and number of marine mammals assessed as potentially at risk of disturbance from UXO clearance are presented in **Chapter 11, Marine Mammals** of the CWP EIAR.

Summary of EIAR Findings

97. Modelling demonstrates that for high order UXO detonation using an EDR of 26 km, the greatest estimated disturbance is to bottlenose dolphins, where up to 499 individuals may be disturbed which represents 7.22% of the MU for this species. For harbour porpoise, up to 595 individuals may be disturbed which represents

[3] https://jncc.gov.uk/our-work/marine-noise-registry.

0.95% of the MU for this species. For the remaining marine mammal species less than 0.5% of the relevant MU are predicted to be impacted.

98. For low order UXO detonation using an EDR of 5 km, the greatest estimated disturbance is to bottlenose dolphin, where up to 18 individuals may be disturbed which represents 0.20% of the MU for this species. For all other marine mammal species, less than 0.1% of the relevant MU are predicted to be impacted.

99. When using TTS as a proxy for disturbance, modelling demonstrates that TTS impact ranges increase with the size of the charge weight used for all marine mammal species. For bottlenose dolphin, common dolphin and Risso's dolphin, less than 0.01% of the MU are predicted to be subject to TTS across all charge weights, using both SEL and SPL_{peak} noise criteria. For harbour porpoise, up to 466 individuals are anticipated to be subject to TTS (SPL_{peak}, using the SCANS IV density estimate) which represents 0.75% of the MU for this species. For minke whales up to 534 individuals are predicted to be subject to TTS (SEL, using the SCANS III density estimate) which represents 2.66% of the MU for this species.

100. While there is a risk that marine mammal species may be exposed to disturbance through UXO detonation at the CWP Project, it should be noted that there is no empirical evidence of marine mammal avoidance from high order or low order detonation of UXOs. It is expected that the detonation of a UXO would elicit a startle response and potentially very short duration behavioural responses which would not be expected to cause widespread or prolonged displacement, and would be unlikely to alter survival and reproductive rates to the extent that the population trajectory would be altered (JNCC, 2020).

101. As set out for the assessment of PTS, it is highly unlikely that high order clearance methods will be employed for the CWP Project and low order clearance methods (deflagration) will be used. Where high order detonation can not be avoided the CWP Project has also committed to the implementation of NAS. Therefore the risk of disturbance to marine mammals species from UXO clearance is low.

Mitigation

102. Mitigation measures to reduce the risk of disturbance to marine mammals from UXO clearance will be the same as those applied to manage the risks of auditory injury (PTS) (Impact 3). Following the application of mitigation, there is considered to be a low risk of disturbance to marine mammals from UXO clearance.

Conclusion

103. Disturbance from UXO clearance has the potential to give rise to deliberate disturbance of the marine mammal species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species**. Therefore, whilst disturbance from UXO clearance does not amount to disturbance for the purposes of Regulation 51, the possibility of an impact on marine mammals species cannot be ruled out, and accordingly a derogation licence is being sought.

104. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned.

Impact 5: Auditory Injury (PTS) from piling WTGs and OSS

105. Impact piling will be the loudest noise source during the construction phase of the CWP Project. To understand the potential risk of auditory injury (PTS) to marine mammals from pile driving the WTGs and OSS, underwater noise propagation modelling was undertaken by Subacoustech Environmental Limited. Full details of the underwater noise modelling and the resulting PTS-onset impact areas and ranges are provided in **Appendix 9.4 UWN Assessment** of the CWP Project EIAR.

106. Four WTG model locations were selected within the CWP array site to represent the range of different ground conditions and water depths across the area (north east (NE), north west (NW), south east (SE), south west (SW)). In order to minimise potential impacts from underwater noise the CWP Project has imposed restrictions on piling activities which relate to three spatially discrete regions of the array site. Three spatially specific piling scenarios were therefore assessed:

- Scenario 1: Most restrictive (slow soft start and ramp up, single pile in 24 hours) – 9.5 m monopile, maximum 4,000 kJ hammer energy, 3.17 hours piling, 5,594 hammer strikes;
- Scenario 2: Less restrictive (soft start, single pile in 24 hours) – 9.5 m monopile, maximum 4,000 kJ hammer energy, 3.17 hours piling, 4,734 hammer strikes; and
- Scenario 3: Least restrictive (soft start, 2 piles in 24 hours) – 9.5 m monopile, maximum 4,000 kJ hammer energy, 6.33 hours piling, 9,468 hammer strikes.

107. Full details of the three WTG piling parameters, including soft-start and ramp-up for each piling scenario are provided in **Chapter 11, Marine Mammals** of the CWP Project EIAR.

108. To quantify the impact of pile driving noise with regard to auditory injury (PTS), the PTS-onset impact range was calculated using the thresholds presented by Southall et al., (2019). This used both SPL_{peak} (instantaneous PTS from a single pile strike) and SEL_{cum} (cumulative PTS from accumulated sound exposure over a piling event). PTS-onset ranges were then combined with density estimates of marine mammal species across the CWP Project and wider area, to provide an estimate of the number of individuals of a species likely to be at risk. Full details of the density estimates used and number of marine mammals assessed as potentially at risk of auditory injury (PTS) are presented in **Chapter 11, Marine Mammals** of the CWP EIAR.

Summary of EIAR Findings

Harbour porpoise

109. For harbour porpoise, modelling demonstrates the maximum PTS-onset range is 620 m (SPL_{peak}) at the SE location, which results in <1 individual experiencing auditory injury at all locations using the maximum density estimate (Irish density estimates (Evans and Waggit, 2023)). Cumulative PTS-onset ranges vary by piling location used:

- For scenario 1 (most restrictive, SE) the maximum cumulative PTS-onset range is 4.7 km, which is predicted to impact up to 11 harbour porpoise which represents 0.02% of the MU for this species.
- For Scenario 2 (less restrictive, SW and NE), the maximum cumulative PTS-onset range is 3.2 km, which is predicted to impact up to 5 harbour porpoise which represents 0.01% of the MU for this species.
- For Scenario 3 (least restrictive, NW), the maximum cumulative PTS-onset range is 2.2 km, which is predicted to impact up to 1 harbour porpoise which is <0.01% of the MU for this species.

110. There is evidence that harbour porpoise detections are reduced in the immediate vicinity of the pile prior to the commencement of piling, as a result of the presence of construction vessels acting as a deterrent, which is not accounted for in the modelling (Brandt et al., 2018, Rose et al., 2019, Benhemma-Le Gall et al., 2021, Benhemma-Le Gall et al., 2023). It is also anticipated that there will be recovery of a threshold shift when sound is received in several smaller doses, as would be the case when pile driving, due to breaks in piling activity. This means that a greater energy level would be required to result in PTS-onset than assumed with the given SEL_{cum} threshold and, therefore, the predicted number of animals experiencing PTS is likely to be overestimated.

111. A review of the potential consequences of PTS resulting from pile driving activity is provided in **Chapter 11, Marine Mammals** of the CWP EIAR. This concludes that while PTS is a permanent effect which cannot be recovered from, evidence derived through expert elicitation for the iPCoD framework (Booth & Heinis,

2018), does not suggest that PTS at the assessed PTS-onset threshold (6 dB PTS) from piling, will cause a significant impact on either survival or reproductive rates for harbour porpoise. Therefore the risk to harbour porpoise from auditory injury (PTS) as a result of pile driving at the CWP Project is low.

Dolphins

112. For all dolphin species identified (bottlenose dolphin, common dolphin and Risso's dolphin), modelling demonstrates that the predicted instantaneous PTS-onset range is <50 m and the predicted cumulative PTS-onset range is <100 m across all WTG piling scenarios and all four WTG locations.

113. As for harbour porpoise, the evidence derived through expert elicitation for iPCoD (Booth & Heinis, 2018) does not suggest that PTS at the assessed PTS-onset threshold (6 dB PTS) from piling will cause a significant impact on either survival or reproductive rates for any dolphin species. Therefore the risk to dolphin species from auditory injury (PTS) as a result of pile driving at the CWP Project is low.

Minke whale

114. For minke whale modelling demonstrates that the predicted instantaneous PTS-onset range is at most 50 m at the SE location, impacting <1 minke whale at all WTG locations, regardless of which density estimate is used. Cumulative PTS-onset ranges vary by piling location used:

    - For scenario 1 (most restrictive, SE) the maximum cumulative PTS-onset range is 9.5 km, which is predicted to impact up to 1 minke whale which represents <0.01% of the MU for this species.
    - For Scenario 2 (less restrictive, SW and NE), the maximum cumulative PTS-onset range is 5.8 km, which is predicted to impact <1 minke whale which represents 0.01% of the MU for this species.
    - For Scenario 3 (least restrictive, NW), the maximum cumulative PTS-onset range is 2 km, which is predicted to impact up to <1 minke whale which is <0.01% of the MU for this species.

115. A review of the potential consequences of PTS on minke whale resulting from pile driving activity is provided in **Chapter 11, Marine Mammals** of the CWP EIAR. This concludes that while PTS is a permanent effect, the evidence derived through expert elicitation for iPCoD (Booth & Heinis, 2018) suggests it is unlikely that vital rates of minke whale would be altered in a biologically meaningful way as a result of PTS at the PTS-onset threshold (6 dB PTS) from piling (Booth and Heinis, 2018). The number of individuals predicted to be affected are also very low and, therefore, the risk to minke whale from auditory injury (PTS) as a result of pile driving at the CWP Project is low.

Mitigation

116. While the number of marine mammals and proportion of relevant management units predicted to experience PTS-onset is low, the CWP Project has committed to the development and implementation of a MMMP to reduce the risk of auditory injury to PTS. This will include the provision of pre-piling watch of a 500 m mitigation zone by a qualified marine mammal observer (MMO) and the use of pre-piling PAM if required. These measures will ensure the risk of instantaneous PTS to all marine mammal species is very low.

117. The maximum predicted cumulative PTS impact ranges for harbour porpoise (4.7 km) and minke whale (9.5 km) are beyond those that can be mitigated by 'industry standard' measures. As such, additional mitigation measures are also proposed to mitigate cumulative PTS. To mitigate potential impacts from underwater noise during the construction of the project, CWP commits to a limit on underwater noise of 169 dB $L_{E,p,ss,05}$ at 750m at WTG and OSS piling events., the use of ADDs to deter marine mammals from the immediate vicinity of the pile and consideration of alternative piling methods.

118. Following the application of mitigation, there is considered to be very low risk of auditory injury (PTS) to marine mammals from piling of WTGs and OSS.

Conclusion

119. Auditory injury from WTG and OSS piling has the potential to give rise to deliberate disturbance of the marine mammal species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51. Whilst auditory injury from WTG and OSS piling does not amount to disturbance for the purposes of Regulation 51, the possibility of an impact on marine mammal species cannot be ruled out, and accordingly, a derogation licence is being sought.

120. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned..

Impact 6: Disturbance from piling WTGs and OSS

121. The assessment of disturbance from piling WTGs and OSS at the CWP Project on marine mammal species was based on current best practice and incorporated the application of a species-specific dose-response function. This quantifies the probability of a response from a marine mammal to a dose of a certain stimulus or stressor (Dunlop et al., 2017, Southall et al., 2019).

122. Noise contours were generated by underwater noise modelling and these were combined with the density estimates of marine mammal species across the CWP Project and wider area and multiplied by the relevant dose-response function, to provide an estimate of the number of individuals of a species likely to be disturbed. Full details of the dose response function derived for the different marine mammal species and marine mammal density estimates used are provided in **Appendix 11.3, Baseline Technical Report** and **Chapter 11, Marine Mammals** of the CWP EIAR.

123. For marine mammals, the dose response function is derived from evidence related to harbour porpoise, however, in the absence of species specific data on dolphin species or minke whale, this dose-response function has been adopted for all marine mammals. It is recognised that this is highly over precautionary as harbour porpoise are considered to be particularly responsive to anthropogenic noise disturbance (Tyack, 2009). Therefore, an alternative threshold for disturbance was also modelled for these species; the Level B Harassment threshold.

124. The National Marine Fisheries Service (NMFS) uses the Level B harassment threshold to predict marine mammal behavioural harassment. This threshold predicts that Level B harassment[4] will occur when an animal is exposed to received levels above 160 dB re 1 µPa (rms) for non-explosive impulsive (e.g., impact pile driving) or intermittent (e.g. scientific, non-tactical sonar) sound sources (Guan and Brookens, 2021, NMFS, 2022). The Level B harassment threshold originates from a study on a grey whale mother and calf, which were shown to exhibit avoidance responses when exposed to air gun playback signals at levels above 160 dB re 1µPa rms (Malme et al., 1984).

125. To understand the potential consequences of disturbance resulting from pile driving activity at the CWP Project, the interim Population Consequences of Disturbance (IPCoD) framework (Harwood et al., 2014, King et al., 2015) was used. IPCoD uses a model of population dynamics to compare projections of a baseline (current) scenario with a series of impact (piling) scenarios, to provide an understanding of the

[4] Level B harassment refers to acts that have the potential to disturb (but not injure) a marine mammal or marine mammal stock in the wild by disrupting behavioural patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

potential future population level consequences of predicted auditory injury and behavioural response. Full details of iPCoD modelling outputs are presented within **Chapter 11, Marine Mammals of the CWP EIAR**.

Summary of EIAR Findings

Harbour porpoise

126. For harbour porpoise, dose-response modelling demonstrates that the maximum number of harbour porpoise predicted to be disturbed on a single piling day is up to 2,667 porpoise, which represents 4.27% of the MU when a monopile foundation is installed at the SE location. However, ranges vary significantly depending on pile location and by contrast, piling at the NW location is predicted to disturb up to 1,186 individuals, using the same density estimates (Irish sea) which represents 1.90% of the MU for this species.
127. To determine the potential population consequences of disturbance on harbour porpoise, iPCoD modelling was undertaken. This assumed the maximum number of animals (2,667) would be disturbed on every piling day (78 days) which is highly precautionary.
128. The iPCoD modelling results showed that the level of disturbance predicted is not sufficient to result in any changes to harbour porpoise at the population level. Any impacts would also be temporary and short term, occurring over a maximum number of 78 piling days.
129. **Chapter 11, Marine Mammals** of the CWP EIAR provides a comprehensive review of harbour porpoise response to pile driving and potential behavioural responses to disturbance. This concludes that any disturbance impacts to harbour porpoise will be short term and that animals are somewhat resilient to, and can compensate for, temporary disturbance effects due to pile driving. Therefore, the risk to harbour porpoise from disturbance due to piling at the CWP Project is low.

Bottlenose dolphin

130. For bottlenose dolphin, dose-response modelling demonstrates that the maximum number of individuals predicted to be disturbed on a single piling day is up to 2,060, when a monopile is installed in the SE location. This represents 24.74% of the MU for this species (assuming the MU is 8,326). However, the number of individuals potentially disturbed varies significantly depending on density estimates used and the modelling location. The greater values are derived using the SCANS IV density estimates and, by contrast, when the Irish sea density estimates are used at the SE location, the maximum number of bottlenose dolphin predicted to be disturbed is up to 54, representing 10.89 % of the MU for this species (assuming the MU is 496). When using the NW location, these numbers reduce to just 0.95% and 0.07% of the MU respectively.
131. As set out above, in the absence of empirical data for bottlenose dolphin, the harbour porpoise dose-response function was adopted which is likely to be highly precautionary, as harbour porpoise are considered to be particularly responsive to anthropogenic noise disturbance. In light of this, the level B harassment threshold, was also used as an alternative disturbance threshold for bottlenose dolphins.
132. Using the level B harassment threshold, the maximum number of individuals predicted to be disturbed on a single piling day is up to 532 when a monopile is installed in the SE location. This represents 6.39% of the MU for this species. As for the dose-response function, ranges vary significantly with pile location and density estimates used, and by contrast, piling at the NW location is predicted to disturb up to 139 individuals, using the same density estimates (SCANS IV) which represents 1.67% of the MU for this species.
133. To determine the potential population consequences of disturbance on bottlenose dolphin, iPCoD modelling was undertaken. This assumed the maximum number of animals would be disturbed on every piling day which is highly precautionary. The iPCoD modelling results show that under all density and MU size scenarios, the mean impacted population size decreases slightly from the mean unimpacted

population size, initially in response to piling, after which it continues on a stable trajectory at 98 – 99% of the mean unimpacted population size. This may result in potential reductions to lifetime reproduction success and survival to some individuals, however, the population trajectory will not be affected over a generational scale. Any impacts would also be temporary and short term, occurring over a maximum of 78 piling days.

134. **Chapter 11, Marine Mammals** of the CWP EIAR provides a comprehensive review of bottlenose dolphin response to pile driving and potential behavioural responses to disturbance. This concludes that while there remains the potential for disturbance and displacement to affect individual behaviour and therefore vital rates, bottlenose dolphins have some capability to adapt their behaviour and to tolerate certain levels of temporary disturbance and this is not expected to affect adult survival or future reproductive rates. Therefore, the risk to bottlenose dolphin from disturbance due to piling at the CWP Project is low.

Common dolphin

135. For common dolphin, dose-response modelling demonstrates that the maximum number of individuals predicted to be disturbed on a single piling day is up to 2,393, which represents 2.33% of the MU when a monopile foundation is installed at the SE location. As for bottlenose dolphin, ranges vary significantly depending on the pile location and density estimates used. By contrast, piling at the NW location is predicted to disturb up to 997 individuals, using the same density estimates (site specific) which represents 0.95% of the MU for this species.

136. As described above for bottlenose dolphin, in the absence of empirical data for common dolphin, the harbour porpoise dose-response function has been adopted which is likely to be highly precautionary. Therefore, the level B harassment threshold, was also used as an alternative disturbance threshold for bottlenose dolphins.

137. Using the level B harassment threshold, the maximum number of individuals predicted to be disturbed on a single piling day is up to 153 when a monopile is installed in the SE location. This represents 0.15% of the MU for this species. This level of impact is not expected to result in any change to the population trajectory for this species. Any impacts will also be temporary and short term, occurring over a maximum of 78 days of piling.

138. **Chapter 11, Marine Mammals** of the CWP EIAR provides a review of common dolphin response to pile driving and potential behavioural responses to disturbance. This concludes that while evidence for this species is relatively sparse, common dolphin are a high frequency cetacean, and are considered to have a similar sensitivity as bottlenose dolphins to behavioural disturbance from pile driving. Therefore, the risk to common dolphin from disturbance due to piling at the CWP Project is low.

Risso's dolphin

139. For Risso's dolphin, modelling demonstrates that the maximum number of individuals predicted to be disturbed on a single piling day is up to 89, which represents 0.73% of the MU when a monopile foundation is installed at the SE location. As for bottlenose and common dolphin, ranges vary depending on pile location and density estimates used. By contrast, piling at the NW location is predicted to disturb up to 32 individuals, using the same density estimates (Irish sea) which represents 0.26% of the MU for this species

140. As described above for bottlenose and common dolphin, in the absence of empirical data for Risso's dolphin, the harbour porpoise dose-response function has been adopted which is likely to be highly precautionary. Therefore, the level B harassment threshold, was also used as an alternative disturbance threshold for Risso's dolphins.

141. Using the level B harassment threshold, the maximum number of individuals predicted to be disturbed on a single piling day is up to 21 when a monopile is installed in the SE location using the Irish Sea density

estimates. This represents 0.17% of the MU for this species. This level of impact is not expected to result in any change to the population trajectory for this species. Any impacts will also be temporary and short term, occurring over a maximum of 78 days of piling.

142. As for common dolphin, evidence for Risso's dolphin response to pile driving activity is relatively sparse. Risso's dolphin are a high-frequency cetacean and, are considered to have a similar sensitivity as bottlenose dolphins to behavioural disturbance from pile driving. Therefore, the risk to Risso's dolphin from disturbance due piling at the CWP Project is low.

Minke Whale

143. For minke whale, dose-response modelling demonstrates that the maximum number of individuals predicted to be disturbed on a single piling day is up to 134, which represents 0.67% of the MU for this species, when a monopile foundation is installed at the SE location. As for harbour porpoise and dolphin, ranges vary depending on pile location and density estimates used, and by contrast, piling at the NW location, is predicted to disturb up to 50 individuals on a single piling day, using the same density estimates (Irish sea), which represents 0.25% of the MU for this species.

144. As described above for dolphin species, in the absence of empirical data for minke whale, the harbour porpoise dose-response function has been adopted which is likely to be highly precautionary. Therefore, the level B harassment threshold, was also used as an alternative disturbance threshold for minke whale.

145. Using the level B harassment threshold, the maximum number of individuals predicted to be disturbed on a single piling day is up to 36 when a monopile is installed in the SE location using the Irish sea density estimates. This represents 0.18% of the MU for this species. This level of impact is not expected to result in any change to the population trajectory for this species. Any impacts will also be temporary and short term, occurring over a maximum of 78 days of piling.

146. **Chapter 11, Marine Mammals** of the CWP EIAR provides a review of minke whale response to underwater noise. While evidence for minke whale response is relatively sparse, due to their large size and capacity for energy storage, it is expected that minke whales will be able to tolerate temporary displacement from foraging areas and to recover from any impact on vital rates. Therefore, the risk to minke whale from disturbance due to piling at the CWP is low.

Mitigation

147. Mitigation measures to reduce the risk of disturbance to marine mammals from WTG and OSS piling will be the same as those applied to manage the risks of auditory injury (PTS). Following the application of mitigation, there is considered to be no risk of population level effects to marine mammals as a result of disturbance from piling activity.

Conclusion

148. WTG and OSS piling has the potential to give rise to deliberate disturbance of the marine mammal species identified. While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or long term displacement of the species and, therefore, does not amount to disturbance for the purposes of Regulation 51. Whilst disturbance from WTG and OSS piling does not amount to disturbance for the purposes of Regulation 51, the possibility of an impact on marine mammal species cannot be ruled out, and accordingly, a derogation licence is being sought.

149. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned.

Impact 7: Auditory Injury (PTS) from piling onshore substation revetment

150. The onshore substation for the CWP Project may require the installation of a combi-wall (revetment) on the banks of the River Liffey in Dublin. Installation activities will occur within the River Liffey and, therefore, have the potential to generate underwater noise that may cause auditory injury (PTS) or disturbance to marine mammal species identified as present. The revetment may be installed using vibro-piling or impact piling techniques, however, dimensions of the pile and hammer energies required would be much lower than those required for piling the WTGs and OSS and the levels of underwater noise generated would be reduced (refer to Table 4-1).

151. To understand the potential risk of auditory injury (PTS) to marine mammals from pile driving the onshore substation revetment, underwater noise propagation modelling was undertaken by Subacoustech Environmental Limited. To quantify the impact of pile driving noise with regard to auditory injury (PTS) the same criteria were used as for piling the WTGs and OSS; SPL_{peak} (instantaneous PTS from a single pile strike) and SEL_{cum} (cumulative PTS from accumulated sound exposure over a piling event). Full details of the underwater noise modelling and the resulting PTS-onset impact areas and ranges are provided in **Appendix 9.4 UWN Assessment** of the CWP Project EIAR

152. PTS-onset ranges were then combined with density estimates of marine mammal species across the CWP Project and wider area, to provide an estimate of the number of individuals of a species likely to be at risk. Full details of the density estimates used and the number of marine mammals assessed as potentially at risk of auditory injury (PTS) are presented in **Chapter 11, Marine Mammals** of the CWP EIAR.

Summary of EIAR Findings

153. The maximum number of marine mammals predicted to experience auditory injury (PTS-onset) on a single piling day at the onshore substation revetment is up to 1 harbour porpoise. This is under the SEL scenario and assumes concurrent piling using two vessels. For the SPL_{peak} scenario and single vessel scenario, <1 harbour porpoise is predicted to experience auditory injury (PTS).

154. For dolphin species and minke whale the number of individuals predicted to experience auditory injury is <1 under all scenarios.

155. While the number of marine mammals predicted to experience PTS-onset is very low, PTS is a permanent effect and not recoverable. However, as described for Impact 5 (Auditory injury (PTS) from piling WTGs and OSS), experts suggest that PTS from piling will not cause a significant impact on either survival or reproductive rates for marine mammals. Therefore, the risk to marine mammals from auditory injury (PTS) as a result of pile driving at the CWP Project onshore revetment is low.

Mitigation

156. Mitigation measures to reduce the risk of PTS to marine mammals from piling the onshore revetment will generally follow the same procedures as those applied to manage the risks of auditory injury (PTS) from WTG and OSS piling, with the exception of an effective reduction in noise at 750m. Following the application of mitigation, there is considered to be a very low risk of auditory injury (PTS) to marine mammals from piling the onshore revetment.

Conclusion

157. Auditory injury from piling at the onshore substation revetment has the potential to give rise to deliberate disturbance of the marine mammal species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not required.

158. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take

further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned..

Impact 8: Disturbance from piling onshore substation revetment

159. To understand the risk of disturbance to marine mammals from piling the onshore substation revetment, underwater noise modelling was undertaken using the species specific dose-response function.

160. Noise contours generated were combined with the density estimates of marine mammal species across the CWP Project and wider area and multiplied by the dose-response function to provide an estimate of the number of individuals of a species likely to be disturbed. Full details of the density estimates used and number of marine mammals assessed as potentially at risk of disturbance are presented in **Chapter 11, Marine Mammals** of the CWP EIAR.

161. As set out for Impact 6 (Disturbance from piing WTGs and OSS), this is likely to be highly precautionary for the assessment of dolphin species and minke whale.

Summary of EIAR Findings

162. The maximum number of marine mammals predicted to be disturbed on a single piling day at the onshore substation revetment is up to three harbour porpoise. Up to two bottlenose dolphin are predicted to be disturbed. For common dolphin, Risso's dolphin and minke whale the number of individuals predicted to be disturbed is <1. This will impact a very small proportion of the relevant MUs for these species, which is not expected to result in any changes to population trajectories. Any disturbance will also be temporary and short term.

163. As described for Impact 6 (Disturbance from piling WTGs and OSS), evidence suggests that marine mammals are able to tolerate and can compensate for, temporary disturbance effects. Therefore, the risk to marine mammals from disturbance due to piling at the onshore substation revetment is low.

Mitigation

164. Mitigation measures to reduce the risk of disturbance to marine mammals from piling the onshore revetment will generally follow the same procedures as those applied to manage the risks of auditory injury (PTS) from WTG and OSS piling, with the exception of the effective reduction of sound at 750m. Following the application of mitigation, there is considered to be a very low risk of disturbance to marine mammals from piling the onshore revetment.

Conclusion

165. Piling at the onshore substation revetment has the potential to give rise to deliberate disturbance of the marine mammal species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and therefore does not amount to disturbance for the purposes of Regulation 51. Whilst disturbance from piling at the onshore revetment does not amount to disturbance for the purposes of Regulation 51, the possibility of an impact on marine mammal species cannot be ruled out, and accordingly, a derogation licence is being sought.

166. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned..

Impact 9: Auditory Injury (PTS) from other construction / decommissioning activities

167. During the construction / decommissioning of the CWP Project, there are a number of additional activities that will generate underwater noise with the potential to cause auditory injury. This includes boulder clearance (plough or subsea grab), pre-lay grapnel run, sandwave reduction (dredger or mass flow excavation), cable burial / removal (jetting, trenching or ploughing), drilling, pile cutting at the seabed.

168. For the assessment of other construction / decommissioning activities, the potential effects on marine mammal species relates to the noise levels generated by the equipment that may be used and the auditory sensitivities of marine mammals in terms of hearing range and hearing sensitivity and is species specific.

169. An assessment of the noise impacts from other construction activities is presented in **Appendix 9.4 UWN Assessment**. This includes an assessment of the potential PTS and / or TTS-onset impact ranges for:

- Cable laying / removal: includes noise from the cable laying vessel and any other associated noise during the offshore cable installation;
- Dredging: includes noise from dredging for seabed preparation work for certain foundation options, and for the export cable, array cables and interconnector cable installation. Suction dredging has been assumed as a worst-case;
- Rock placement / removal: includes noise from installation of offshore cables (cable crossings and cable protection) and scour protection around foundation structures;
- Trenching: includes noise from plough trenching during offshore cable installation and cable and foundation removal; and
- Vessel noise (disturbance): Vessel noise from large and medium sized vessels.

170. **Chapter 11, Marine Mammals** of the CWP EIAR provides a comprehensive assessment of the typical operating characteristics of equipment used and potential overlap with estimated hearing range of different marine mammal functional hearing groups. Where there is no overlap between hearing capability and operating characteristics there is no potential for PTS to occur.

Summary of EIAR Findings

171. The assessment concludes that for all non-piling construction / decommissioning activities assessed, the PTS-onset impact ranges are predicted to be <100 m for all marine mammal species identified using the SEL cumulative on-set threshold (Table 5-3).

Table 5-3 Auditory injury impact ranges for non-piling construction noise (using weighted SEL)

	LF (199 dB)	HF (198 dB)	VHF (173 dB)
Dredging (Backhoe)	<100 m	<100 m	<100 m
Dredging (Suction)	<100 m	<100 m	<100 m
Drilling	<100 m	<100 m	<100 m
Cable laying	<100 m	<100 m	<100 m
Trenching	<100 m	<100 m	<100 m
Rock placement	<100 m	<100 m	<100 m

172. It is expected that underwater noise generated by dredging, drilling, pile cutting and trenching will be at lower frequency ranges and generally below the PTS-onset threshold for marine mammals identified and, therefore, the risk of injury is unlikely (Todd et al., 2015). For harbour porpoise and dolphins, the hearing sensitivity below 1 kHz is relatively poor and it is expected that a PTS at this frequency would result in little

impact to vital rates. Minke whale may be more sensitive to lower frequency noise, however, impact ranges modelled are extremely limited in spatial extent and density estimates for minke whale across the project and wider area are low.

173. Underwater noise generated during cable and rock placement installation and removal is generally considered to have a low potential for impacts to marine mammals due to the non-impulsive nature of the noise generated and the fact that any generated noise is likely to be dominated by the vessel from which installation is taking place (Genesis, 2011). Measured noise levels for these activities have been found to be within background noise levels (Nedwell et al., 2003; Nedwell and Howell, 2004).

174. Non-piling construction / decommissioning noise sources will have an extremely local spatial extent and will be transient and intermittent. While auditory injury is a permanent effect from which an animal cannot recover, no animals are expected to be within the impact ranges for PTS-onset predicted from the other construction activities assessed. Therefore, the risk to marine mammals from PTS-onset due to other construction activities is low.

175. No mitigation is proposed since injury ranges are predicted to be <100m and it is expected that any marine mammals will be disturbed out of this injury area by the presence of the construction vessels.

Mitigation

176. Due to the low risk of auditory injury (PTS) to marine mammals from other construction activities (<100 m injury range), no specific mitigation measures are required.

Conclusion

177. Auditory injury from other construction activities has the potential to give rise to deliberate disturbance of the marine mammal species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species,** and therefore, does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not required.

Impact 10: Disturbance from other construction / decommissioning activities

178. As set out for impact 9 (Auditory injury (PTS) from other construction / decommissioning activities), during the construction / decommissioning of the CWP Project, there are a number of additional activities that will generate underwater noise. This includes boulder clearance, Pre-lay Grapnel Run, sandwave reduction, cable burial, trenching, drilling and pile cutting.

179. There is currently no guidance on the thresholds to be used to assess disturbance of marine mammals from other construction activities. Therefore, the assessment undertaken was based on evidence available in existing literature for the equipment proposed to be used and marine mammal species identified as present. The majority of available evidence on the impact of disturbance to marine mammals from other construction activities focuses on the impact of vessel activity and dredging. Both of these activities are of relevance during the construction / decommissioning of the CWP Project.

180. The potential use of ADDs to deter marine mammals from the immediate vicinity of any piling events, or UXO clearance to reduce potential disturbance, will also generate underwater noise. Currently the most commonly used ADD is the Lofitech AD Seal Scarer[5] which has been shown to have the most consistent effective deterrent ranges for harbour porpoise and minke whale (Brandt et al., 2013a and Brandt et al., 2013b). However, other types of ADD may be available and suitable for use during

[5] https://www.lofitech.no/

construction/decommissioning of the CWP Project, and the final ADD choice and specification would be confirmed within the final MMMP.

181. **Chapter 11, Marine Mammals** of the CWP EIAR provides a comprehensive assessment of the typical operating characteristics of equipment used and potential for disturbance impacts to marine mammal species identified. The **MMMP** for the CWP Project provides further details on the use of ADDs to deter marine mammals from construction / decommissioning activities.

Summary of EIAR Findings

182. The assessment concludes that any disturbance impacts from other construction activities will primarily be driven by the underwater noise generated by vessels during non-piling construction / decommissioning related activities, and, as such, it is expected that any impact of disturbance will be highly localised (up to 5 km of the noise source) and temporary (McQueen et al., 2020, Todd, et al., 2020, Pirotta et al., 2013). Other construction / decommissioning activities will also be short-term and will occur intermittently and at low intensity throughout the construction period.

183. Evidence suggests that marine mammals are able to tolerate and can compensate for, temporary disturbance effects and it's not expected that individual vital rates will be affected. Therefore, the risk to marine mammals from disturbance due to other construction activities is low.

Summary on the use of ADDs

184. The purpose of ADD deployment is to deter marine mammals out of the identified monitored zone prior to the start of piling or UXO detonation. The required duration of ADD deployment for the CWP Project would be calculated using swimming speed assumptions to ensure marine mammals are beyond the monitored zone, while reducing the need for ADD use wherever possible. For example, assuming a harbour porpoise swims at 1.5 m/s it would require 11.1 minutes of ADD activation for an animal to flee from a pile out to 1 km and 33.3 minutes of ADD activation for an animal to flee out to 3 km.

185. In line with IWDG and JNCC guidance (IWDG, 2020, JNCC, 2010) ADD use would not exceed the noise levels generated by piling or UXO clearance activities, would only be used in conjunction with visual and / or acoustic monitoring and would only be used prior to commencing activities. ADD duration would also be balanced against the potential increased disturbance to marine mammals and the duration of their activation would be discussed and agreed with NPWS and other relevant stakeholders to ensure their use (if required) is proportionate.

186. Extensive reviews of ADDs are available, however, a report produced by JNCC (2022) provides a comprehensive summary and collates the evidence around the effectiveness of ADDs at deterring a range of marine mammal species. The report concludes that the Lofitech Seal Scarer provides consistent and effective deterrence of marine mammal species at a range of distances required, depending on project location. This is supported by trials conducted in the German North Sea, which used C-PODs to observe deterrence ranges up to 7.5 km from the ADD deployment site (Brandt et al., 2013b). The report also presents a high level assessment of the risk of injury from ADDs and concludes generally that the risk of injury to marine mammals is likely to be low for all devices.

187. The use of ADDs at the CWP Project would be highly localised (within the immediate vicinity), temporary and very short term, associated only with pre piling or pre UXO clearance activities. In line with guidance, ADD use would not exceed the noise levels generated by piling or UXO clearance activities and their use would be balanced against any potential disturbance. Therefore, the risk to marine mammals from disturbance due to use of ADDs is low.

Mitigation

188. Due to the low risk of disturbance to marine mammals from other construction / decommissioning activities, no specific mitigation measures are required.

Conclusion

189. Other construction / decommissioning activities have the potential to give rise to deliberate disturbance of the marine mammal species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51. Whilst noise resulting from other construction/decommissioning does not amount to disturbance for the purposes of Regulation 51, the possibility of an impact on marine mammal species cannot be ruled out, and accordingly, a derogation licence is being sought.

Impact 11: Vessel collision (injury / mortality)

190. During construction / decommissioning of the CWP Project, a potential source of impact from increased vessel activity is physical trauma from collision with a boat or ship. Injuries include blunt trauma to the body or injuries consistent with propeller strikes. The risk of collision of marine mammals with vessels is directly influenced by the type of vessel and the speed with which it is travelling and indirectly influenced by ambient noise levels underwater and the behaviour the marine mammal is engaged in (Laist et al., 2001).

191. The assessment of vessel collision on marine mammals at the CWP Project was based on evidence available in the existing literature, and a comprehensive summary of the literature review undertaken is provided in **Chapter 11, Marine Mammals** of the CWP EIAR.

Summary of EIAR Findings

192. Harbour porpoises and dolphins are relatively small and highly mobile species, and given observed responses to noise, are expected to detect vessels in close proximity and largely avoid collision. Predictability of vessel movement by marine mammals is known to be a key aspect in minimising the potential risks imposed by vessel traffic (Nowacek et al., 2001, Lusseau, 2003, 2006, Lusseau et al., 2009).

193. The Cetaceans Strandings Investigation Programme in the UK (CSIP) documents the annual number of reported strandings and the cause of death of those individuals are examined at post mortem. Evidence from CSIP shows that very few strandings have been attributed to vessel collisions and this is not considered to be a key source of mortality in marine mammals. It is noted that in Ireland strandings are reported to the IWDG by members of the public, however, no “regular, standardised post-mortem examinations of suitable carcasses are undertaken to establish the cause of death” (McGoven et. al., 2018). Therefore, there is unlikely to be sufficient data available on the risk of vessel collision mortality in Irish waters to provide any further context to the assessment. While it is acknowledged that the CSIP information is UK based, the marine mammal species documented are regularly recorded in Irish waters and strandings information will be relevant to marine mammal species more generally.

194. The CWP Project area already experiences high levels of vessel traffic, as described in **Appendix 16.3, Navigation risk Assessment** of the CWP Project EIAR, and therefore an increase in vessel numbers would not be a novel impact for marine mammals present in the area. Increases in vessel activity will be short term, and it is highly likely that any additional vessels associated with the CWP Project would be stationary or slow moving throughout construction / decommissioning, and for significant periods of time, as a result of measures introduced through the Ecological Vessel Management Plan (EVMP). Therefore, the risk or injury or mortality to marine mammals from vessel collision during construction / decommissioning of the CWP Project is low.

Mitigation

195. While there is a low risk of injury or mortality to marine mammals as a result of increased vessel activity, the CWP Project has committed to the implementation of an EVMP throughout the construction and decommissioning period. This will ensure that vessel traffic moves along predictable routes and will define how vessels should behave in the presence of marine mammals. With the application of mitigation, the risk to marine mammals is further reduced.

Conclusion

196. Injury or mortality from collision with vessels has the potential to give rise to deliberate disturbance of the marine mammal species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not required.

197. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned.

Impact 12: Vessel disturbance

198. Disturbance to marine mammals by vessels will be driven by a combination of underwater noise and the physical presence of the vessel itself (Pirotta et al., 2015). It is not simple to disentangle these drivers and therefore potential disturbance from vessels was assessed in general terms, covering disturbance driven by both vessel presence and underwater noise generated by the vessel.

199. The potential for disturbance from vessel presence was considered on a species by species basis. This included a quantitative assessment on the number of individuals, and percentage of the relevant MU, for each marine mammal receptor predicted to experience behavioural disturbance as a result of the presence of construction vessels. Full details are provided within **Chapter 11, Marine Mammals** of the CWP EIAR.

Summary of EIAR Findings

200. Table 5-4 presents the estimated number of animals and the percentage of the relevant MU predicted to be disturbed at any one time by a single vessel. Disturbance ranges used were taken from wider data sources and literature.

Table 5-4 Estimated number of animals and the percentage of the MU predicted to be disturbed at any one time (i.e., radius from the source, and the area around the source) by vessels

Species	Density (animals/km^2)	Disturbance Radius	Area (km^2)	# Impacted	% MU
Harbour porpoise	0.1225 Site specific density estimate	4 km	50.27	6	<0.01%
	0.2803 (Gilles et al., 2023)			14	<0.01%
Bottlenose dolphin	0.2352 (Gilles et al., 2023)	400 m	0.5	<1	<0.1%
Common dolphin	0.2810 Site specific density surface estimate	300 m	0.28	<1	<0.001%
	0.0272 (Gilles et al., 2023)			<1	<0.001%
Risso's dolphin	0.0008 Site specific point density estimate	400 m	0.5	<1	<0.01%
	0.0022 (Gilles et al., 2023)			<1	<0.01%

Minke whale	0.0019 Site specific point density estimate	250 m	0.2	<1	<0.05%
	0.0137 (Gilles et al., 2023)			<1	<0.05%

201. The maximum number of individuals predicted to be disturbed is up to 14 harbour porpoise which represents <0.01% of the MU for this species. For all dolphin species and minke whale <1 individual is predicted to be disturbed, representing no more than 0.1% of the relevant MU units for these species in each case.

202. A comprehensive review of potential behavioural responses of marine mammals to vessel disturbance is provided in **Chapter 11, Marine Mammals** of the CWP Project EIAR. This concluded that disturbance from vessels can result in short term changes to marine mammal behaviour, including changes to foraging behaviour, swim speed as well as avoidance responses (Constantine et al., 2004, La Manna et al., 2013, Pirotta et al., 2015, Marley et al., 2017a, Marley et al., 2017b, Christiansen et al., 2013, Christiansen et al., 2015). However, marine mammals are able to tolerate and can compensate for, temporary disturbance effects and it is not expected to result in any changes to vital rates or population level impacts.

203. The area surrounding the CWP Project already experiences high levels of vessel traffic, and the introduction of additional vessels during construction and decommissioning at CWP Project is not a novel impact for marine mammals present in the area. Increases in vessel activity will be short term and of local spatial extent, and any additional vessels associated with the CWP Project would be stationary or slow moving throughout construction and decommissioning, and for significant periods of time, as a result of measures introduced through the EVMP. Therefore, the risk or disturbance to marine mammals from increased vessels during construction / decommissioning of the CWP Project is low.

Mitigation

204. The CWP Project has committed to an EVMP as embedded mitigation, which will ensure that vessel traffic moves along predictable routes and will define how vessels should behave in the presence of marine mammals. With the application of mitigation, the risk to marine mammals is further reduced.

Conclusion

205. Increased vessel activity has the potential to give rise to deliberate disturbance of the marine mammal species identified. While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species and, therefore, does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not required.

206. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned.

5.1.2 Operation and Maintenance

Impact 13: Auditory injury (PTS) from operational noise

207. The main source of underwater noise from operational WTGs will be mechanically generated vibration from the rotating machinery in the WTGs, which is transmitted into the sea through the structure of the WTG tower and foundations.

208. The assessment of auditory injury (PTS) from operational noise considered the potential noise generated by the two different rotor sizes proposed for the CWP Project; 250 m and 276 m rotor diameters. The power

outputs for the WTGs modelled were assumed based on data from similar projects. PTS and TTS-onset impact ranges were modelled using the non-impulsive (SEL) criteria from Southall et al., 2019.

Summary of EIAR Findings

209. Table 5-5 presents PTS and TTS impact ranges, for both a 250 m and 276 m rotor diameter, using the non-impulsive (SEL) criteria. Modelling demonstrates that for operational noise, impact ranges are predicted to be <100 m for all marine mammal species identified.

Table 5-5 Operational WTG noise impact ranges using the non-impulsive noise criteria from Southall et al. (2019)

Southall et al. (2019) weighted SEL		250 m Rotor Diameter	276 m Rotor Diameter
PTS (non-impulsive)	173 dB (VHF)	<100 m	<100 m
	198 dB (HF)	<100 m	<100 m
	199 dB (LF)	<100 m	<100 m
TTS (non-impulsive)	153 dB (VHF)	<100 m	<100 m
	178 dB (HF)	<100 m	<100 m
	179 dB (LF)	<100 m	<100 m

210. Operational noise derived from WTGs is primarily low frequency (well below 1 kHz) (Thomsen et al., 2006). For harbour porpoise and dolphin species, hearing sensitivity below 1 kHz is relatively poor (Ketten, 2004) and therefore, it is expected that a PTS at this frequency would result in little impact to vital rates.

211. The low frequency noise produced during operations may be more likely to overlap with the hearing range of low frequency marine mammal species such as minke whales. However, impact ranges modelled are extremely limited in spatial extent and density estimates for minke whale across the project and wider area are low. Due to their large size and capacity for energy storage, it is also expected that minke whales would be able to tolerate temporary displacement effects.

212. It is not expected that operational noise would lead to any effects on individual vital rates for marine mammal species and the risk to marine mammals from auditory injury (PTS).

Mitigation

213. Due to the low risk of auditory injury (PTS) to marine mammals from operational noise of WTGs, no specific mitigation measures are required.

Conclusion

214. Auditory injury (PTS) due to operational noise generated by WTGs has the potential to give rise to deliberate disturbance of the marine mammal species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not required.

Impact 14: Disturbance from operational noise

215. As set out for Impact 13 (auditory injury (PTS) from operational noise), the main source of underwater noise from operational WTGs will be mechanically generated vibration for the rotating machinery in the WTGs.

216. The assessment of disturbance to marine mammals from operational noise is based on evidence available in existing literature. A comprehensive review of operational WTG noise and marine mammals is provided in **Chapter 11, Marine Mammals** of the CWP EIAR.

Summary of EIAR Findings

217. Operational noise derived from WTGs is primarily low frequency (well below 1 kHz) and for harbour porpoise and dolphin species, hearing sensitivity below 1 kHz is relatively poor. Therefore, it is not expected that any disturbance at this frequency would result in impacts to vital rates for these species.

218. As set out above, low frequency noise produced during operations may be more likely to overlap with the hearing range of low frequency marine mammal species such as minke whales. However, impact ranges modelled are extremely limited in spatial extent and density estimates for minke whale across the project and wider area are low.

219. A number of studies have reported the presence of marine mammals within windfarm footprints. For example, at the Horns Rev and Nysted offshore windfarms in Denmark, long-term monitoring showed that both harbour porpoise and harbour seals were sighted regularly within the operational OWFs, and within two years of operation, the populations had returned to levels that were comparable with the wider area (Diederichs et al., 2008). Other studies at Dutch and Danish OWFs (Scheidat et al., 2011) and in the Moray Firth in Scotland (Fernandez-Betelu et al., 2022) also suggest that harbour porpoise may be attracted to increased foraging opportunities within operating offshore windfarms.

220. It is acknowledged that these studies were conducted at windfarms with smaller sized WTGs, and therefore, there is uncertainty as to how applicable the results are to future larger WTG sizes. However, recent advances in technology mean that newer WTGs use direct drive technology rather than gears, which are expected to generate lower operational underwater noise levels (Stöber and Thomsen, 2021), and as WTGs increase in size, fewer are required to be installed to meet a projects capacity.

221. Therefore, given the presence of marine mammals within operational windfarms, it is unlikely that operational noise would result in any disturbance effect and the risk to marine mammals from disturbance due to operational noise of WTGs is low.

Mitigation

222. Due to the low risk of disturbance to marine mammals from operational noise of WTGs, no specific mitigation measures are required.

Conclusion

223. Operational noise generated by WTGs has the potential to give rise to deliberate disturbance of the marine mammal species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not required.

Impact 15: Vessel collision (injury / mortality)

224. As described for Impact 11 (vessel collision (injury / mortality), a potential source of impact to marine mammals from increased vessel activity due to the CWP Project, is physical trauma, including blunt trauma or injury consistent with propeller strikes.

225. The assessment of vessel collision on marine mammals during O&M at the CWP Project was based on evidence available in the existing literature, and a comprehensive summary of the literature review undertaken is provided in **Chapter 11, Marine Mammals** of the CWP EIAR.

Summary of EIAR Findings

226. As described for impact 11 (vessel collision (injury / mortality), harbour porpoises and dolphins are relatively small and highly mobile species, and are expected to detect vessels in close proximity and avoid collision. Predictability of vessel movement by marine mammals is known to be a key aspect in minimising the potential risks imposed by vessel traffic. Evidence from the CSIP also demonstrates that very few strandings have been attributed to collisions and this is not thought to be a key source of mortality in marine mammals.

227. The CWP Project already experiences high levels of vessel traffic and vessel numbers associated with the O&M of the CWP Project would be reduced compared to construction. Vessels associated with the CWP Project would also be slow moving as a result of measures introduced through the EVMP and, therefore, the risk of injury or mortality to marine mammals due to vessel collision during O&M of the CWP Project is low.

Mitigation

228. While there is a low risk of injury or mortality to marine mammals as a result of increased vessel activity, the CWP Project has committed to the implementation of an EVMP throughout the O&M period. This will ensure that vessel traffic moves along predictable routes and will define how vessels should behave in the presence of marine mammals. With the application of mitigation, the risk to marine mammals is further reduced.

Conclusion

229. Increased vessel activity during O&M of the CWP Project has the potential to give rise to deliberate disturbance of the marine mammal species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not required.

230. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned.

Impact 16: Disturbance from vessels

231. As described for Impact 12 (vessel disturbance during construction), vessel disturbance to marine mammals is driven by a combination of underwater noise and the physical presence of the vessel itself.

232. Underwater noise modelling was undertaken to provide an assessment of potential PTS and TTS-onset in marine mammals due to vessel noise (disturbance) during construction. This is presented in **Appendix 9.4 UWN Assessment** of the CWP Project EIAR. Vessel activity during O&M of the CWP Project will be reduced compared to construction and therefore any risk to marine mammals due to vessel disturbance will also be reduced.

Summary of EIAR Findings

233. As described for Impact 12 (vessel disturbance during construction), the area surrounding the CWP Project already experiences high levels of vessel traffic, and the introduction of additional vessels during O&M at the CWP Project is not a novel impact for marine mammals present in the area.

234. Any disturbance from vessel noise, will also be of local spatial extent, with only short-term disturbance resulting from individual vessels. Vessels associated with the CWP Project would also be stationary or slow moving throughout O&M, as a result of measures introduced through the EVMP. Therefore, the risk or disturbance to marine mammals from increased vessels during O&M of the CWP Project is low.

Mitigation

235. While there is a low risk of disturbance to marine mammals as a result of increased vessel activity, the CWP Project has committed to the implementation of an EVMP throughout the O&M period. This will ensure that vessel traffic moves along predictable routes and will define how vessels should behave in the presence of marine mammals. With the application of mitigation, the risk to marine mammals is further reduced.

Conclusion

236. Increased vessel activity during O&M of the CWP Project has the potential to give rise to deliberate disturbance of the marine mammal species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not required.

237. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned..

5.1.3 Risk Assessment Summary Marine Mammals

238. Table 5-6 provides a summary of the risk assessment undertaken for marine mammals in line with the DAHG (2014) guidance.

Table 5-6 Risk assessment summary: Marine mammals

Annex IV Species	DAHG Guidance	Assessment Conclusion
Marine Mammals	Is the plan or project likely to result in death, injury or disturbance of individuals?	As set out in Section 5.1, Marine Mammal Risk Assessment (Impact 1 to Impact 16), there is potential for mortality, injury or disturbance to occur to individuals as a result of the construction, operation or decommissioning of the CWP Project. However, in each case, The CWP Project has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impact on the population of the species concerned. While some degree of disturbance may occur, it is not predicted to be of such an extent that it may affect the chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of marine mammal species.
	Is it possible to estimate the number of individuals of each species that are likely to be affected?	As set out in Section 5.1, Marine Mammal Risk Assessment (Impact 1 to Impact 16), it is possible to estimate the number of individuals of each species that are likely to be affected. Density estimates of marine mammal species have been derived through site specific and wider survey data and information sources, these estimates are combined with impact ranges derived through underwater noise modelling to provide a

		quantitative assessment of individuals likely to be affected. Where modelling is not possible, a qualitative estimate has been undertaken through best available evidence to provide an estimate of the number of individuals likely to be affected.
	Will individuals be disturbed at a sensitive location or sensitive time during their life cycle?	As set out in Section 3.1 (Annex IV Species), and Section 5.1, Marine Mammal Risk Assessment (Impact 1 to Impact 16), marine mammal species may be present year round across the CWP Project and wider area and peak sightings may coincide with breeding seasons. However, as outlined above, while some degree of disturbance may occur, it is not predicted to be of such an extent that it may affect the chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of marine mammal species.
	Are the impacts likely to focus on a particular section of the species' population, e.g., adults vs. juveniles, males vs. females?	As set out in Section 3.1 (Annex IV Species), and Section 5.1, Marine Mammal Risk Assessment (Impact 1 to Impact 16), marine mammal species may be present year round across the CWP Project and wider area. However, it is not predicted that impacts will focus on a particular section of the species population (gender or age group).
	Will the plan or project cause displacement from key functional areas, e.g., for breeding, foraging, resting or migration?	As set out in Section 3.1 (Annex IV Species) 3.2 (Impacts Identified) and Section 5.1, Marine Mammal Risk Assessment (Impact 1 to Impact 16), marine mammal species may be present year round across the CWP Project and wider area. However it is not predicted that displacement will take place from any key functional areas. Offshore infrastructure is not located in sensitive ecological habitats and all marine mammals are generalist feeders and are not sensitive to changes in prey abundance or distribution. Marine mammals are also highly mobile species capable of foraging over wide areas.
	How quickly is the affected population likely to recover once the plan or project has ceased?	As set out in Section 5.1, Marine Mammal Risk Assessment (Impact 1 to Impact 16), certain impacts may be permanent (auditory injury (PTS)), while others are temporary (disturbance). However, in each case, mitigation measures will be applied to ensure the risk to marine mammals is as low as possible. Marine mammals are also able to tolerate and can compensate for temporary disturbance effects. While some degree of disturbance may occur, it is not predicted to be of such an extent that it may affect the chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of marine mammal species..

5.2 Leatherback Turtles Risk Assessment

5.2.1 Construction / decommissioning

Impact 1: Disturbance due to construction / decommissioning noise and vibration

239. During construction and decommissioning of the CWP Project there are a number of activities with the potential to generate underwater noise. The greatest level of noise will be generated by offshore piling to install the WTG and OSS foundations, however, other noise generating activities are predicted to occur during construction and decommissioning activities, including geophysical surveys, UXO clearance (construction only) seabed preparation works, cable installation / removal, and scour protection / removal.

240. To understand the potential risk of disturbance to marine turtles from pile driving the WTGs and OSS and UXO clearance, underwater noise propagation modelling was undertaken by Subacoustech Environmental Limited. Full details of the underwater noise modelling and noise contours produced are provided in **Appendix 9.4 UWN Assessment** of the CWP Project EIAR. Full details of the marine turtle assessment are presented in **Chapter 9, Fish Shellfish and Turtle Ecology** of the CWP EIAR.

241. As described in Section 5.1 (Marine Mammals Risk Assessment), Impact 5 (auditory injury (PTS) from piling WTGs and OSS), four piling locations were modelled as representative of different ground conditions and water depths across the CWP array site and therefore different degrees of noise propagation. As for marine mammals, three piling scenarios were modelled 'most restrictive' 'less restrictive' and 'least restrictive' in order to minimise potential impacts of underwater noise. Noise modelling was also undertaken in the Liffey where piling will be required and UXO clearance was modelled using the maximum charge weight of 525 kg, plus a donor charge.

242. Thresholds for marine turtles that may cause mortality, recovery and TTS (temporary reduction in hearing sensitivity that may cause a decrease in communication, predator / prey detection) from impact piling are considered as either single strike sound pressure level (SPL_{peak}) or cumulative sound exposure (SEL_{cum}) and are taken from Popper et al., 2014. Both a fleeing model and stationary model were assessed as a precautionary approach, however, it is considered that in almost all cases, marine turtles will flee an area of elevated underwater noise and vibration.

243. The (high order) detonation of UXO results in a single pressure wave from the noise source and, therefore only SPL_{peak} is considered in terms of thresholds (Popper et al., 2014). The different thresholds used for the assessment of disturbance are presented in Table 5-7.

Table 5-7 Hearing thresholds marine turtles as per Popper et al., (2014)

Receptor	Piling (WTG, OSS and onshore substation revetment)			UXO Clearance
	Mortality and potential mortal injury	Recoverable injury	Temporary Threshold Shift	Mortality and potential mortal injury
Leatherback turtle	210 dB SEL_{cum} >207 dB peak	N/A	N/A	229–234 dB peak

Summary of EIAR Findings

244. Modelling demonstrates that (unmitigated) impact piling under the stationary model results in a maximum distance of 280 m, and an ensonified area approximately 0.25 km^2 from the noise source under the SPL_{peak} scenario, and maximum distance of 2.3 km, and an ensonified area of 15 km^2 from the noise source under the SEL_{cum} scenario. Under the more realistic fleeing model, this reduces to a maximum distance of <100 m and an ensonified area of less than 0.1 km^2 under the SEL_{cum}. To mitigate potential impacts from

underwater noise during the construction of the project, CWP commits to a limit on underwater noise of 169 dB $L_{E,p,ss,05}$ at 750m at WTG and OSS piling events, which reduces the spatial extent of the ensonified area.

245. Piling the onshore substation revetment under the stationary model results in a maximum distance of <50 m, and an ensonified area approximately <0.01 km^2 from the noise source under the SPL_{peak} scenario, and a maximum distance of 1.1 km, and an ensonified area of 1 km^2 from the noise source under the SEL_{cum} scenario. Under the more realistic fleeing model, this reduces to a maximum distance of <100 m and an ensonified area of less than 0.1 km^2 under the SEL_{cum}.

246. High order UXO clearance results in maximum distance of up to 810 m from the UXO detonation under the SEL_{peak} scenario. CWP has committed to Noise Abatement Systems in the event of high order UXO clearance.

247. While the consequences of injury or mortality for marine turtles may be severe, the area of impact is localised and is considered negligible in the context of the wider availability of habitat. Turtles are a mobile species and have a high capacity to avoid the area. The density of marine turtles in the CWP Project and wider area is also very low. No leatherback turtles were recorded in site specific surveys and it is estimated that the density of his species in the Celtic and Irish Sea is 0.06 per 100 km^2.

248. Leatherback turtles are unlikely to be present in the CWP Project area in large numbers, and any effects are unlikely to lead to any population level consequences. Therefore the risk to leatherback turtles from disturbance due to construction / decommissioning noise from the CWP Project is low.

Mitigation

249. While the risk of disturbance to leatherback turtles from construction or decommissioning noise is low, the CWP has committed to the development and implementation of a MMMP to reduce the risk of injury or disturbance to marine mammals. The procedures set out for marine mammals, including the commitment to the implementation of NAS to ensure effective reduction of underwater noise for UXO, and a commitment to a limit on underwater noise of 169 dB $L_{E,p,ss,05}$ at 750m at WTG and OSS piling events, will also be relevant for marine turtles. These measures will ensure the risk of disturbance to leatherback turtles as a result of the construction or decommissioning the CWP Project is very low.

Conclusion

250. Construction and decommissioning noise associated with the CWP Project has the potential to give rise to deliberate disturbance of leatherback turtles. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51.

251. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned.

252. Due to the very low density of Leatherback turtles recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential disturbance, and the anticipation that any such potential will not be deliberate, a derogation under Regulation 54 is not required or sought for construction and decommissioning noise impacts on Leatherback turtles.Impact 2: Vessel collision (injury / mortality)

253. During construction / decommissioning of the CWP Project, a potential source of impact to marine turtles from increased vessel activity is physical trauma from collision with a boat or ship. Injuries include blunt trauma to the body or injuries consistent with propeller strikes. Such injuries may result in individuals becoming vulnerable to secondary infections or predation and reduced foraging efficiency.

254. The assessment of vessel collision on marine turtles at the CWP Project was based on evidence available in the existing literature, and is provided in **Chapter 9, Fish, Shellfish and Turtles** of the CWP EIAR.

Summary of EIAR Findings

255. Turtles need to surface regularly to breathe which can make them vulnerable to collision with vessels. Vessels travelling at lower speeds have a higher probability of detecting marine megafauna than vessels travelling at faster speeds and, in turn, slower vessels following a consistent trajectory allow turtles the opportunity to avoid collisions (Vanderlaan and Taggart, 2007).

256. The CWP Project area already experiences high levels of vessel traffic, and contains a busy shipping route in and out of Dublin port as described in **Appendix 16.3, Navigation Risk Assessment** of the CWP Project EIAR. Therefore, an increase in vessel numbers would not be a novel impact for leatherback turtles present in the area. Leatherback turtles are unlikely to be present in the CWP Project area in large numbers, and therefore, likelihood of collision with vessels is low.

257. Increases in vessel activity will also be short term, and it is highly likely that any additional vessels associated with the CWP Project would be stationary or slow moving throughout construction / decommissioning, and for significant periods of time, as a result of measures introduced through the Ecological Vessel Management Plan (EVMP). Therefore, the risk or injury or mortality to leatherback turtles from vessel collision during construction / decommissioning of the CWP Project is low.

Mitigation

258. While there is a low risk of injury or mortality to leatherback turtles as a result of increased vessel activity, the CWP Project has committed to the implementation of an EVMP throughout the construction and decommissioning period. This will ensure that vessel traffic moves along predictable routes and will define how vessels should behave in the presence of marine turtles. With the application of mitigation, the risk to marine turtles is further reduced.

Conclusion

259. Increased Injury or mortality from collision with vessels has the potential to give rise to deliberate disturbance of leatherback turtles. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51.

260. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned.

261. Due to the very low density of marine turtles recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential injury and mortality, and the anticipation that any such potential injury and mortality will not be deliberate, a derogation under Regulation 54 is not required or sought for vessel collision impacts for Leatherback turtles.

5.2.2 Operation and Maintenance

Impact 3: Disturbance due to operational noise and vibration

262. During O&M of the CWP Project, various sources of noise will exist. This includes noise from vessels, noise from the operation of the WTGs (noise generated mechanically from the rotating machinery), geophysical survey noise and noise from any maintenance tasks on offshore infrastructure.

263. The effect of operational noise on leatherback turtles may be loss or avoidance of available habitat through physical or behavioural responses to low level continuous noise. The assessment was based on evidence available in the existing literature, and is provided in **Chapter 9, Fish, Shellfish and Turtles** of the CWP EIAR.

Summary of EIAR Findings

264. Operational noise will generally be low level and will not involve a percussive impact, therefore the level of noise produced will be significantly less than that from construction. While there is the potential that operational noise will result in in short term behavioural responses in marine turtles (i.e. fleeing the area), this will occur over very small areas within the CWP Project offshore development area. Leatherback turtles are a mobile species capable of foraging over a wide area and avoiding areas of impact.

265. Leatherback turtles are unlikely to be present in the CWP Project area in large numbers, and it is not expected that operational noise would lead to any effects on individual vital rates, therefore, the risk to marine turtles from operational noise is low.

Mitigation

266. While the risk of disturbance to leatherback turtles from operational noise is low, the CWP has committed to the development and implementation of a MMMP to reduce the risk of injury or disturbance to marine mammals. The procedures set out for marine mammals will also be relevant for marine turtles and these measures will ensure the risk of disturbance to leatherback turtles as a result of the O&M the CWP Project is very low.

Conclusion

267. Construction and decommissioning noise associated with the CWP Project has the potential to give rise to deliberate disturbance of leatherback turtles. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51.

268. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned..

269. Due to the very low density of marine turtles recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential disturbance, and the anticipation that any such potential disturbance will not be deliberate, a derogation under Regulation 54 is not required or sought for operational noise impacts on Leatherback turtles.

Impact 4: Vessel collision (injury / mortality)

270. As described for Impact 2, (vessel collision (injury / mortality) during construction / decommissioning), a potential source of impact to marine turtles from increased vessel activity due to the CWP Project, is physical trauma, including blunt trauma or injury consistent with propeller strikes.

271. The assessment of vessel collision on marine turtles during O&M of the CWP Project was based on evidence available in the existing literature, and is provided in **Chapter 9, Fish, Shellfish and Turtles** of the CWP EIAR.

Summary of EIAR Findings

272. As described for impact 2 (vessel collision (injury / mortality), speed of vessel movement is known to be a key aspect in minimising the potential risks imposed by vessel traffic to marine turtles, and slower vessels

following a consistent trajectory allow turtles the opportunity to avoid collisions. Leatherback turtles are unlikely to be present in the CWP Project area in large numbers, and therefore, likelihood of collision with vessels is low.

273. The CWP Project already experiences high levels of vessel traffic and vessel numbers associated with the O&M of the CWP Project would be reduced compared to construction. Vessels associated with the CWP Project would also be slow moving as a result of measures introduced through the EVMP and therefore the risk of injury or mortality to leatherback turtles due to vessel collision during O&M of the CWP Project is low.

Mitigation

274. While there is a low risk of injury or mortality to leatherback turtles as a result of increased vessel activity, the CWP Project has committed to the implementation of an EVMP throughout the O&M period. This will ensure that vessel traffic moves along predictable routes and will define how vessels should behave in the presence of marine turtles. With the application of mitigation, the risk to marine turtles is further reduced.

Conclusion

275. Increased vessel activity during O&M of the CWP Project has the potential to give rise to deliberate disturbance to leatherback turtles. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51.

276. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned.

277. Due to the very low density of marine turtles recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential injury and mortality, and the anticipation that any such potential injury and mortality will not be deliberate, a derogation under Regulation 54 is not required or sought for vessel collision impacts for Leatherback turtles.

5.2.3 Risk Assessment Summary Leatherback Turtles

278. Table 5-8 provides a summary of the risk assessment undertaken for leatherback turtles in line with the DAHG (2014) guidance.

Table 5-8 Risk assessment summary: Leatherback turtles

Annex IV Species	DAHG Guidance	Assessment Conclusion
Leatherback turtles	Is the plan or project likely to result in death, injury or disturbance of individuals?	As set out in Section 5.2, Leatherback Turtle Risk Assessment (Impact 1 to Impact 4), there is potential for mortality, injury or disturbance to occur to individuals as a result of the construction, operation or decommissioning of the CWP Project. However, the density of leatherback turtles across the CWP Project and wider area is very low indicating a low likelihood of presence. In addition, mitigation measures will be applied to ensure the risk to leatherback turtles is as low as possible. While some degree of disturbance may occur, it is not predicted to be

Annex IV Species	DAHG Guidance	Assessment Conclusion
		of such an extent that it may affect the chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of leatherback turtles. Therefore, due to the very low density of marine turtles recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential disturbance or mortality, and the anticipation that any such potential disturbance and mortality will not be deliberate, a derogation under Regulation 54 is not required or sought for Leatherback turtles.
	Is it possible to estimate the number of individuals of each species that are likely to be affected?	As set out in Section 5.2, Leatherback Turtle Risk Assessment (Impact 1 to Impact 4), it is possible to estimate the number of individuals of each species that are likely to be affected. Density estimates of leatherback turtles have been derived through site specific and wider survey data and information sources, these estimates are combined with impact ranges derived through underwater noise modelling to provide an estimate of individuals likely to be affected. Where modelling is not possible, a qualitative estimate has been undertaken through best available evidence to provide an estimate of the number of individuals likely to be affected.
	Will individuals be disturbed at a sensitive location or sensitive time during their life cycle?	As set out in Section 3.1 (Annex IV Species), and Section 5.2, Leatherback Turtle Risk Assessment (Impact 1 to Impact 4), Leatherback Turtles may be present year round across the CWP Project and wider area, and it is possible that individuals will be disturbed at sensitive times during their life cycle. However leatherback turtles are thought to be summer visitors while on migration are therefore less vulnerable to impact. Numbers sighted and therefore likelihood of presence and subsequently risk of disturbance is also very low.
	Are the impacts likely to focus on a particular section of the species' population, e.g., adults vs. juveniles, males vs. females?	As set out in Section 3.1 (Annex IV Species), and Section 5.2, Leatherback Turtle Risk Assessment (Impact 1 to Impact 4), Leatherback turtles may be present year round across the CWP Project and wider area and it is not predicted that impacts will focus on a particular section of the species population (gender or age group). Numbers sighted and therefore likelihood of presence and subsequently risk of disturbance is also very low.
	Will the plan or project cause displacement from key functional areas, e.g., for breeding, foraging, resting or migration?	As set out in Section 3.1 (Annex IV Species) 3.2 (Impacts Identified) and Section 5.2, Leatherback Turtle Risk Assessment (Impact 1 to Impact 4), Leatherback turtles may be present year round across the CWP Project and wider area. Offshore infrastructure is not located in sensitive ecological habitats and leatherback turtles mobile species capable of foraging and migrating over

Annex IV Species	DAHG Guidance	Assessment Conclusion
		wide areas. Therefore, it is not predicted that displacement will take place from any key functional areas.
	How quickly is the affected population likely to recover once the plan or project has ceased?	As set out in Section 5.2, Leatherback Turtle Risk Assessment (Impact 1 to Impact 4), while some impacts such as injury or mortality may be severe, in each case, impacts will be temporary and reversible and mitigation measures be applied to ensure the risk to leatherback turtles is as low as possible. Leatherback turtles are also highly mobile and sightings of leatherback turtles and therefore likelihood of presence and subsequently risk of disturbance is very low. While some degree of disturbance may occur, it is not predicted to be of such an extent that it may affect the chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of leatherback turtles. Therefore, due to the very low density of marine turtles recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential disturbance or mortality, and the anticipation that any such potential disturbance and mortality will not be deliberate, a derogation under Regulation 54 is not required or sought for Leatherback turtles.

5.3 Offshore Bats Risk Assessment

5.3.1 Construction / decommissioning

Impact 1: Disturbance due to artificial lighting

279. There is the potential for bat species to be disturbed by artificial lighting associated with the construction / decommissioning of the CWP Project. Certain species may be attracted to lighting while light shy species may avoid the area for foraging. Lights are also known to draw different invertebrates towards them and thereby away from areas used by light shy species, which would benefit more light tolerant species (Spoelstra et al., 2017, Azam et al., 2015).

280. The impacts of lighting on bats on land is relatively well studied, however, the extent to which this will affect bats foraging and migrating offshore is unknown. Bat species including Daubenton's have been found to forage up to 10 km out to sea (Ahlén et al., 2007) and, therefore, there is potential for artificial lighting onshore and offshore to alter bat behaviour.

Summary of EIAR Findings

281. Of the species of bat identified as present in and around the CWP Project, it is anticipated that the three pipistrelle species and Leisler's bat will forage around artificial lighting, while Daubenton's bat will avoid artificial lighting (Bat Conservation Trust (BCT), 2018). Pipistrellus species, were the most abundantly recorded during site specific surveys and these species are found to be positively affected by lighting. While

Daubenton's bat may be negatively affected, only very low numbers of Daubenton's bats are expected to be foraging at sea within the CWP Project area, with an average of 0.05 passes per night recorded.

282. The use of artificial lighting during construction / decommissioning will be short term and temporary. In addition, the area of works, south of the Dublin Port, is already well used by vessels, including at night and the use of targeted task specific lighting would reduce any effects.

283. The assessment concluded that any impacts from lighting offshore would be indistinguishable from the current baseline and annual variation and the risk of disturbance to bat species during construction / decommissioning of the CWP Project is very low. Full details are provided in **Chapter 10, Offshore Bats** of the CWP Project EIAR.

Mitigation

284. While the risk to bat species from disturbance due to artificial lighting is very low, the CWP Project has committed to further mitigate the potential impacts of lighting associated with offshore construction / decommissioning works. The amount of lighting will be targeted to achieve the minimum required or necessary light levels, by reducing the number of lights or by moving from general area lighting to specifically focused task-based lighting.

Conclusion

285. Artificial lighting has the potential to give rise to deliberate disturbance of the bat species identified. While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species and, therefore, does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not required.

286. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned.

287. Due to the very low density of bats recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential disturbance, and the anticipation that any such potential disturbance will not be deliberate, a derogation under Regulation 54 is not required or sought for disturbance from artificial lighting to offshore bats.Operation and maintenance

Impact 2: Disturbance due to artificial lighting

288. As described for Impact 1 (Disturbance due to artificial lighting) during construction, there is the potential for bat species to be disturbed by artificial lighting associated with the CWP Project.

289. Looking at WTGs specifically, studies in the United States have found no impacts on bat mortality associated with aviation lighting (Guest et al., 2022), with Cryan and Barclay (2009) finding no difference in mortality at lit WTGs compared to unlit WTGs. However, there is some research (Brabant et al., 2019; Lagerveld et al., 2014) which suggests aviation lighting may attract light tolerant species, such as Nathusius' pipistrelles, towards operational offshore WTGs, thereby increasing other risks, including collision, and further changing behaviours.

Summary of EIAR Findings

290. As structures within the CWP Project array site will be marked and lit in accordance with the International Association of Marine Aids to Navigation and Lighthouse Authorities and Civil Aviation Authority requirements, there is potential for disturbance impacts associated with O&M lighting.

291. The lighting of the WTGs and OSSs is a health and safety requirement and, as such, cannot be avoided or minimised, however, at the closest point WTGs and OSS will be seven nautical miles from the shore, and as the lighting should be restricted to five nautical miles the effects will be restricted to bats already within the offshore environment.

292. As described for construction related disturbance, of the species of bat identified as present in and around the CWP Project, it is anticipated that the three pipistrelle species and Leisler's bat will forage around artificial lighting, while Daubenton's bat will avoid artificial lighting (BCT, 2018). Data from site specific surveys demonstrated that the number of bat passes considered potentially linked to migration was low for all species at all locations. Pipistrellus species, were the most abundantly recorded during site specific surveys and these species are found to be positively affected by lighting. While Daubenton's bat may be negatively affected, only very low numbers of Daubenton's bats are expected to be foraging at sea within the CWP Project area, with an average of 0.05 passes per night recorded.

293. Vessel activity during O&M of the CWP Project will be low level and short term associated with specific maintenance works, and the area which will be used by vessels associated with the CWP Project is already well used by vessels from Dublin Port.

294. The assessment concluded that any impacts from lighting offshore would be indistinguishable from the current baseline and annual variation and the risk of disturbance to bat species during O&M of the CWP Project is very low. Full details are provided in **Chapter 10, Offshore Bats** of the CWP Project EIAR.

Mitigation

295. Due to the very low risk of disturbance to bat species from operational lighting associated with the CWP Project, no specific mitigation measures are required. However, as described for construction / decommissioning, lighting during any maintenance works will be minimised, by reducing the number of lights or by moving from general area lighting to specifically focused task-based lighting.

Conclusion

296. Artificial lighting during O&M of the CWP Project has the potential to give rise to deliberate disturbance of the bat species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not required.

297. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned.

298. Due to the very low density of bats recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential disturbance, and the anticipation that any such potential disturbance will not be deliberate, a derogation under Regulation 54 is not required or sought for disturbance from artificial lighting to offshore bats. Impact 3: Collision risk (injury / mortality)

299. Bat species are known to collide with onshore WTGs and, as such, they are considered at potential risk of collision with offshore WTGs. Collision with blades may result in blunt trauma or barotrauma impacts.

300. Research suggests that the flight heights of different species varies during migration to take advantage of favourable tailwinds, with flights at greater heights (above 40 m) putting migratory species, such as pipistrelle and Leisler's bats, within the rotor sweep zone and therefore at greater risk of collision with WTGs compared to foraging bats, such as Daubenton's.

Summary of EIAR Findings

301. Based on flight patterns and behaviours, Eurobats (Rodrigues et al., 2015) lists the different susceptibilities of each species to collision as below:
    - Common pipistrelle – high;
    - Soprano pipistrelle – high;
    - Nathusius' pipistrelle – high;
    - Leisler's – high; and
    - Daubenton's – low.
302. Migratory species, including pipistrelle and Leisler's may be migrating across the CWP Project area and are therefore at higher risk of collision. Lower flying bats such as Daubenton's would be foraging off the water's surface at most 10 m above sea level and below the rotor swept area. This species is therefore at a lower risk of collision.
303. The species at higher risk of collision (pipistrelle and Leisler's bats), were associated with the more common species which have a more stable population and would be less affected by any impact at the population level. In addition given the precautionary approach to identifying calls as potentially migratory, and that it is not possible to distinguish different individual bats from the calls, the number of potentially migratory passes are considered very low relative to the populations of bat species in the area. This is evidenced by more recent (2025) survey data which has not identified any bat presence.
304. The assessment concluded that collisions would affect less than one percent of the population affected and therefore the consequence on species populations would be limited / barely discernible. Therefore, the risk of disturbance to bat species due to collision during the O&M of the CWP Project is very low. Full details are provided in **Chapter 10, Offshore Bats** of the CWP Project EIAR.

Mitigation

305. Due to the low risk of disturbance to bat species from collision risk associated with the CWP Project, no specific mitigation measures are required. However, the CWP Project is committed to undertaking long term monitoring with a view to implementing mitigation measures if appropriate through an agreed approach of adaptive management.

Conclusion

306. Collision risk associated with the O&M of the CWP Project has the potential to give rise to deliberate disturbance of the bat species identified. **While some degree of disturbance is expected, it is not predicted to be of such an extent that it may affect its chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species** and, therefore, does not amount to disturbance for the purposes of Regulation 51, and a derogation under Regulation 54 is not required.
307. CWPL has proposed appropriate mitigation measures to prevent disturbance, to assess the effectiveness of such measures through appropriate monitoring and, in the light of the information gathered, to take further measures as required to ensure that there are no significant adverse impacts on the population of the species concerned..
308. Due to the very low density of bats recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential disturbance or mortality, and the anticipation that any such potential disturbance and mortality will not be deliberate, a derogation under Regulation 54 is not required or sought for collision risk to offshore bats.

5.3.2 Risk Assessment Summary Offshore Bats

309. Table 5-9 provides a summary of the risk assessment undertaken for offshore bats in line with the DAHG (2014) guidance.

Table 5-9 Risk assessment summary: Offshore bats

Annex IV Species	DAHG Guidance	Assessment Conclusion
Offshore bats	Is the plan or project likely to result in death, injury or disturbance of individuals?	As set out in Section 5.3, Offshore Bats Risk Assessment (Impact 1 to Impact 3), there is potential for mortality, injury or disturbance to occur to individuals as a result of the construction, O&M or decommissioning of the CWP Project. However, the number of migratory bat passes recorded is low compared to wider populations, indicating a low likelihood of presence. In addition, mitigation measures will be applied to ensure the risk to offshore bats is as low as possible. While some degree of disturbance may occur, it is not predicted to be of such an extent that it may affect the chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of offshore bats.. Therefore, due to the very low density of bats recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential disturbance or mortality, and the anticipation that any such potential disturbance and mortality will not be deliberate, a derogation under Regulation 54 is not required or sought for offshore bats.
	Is it possible to estimate the number of individuals of each species that are likely to be affected?	As set out in Section 5.3, Offshore Bats Risk Assessment (Impact 1 to Impact 3), it is possible to estimate the number of individuals of each species of bat that are likely to be affected. Estimates of offshore bat migratory passes across the CWP Project area have been derived through site specific and wider survey data and information sources. These estimates are combined with the evidence base around impacts and likely consequences to provide an estimate of the number of individuals likely to be affected.
	Will individuals be disturbed at a sensitive location or sensitive time during their life cycle?	As set out in Section 3.1, Annex IV Species, and Section 5.3, Offshore Bats Risk Assessment (Impact 1 to Impact 3), bats may be present year round across the CWP Project and wider area, and it is possible that individuals will be disturbed at sensitive times during their life cycle. However, the number of migratory bat passes recorded is low compared to wider populations, indicating a low likelihood of presence and subsequently risk of disturbance is also low.

Annex IV Species	DAHG Guidance	Assessment Conclusion
	Are the impacts likely to focus on a particular section of the species' population, e.g., adults vs. juveniles, males vs. females?	As set out in Section 3.1, Annex IV Species, and Section 5.3, Offshore Bat Risk Assessment (Impact 1 to Impact 3), bats may be present year round across the CWP Project and wider area and it is not predicted that impacts will focus on a particular section of the species population (gender or age group). However, the number of migratory bat passes recorded is low compared to wider populations indicating a low likelihood of presence and subsequently risk of disturbance is also low.
	Will the plan or project cause displacement from key functional areas, e.g., for breeding, foraging, resting or migration?	As set out in Section 3.1, Annex IV Species 3.2, Impacts Identified and Section 5.3, Offshore Bats Risk Assessment (Impact 1 to Impact 3), bats may be present year round, and may potentially migrate across the CWP Project and wider area. However, offshore infrastructure is not located in sensitive ecological habitats, bats are mobile species capable of foraging and migrating over wide areas, and the number of migratory bat passes recorded is low compared to wider populations. Therefore, it is not predicted that displacement will take place from any key functional areas.
	How quickly is the affected population likely to recover once the plan or project has ceased?	As set out in Section 5.3, Offshore Bats Risk Assessment (Impact 1 to Impact 3), while some impacts such as injury or mortality may be severe, in each case, impacts will be temporary and reversible and mitigation measures be applied to ensure the risk to bat species is as low as possible. Bats are also mobile species capable of foraging over wide areas, and the number of migratory bat passes recorded is low compared to wider populations, indicating a low likelihood of presence and low risk of disturbance. Therefore, while some degree of disturbance may occur, it is not predicted to be of such an extent that it may affect the chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of offshore bat species. Therefore, due to the very low density of bats recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential disturbance or mortality, and the anticipation that any such potential disturbance and mortality will not be deliberate, a derogation under Regulation 54 is not required or sought for offshore bats.

5.4 Risk Assessment Conclusions

310. The assessments presented in Sections 5.1 (marine mammals), 5.2 (leatherback turtles), and 5.3 (offshore bats) demonstrate that there is a potential risk of disturbance to Annex IV species due to the construction, O&M and decommissioning of the CWP Project:

- For marine mammal species the risk of disturbance is associated with underwater noise generated through construction and decommissioning activities including, piling of WTGs, OSS and the onshore revetment, potential UXO clearance and geophysical surveys, as well as disturbance through collision (injury or mortality) or noise disturbance from vessels and operation of WTGs.
- For leatherback turtles the risk of disturbance is associated with construction, O&M and decommissioning noise and vibration and disturbance through vessel collision injury or mortality.
- For offshore bats the risk of disturbance is associated with construction, O&M and decommissioning lighting affecting migration or foraging behaviours, and potential collision (injury or mortality) with WTG blades.

311. In each case, with the application of mitigation, the level of disturbance assessed is not predicted to be of such an extent that it may affect the chances of survival, breeding success or reproductive ability, or lead to a non-temporary reduction in the occupied area or the relocation or displacement of the species assessed, and therefore does not amount to disturbance for the purposes of Regulation 51.

312. In line with EU Directive 2023/2413, with the implementation of mitigation and, where necessary monitoring, to reduce the risk of disturbance wherever possible, it can also be concluded that such disturbance is not considered to be deliberate within the meaning of the Directives.

313. Due to the low density of marine turtles and bats recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential disturbance and mortality, and the anticipation that any such potential disturbance and mortality will not be deliberate, a derogation under Regulation 54 is not required or sought for marine turtles or offshore bats.

314. However, whilst it is also concluded that deliberate disturbance is not significant with regards EIA, does not result in adverse effects with regards Habitats Directive, and does not introduce an impediment to Favourable Conservation Status of the species within their natural range and all relevant and appropriate mitigations are being taken forward, the possibility of an impact on marine mammal species cannot be ruled out, and accordingly, a derogation licence is being sought. The following sections address the requirements of a derogation licence application in line with the conditions set out in Regulation 54.

6 EVIDENCE TO SUPPORT THE DEROGATION TESTS

315. The following sections address the conditional requirements of a derogation licence application in line with the conditions set out in Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations, 2011-2021 as follows:

    1. A reason, or reasons, listed in Regulation 54 (a – e) applies (Section 6.1);
    2. No satisfactory alternatives exist (Section 6.2); and
    3. Derogation would not be detrimental to the maintenance of a population(s) at a favourable conservation status (Section 6.3).

6.1 Imperative Reasons of Overriding Public Interest

316. Regulation 54(2)(c) of the Habitats Directive sets out that a derogation licence may be granted by the Minister, provided the project is:

    > "In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment."

317. The CWP Project is a renewable energy generating development and EU law presumes that the planning, construction and operation of renewable energy plants is in the overriding public interest and serving public health and safety for these purposes (see Article 16f of Directive 2018/2001, inserted by Directive (EU) 2023/2413).

318. Recital 44 of Directive (EU) 2023/2413 explains that "Member States should presume those renewable energy plants and their related infrastructure to be of overriding public interest and serving public health and safety, except where there is clear evidence that those projects have significant adverse effects on the environment which cannot be mitigated or compensated for, or where Member States decide to restrict the application of that presumption in duly justified and specific circumstances, such as reasons related to national defence."

319. In line with EU Directive 2023/2413, as a renewable energy generating development, there is a presumption that the CWP Project is a development for which there exist imperative reasons for overriding public interest (IROPI). All of its potential significant adverse effects on biodiversity can be mitigated and as such condition 54(2)(c) of the Habitats Directive is satisfied.

320. From a policy perspective, the need for OWF development within Irish waters to replace more environmentally damaging energy options such as traditional (fossil fuel) power stations is set out in the **Planning Report** which supports the CWP Project planning application.

321. The Planning Report sets out the overall compliance of the CWP Project with Ireland's planning policy framework and highlights its European, national, regional and local importance in terms of achieving climate change and renewable energy targets, as well as the significant economic and social opportunities it provides.

322. The CWP Project is built on the evolution of Marine Policy, environmental obligations and climate change. The transition to renewable energy, including offshore renewable energy is a matter of strategic importance and is recognised in Project Ireland 2040 – The National Development Plan 2021–2030; in Project Ireland 2040 – National Planning Framework 2040; in Project Ireland 2040 – National Marine Planning Framework; and in the Climate Action Plan (CAP) 2024.

323. The CWP Project is the largest renewable energy project currently proposed in Irish waters and is the most important contributor to Ireland's overall offshore wind generation goals. With a planned output of 1300 MW

it represents up to 26% of Ireland's 2030 target of 5 gigawatts (GW) for offshore wind energy. The CWP Project makes significant contributions to the achievement of the CAP 2024 and as a standalone project it will make the most significant contribution to the achievement of abatements in the electricity sector, equal to nearly 45% of total carbon budget in 2030.

324. As noted in the Government's Energy Security in Ireland to 2030: Energy Security Package' (Government of Ireland 2023), energy security is systematically linked and dependent upon harnessing indigenous renewable energy resources at speed and scale and the rapid electrification of energy demand.

325. The rapid delivery of offshore wind projects, such as the CWP Project, is therefore a matter of urgency and of both national and European importance. The CWP Project will:

- Facilitate the accelerated and increased use of renewable energy with a maximum export capacity of 1300 MW.
- Stabilise electricity pricing through provision of a fixed price for the electricity generated for a period of 20 years.
- Improve the security of supply nationally by significantly increasing the domestic production of renewable energy;
- Contribute to a reduction in the dependency on imported electricity and on fossil fuels. These will both support a more sustainable electricity mix and dilute the share of non-renewable sources in the overall energy mix; and
- Positively support the collective effort towards a reduction of GHG emissions.

326. Given the contributions made by the CWP Project to facilitating the generation and use of clean renewable energy, tackling the climate crisis and provision of energy security, development of the project is considered to be in the interests of public health and public safety, with beneficial consequences of primary importance for the environment. Full details of the CWP Project's contribution is provided within the **Planning Report** for the CWP Project.

327. As such, the CWP Project demonstrates in accordance with the requirement of a Regulation 54, that there are imperative reasons of overriding public interest for the delivery of the CWP project contribution to the national and European need for renewable energy.

6.2 Assessment of Alternatives

328. As required under the EIA Directive 2011/52/EU (as amended) and the Planning Development Regulations 2001 (as amended), **Chapter 3, Site Selection and Consideration of Alternatives** of the CWP EIAR details the site selection process and consideration of reasonable alternatives carried out by the Developer, to determine the most appropriate location and design for the CWP Project, with consideration and comparison of potential environmental effects.

329. In addition, **Chapter 4, Project Description** describes the design approach that has been taken for each component of the CWP Project detailed design parameters, installation and removal methodologies and the degree of flexibility required, as appropriate. Chapter 4 also details mitigation measures that are built into the design of the Project (primary mitigation measures) to reduce potential impacts on the environment (refer to Table 4-2 for those measures relevant to Annex IV species).

330. In developing the CWP Project, the Developer has ensured alignment with Irish Government's policy objectives in all areas related to the establishment of Offshore Renewable Energy (ORE), including polices relevant to ORE site selection and consideration of alternatives. A description of the site selection and consideration of alternatives related policies that have been considered is provided within **Chapter 3, Site Selection and Alternatives** of the CWP EIAR, supported by the **Planning Report** which provides an assessment of the CWP Project against all relevant planning policy.

331. **Chapter 3, Site Selection and Consideration of Alternatives** provides a description of the reasonable alternative options for the CWP Project at every stage of the project development process. This includes a 'do nothing' scenario, alongside consideration of alternative locations for the array site, cable route alignments, site layouts, designs, processes and methodologies and mitigation measures for both the offshore and onshore infrastructure.

332. The siting, design and ongoing refinement of the CWP Project has taken account of physical constraints, and environmental, technical, social and commercial considerations. The overarching aim of this process was to identify options that will be both environmentally acceptable and technically deliverable, whilst seeking to deliver the lowest cost of energy to the consumer.

333. A multidisciplinary team was formed to undertake site selection and assessment of alternatives which included a team of specialists comprising engineers, planners, legal advisors and EIA consultants. The identification of preferred sites, routes, layouts, designs, methodologies and mitigation measures was progressed through six phases and included desktop studies, site visits, identification and mapping constraints and public stakeholder consultation.

334. A full description is provided in **Chapter 3, Site Selection and Consideration of Alternatives** and includes detailed assessment of the following project options:

- Phase 1: Consideration of alternative array sites, associated infrastructure and alternative designs;
- Phase 2: Consideration of alternative grid connection points;
- Phase 3: Consideration of alternative landfall sites, landfall infrastructure and alternative designs;
- Phase 4: Consideration of alternative offshore export cable corridors (OECC) and alternative cable designs;
- Phase 5: Consideration of alternative onshore substation sites, associated infrastructure and alternative designs; and
- Phase 6: Consideration of alternative export cable routes.

335. For each phase, a description of the reasonable alternatives was provided, alongside the key reasons for selecting the chosen option, including policy considerations and comparison of environmental effects. Each component of the CWP Project is fully defined and justified, demonstrating in each case that the project design selected is the most appropriate, best environmental option, and that no satisfactory alternatives exist.

336. However, even after the adoption of all necessary mitigation measures, there remains a possibility that the CWP Project would result in the disturbance of the species the subject of this Annex IV Risk Assessment.

337. As such, the CWP Project demonstrates in accordance with the requirement of a Regulation 54, that no satisfactory alternatives exist to deliver the project contribution to the recognised imperative for renewable energy.

6.3 Favourable Conservation Status

338. Derogation licences for Annex IV species may be granted by the Minister, which would allow otherwise illegal activities to go ahead, provided that granting the derogation would not be detrimental to the maintenance of a population(s) at a FCS, defined in the Habitats Directive as when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable element of its natural habitats;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and

- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

339. The information presented in Section 3.1 (Annex IV Species) and Table 3-2 of this report demonstrate that the overall conservation status of the marine mammal species assessed is favourable.

340. The assessments presented within Section 5 of this report demonstrate that while there is a low risk of disturbance to marine mammal species from the CWP Project, with the application of mitigation measures, the risk is further reduced and in each case will not be sufficient to affect the species chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or non-temporary displacement of the species and does not amount to disturbance for the purposes of Regulation 51.

341. Population dynamics data indicates in each case, that marine mammal species are maintaining themselves on a long term basis as a viable element of their natural habitats. The natural range of the species is not being reduced and is not likely to be reduced for the foreseeable future and there is and will continue to be a sufficiently large habitat to maintain species populations on a long-term basis.

342. Therefore the assessment presented in this report allows conclusions to be drawn that there will be no impediment to the FCS of the marine mammal species being maintained and a derogation licence for the construction of the CWP Project can be granted.

6.4 Monitoring Proposals

343. CWPL is committed to monitoring the impacts of any derogation licence granted during the construction of the CWP Project and welcomes a condition to report on such monitoring on an annual basis. Monitoring proposals are set out within the CWP Project In Principle Environmental Monitoring Plan (IPEMP) provided in support of this Annex IV Risk Assessment.

7 CONCLUSIONS

344. CWPL is proposing to develop the CWP Project, an offshore wind farm located in the Irish sea approximately 13 – 22 km off the east coast of Ireland at County Wicklow. Once constructed the CWP Project has an expected generating capacity of 1300 MW and anticipated operational lifespan of 25 years.

345. This document has been prepared to provide the necessary information for the regulatory authorities, to assist in making an informed decision on the likely impact of the CWP Project on Annex IV species, under Article 12 of the Habitats Directive (92/43/EEC), to determine whether a derogation licence is required for the CWP Project and if so, whether the criteria for derogation are met.

346. Under Regulation 51 of the Habitats Directive it is an offence to deliberately disturb Annex IV species particularly during the period of breeding, rearing, hibernation and migration without first obtaining a derogation licence from the Minister in accordance with Regulation 51. Where 'disturbance' is defined as "Any activity that deliberately disturbs a species to the extent that it may affect its chances of survival, reproductive ability or breeding success, or that leads to a reduction in the area occupied by the species or to its relocation or displacement."

347. In line with guidance (NPWS, 2021 and DAHG, 2014) a risk assessment for Annex IV species has been undertaken and is presented within this document. This has determined that Annex IV species are present in the CWP Project area and wider area including, marine mammal species (harbour porpoise, bottlenose dolphin, common dolphin, Risso's dolphin and minke whale), leather back turtle and bat species (common pipistrelle, soprano pipistrelle, Nathusius pipistrelle, Leisler's bat and Daubenton's bat). Through review of project specific survey data, wider survey and data sources it has been possible to estimate the number of individuals potentially affected by the CWP Project.

348. Potential disturbance impacts to Annex IV species have been identified and assessed with reference to the CWP Project EIAR chapters, appendices and supporting documents. The risk assessment presented within this document has also considered primary mitigation that is relevant to the Annex IV species identified. Where necessary additional mitigation and monitoring has also been proposed to reduce the risk of potential disturbance to Annex IV species wherever possible.

349. The risk assessment has concluded that due to the low density of marine turtles and bats recorded across the CWP study areas, combined with the very low risk of any meaningful impact, the inclusion of appropriate and necessary mitigation measures to avoid potential disturbance and mortality, and the anticipation that any such potential disturbance and mortality will not be deliberate, a derogation under Regulation 54 is not required or sought for marine turtles or offshore bats.

350. In relation to marine mammals, while some degree of disturbance is expected (Refer to Risk Assessment Impacts 3,4,5,6,8,10), it is not predicted to be of such an extent that it may affect chances of survival, breeding success or reproductive ability, or lead to a reduction in the occupied area or the relocation or displacement of the species. Whilst disturbance does not amount to disturbance for the purposes of Regulation 51, the possibility of an impact on marine mammal species cannot be ruled out, and accordingly, a derogation licence is being sought.

351. As set out in the CWP Project **Planning Report**, the CWP Project is a renewable energy generating development and as such, there is a presumption in EU law (Directive 2023/2413) in favour of the CWP Project as a development for IROPI. From a policy perspective the CWP Project is in compliance with Ireland's planning policy framework and is of European, national, regional and local importance in terms of facilitating the generation and use of clean renewable energy, tackling the climate crisis and provision of energy security. As such there are imperative reasons of overriding public interest for the delivery of the CWP project's contribution to the national and European need for renewable energy.

352. As set out in EIAR **Volume 2, Chapter 3, Site Selection and Consideration of Alternatives** a range of alternatives were considered and assessed for the CWP Project, as part of a phased approach, to determine the most appropriate location and design for the project, with consideration and comparison of

potential environmental effects. Each component of the CWP Project is fully defined and justified, demonstrating in each case that the project design selected is the most appropriate and best environmental option, and that no satisfactory alternatives exist.

353. In line with Regulation 54, derogation licences for Annex IV species may be granted by the Minister, which would allow otherwise illegal activities to go ahead, provided that granting the derogation would not be detrimental to the maintenance of a population(s) at an FCS. The assessments presented within this report allow conclusions to be drawn that there will be no impediment to the FCS of marine mammal species being maintained and a derogation licence for the CWP Project can be granted.

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