

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Environmental Statement

Volume 2, Chapter 9: Other sea users

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Image of an offshore wind farm

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Errata

Errata reference number	Deadline included	Document number	Volume and chapter	Paragraph/ Table/Figure	Description of errata	Correction
10	PD	APP-027	Volume 2, Chapter 9: Other sea users	Paragraph 9.5.2.22	Reference to Figure 9.6 is an error. It should refer to Figure 9.4.	Delete the words '(see Figure 9.6)' where they appear in paragraph 9.5.2.22 and replace with the words '(see Figure 9.4)'.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Contents

9	OTHER SEA USERS.....	1
9.1	Introduction	1
9.1.1	Overview	1
9.2	Legislative and policy context.....	1
9.2.1	Planning policy context.....	1
9.2.2	National Policy Statements	2
9.2.3	North West Inshore and North West Offshore Marine Plans	3
9.3	Consultation	4
9.4	Baseline methodology	10
9.4.1	Relevant guidance.....	10
9.4.2	Scope of the assessment	10
9.4.3	Study area	11
9.4.4	Desktop study.....	14
9.4.5	Site specific surveys.....	15
9.5	Baseline environment	15
9.5.1	Regional other sea users study area	15
9.5.2	Local other sea users study area	18
9.5.3	Radar Early Warning Systems (REWS) study area	26
9.5.4	Future baseline scenario	28
9.5.5	Data limitations	28
9.6	Impact assessment methodology	28
9.6.1	Overview	28
9.6.2	Impact assessment criteria	28
9.7	Key parameters for assessment.....	30
9.7.1	Maximum Design Scenario	30
9.8	Measures adopted as part of the Morgan Generation Assets.....	33
9.9	Assessment of significant effects	35
9.9.1	Overview	35
9.9.2	Displacement of recreational activities.....	35
9.9.3	Reduction or restriction of other offshore energy activities	37
9.9.4	Interference with the performance of REWS located on oil and gas platforms	40
9.9.5	Potential impact of rerouted traffic on REWS alarm rates	42
9.9.6	Future monitoring	44
9.10	Cumulative effects assessment methodology	44
9.10.1	Methodology	44
9.10.2	Maximum Design Scenario	50
9.11	Cumulative effects assessment.....	54
9.11.2	Displacement of recreational activities.....	55
9.11.3	Reduction or restriction of other offshore energy activities	60
9.11.4	Interference with the performance of REWS located on oil and gas platforms	67
9.11.5	Potential impact of rerouted traffic on REWS alarm rates	69
9.12	Transboundary effect	72
9.13	Inter-related effects.....	72
9.14	Summary of impacts, mitigation measures and monitoring.....	72
9.15	References	78

Tables

Table 9.1:	Summary of the NPS EN-3 provisions relevant to other sea users.	2
Table 9.2:	Summary of NPS EN-3 policy on decision making relevant to other sea users.	3
Table 9.3:	North West Inshore and North West Offshore Marine Plan policies of relevant to other sea users.	4

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 9.4:	Summary of key matters raised during consultation activities undertaken for the Morgan Generation Assets relevant to other sea users.	5
Table 9.5:	Potential impacts considered within this assessment.	10
Table 9.6:	Impacts scoped out of the assessment for other sea users.	11
Table 9.7:	Summary of key data sources and desktop reports.	14
Table 9.8:	Offshore wind farms in the east Irish Sea.	19
Table 9.9:	Definition of terms relating to the magnitude of an impact.	29
Table 9.10:	Definition of terms relating to the sensitivity of the receptor.	29
Table 9.11:	Matrix used for the assessment of the significance of the effect.	30
Table 9.12:	MDS considered for the assessment of potential impacts on other sea users.	31
Table 9.13:	Measures adopted as part of the Morgan Generation Assets.	33
Table 9.14:	Estimated change in yearly alarm rates against the base case for platforms where an increase in alarms was observed.	43
Table 9.15:	List of other projects, plans and activities considered within the CEA.	46
Table 9.16:	MDS considered for the assessment of potential cumulative effects on other sea users.	51
Table 9.17:	Displacement of recreational activities.	55
Table 9.18:	Reduction or restriction of other offshore energy activities.	60
Table 9.19:	Interference with the performance of REWS located on oil and gas platforms.	67
Table 9.20:	Potential impact of rerouted traffic on REWS alarm rates.	69
Table 9.21:	Summary of potential environmental effects, mitigation and monitoring.	73
Table 9.22:	Summary of potential cumulative environmental effects, mitigation and monitoring.	74

Figures

Figure 9.1:	The other sea users study areas.	13
Figure 9.2:	Aggregate extraction and disposal sites in the vicinity of the Morgan Generation Assets.	16
Figure 9.3:	Recreational activities in the vicinity of the Morgan Generation Assets.	17
Figure 9.4:	Other offshore wind farms and cables within the vicinity of the Morgan Generation Assets.	21
Figure 9.5:	Oil and gas licence blocks and features in the vicinity of the Morgan Generation Assets.	24
Figure 9.6:	CCS and oil and gas activities in the vicinity of the Morgan Generation Assets.	25
Figure 9.7:	REWS in the vicinity of the Morgan Generation Assets.	27
Figure 9.8:	Other projects, plans and activities screened into the CEA.	49

Annexes

Annex number	Annex title
9.1	Radar Early Warning Systems (REWS) and Microwave Communication Links technical report

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Glossary

Term	Meaning
Marine aggregate	Marine dredged sand and/or gravel.
Marine aggregate extraction	The process of removing naturally occurring sand and gravels.
Notice to Mariners	Issued from a number of different sources, such as the UK Hydrographic Office, Trinity House or Local Harbour Authorities. Contain important navigational information such as chart updates, changes in buoyage, prior warning of activities such as dredging, exclusion zones, harbour closures and byelaws etc.
Seismic survey	The technique involves releasing pulses of acoustic energy along designated lines, the energy penetrates the sub-surface rocks and is reflected back to the surface where it can be detected by acoustic transducers and relayed to a recording vessel.
Tidal excursion	The net horizontal distance travelled by a water particle from Mean Low Water Springs (MLWS) to Mean High Water Springs (MHWS) or vice versa.

Acronyms

Acronym	Description
AIS	Automatic Identification System
BEIS	Business, Energy and Industrial Strategy
CCS	Carbon Capture and Storage
CCUS	Carbon Capture, Usage and Storage
CEA	Cumulative Effects Assessment
CPA	Closest Point of Approach
CTV	Crew Transfer Vessel
DCO	Development Consent Order
DESNZ	Department for Energy Security and Net Zero
EIA	Environmental Impact Assessment
ESCA	European Subsea Cables Association
ICPC	International Cable Protection Committee
IEMA	Institute of Environmental Management and Assessment
LoS	Line of Sight
MCA	Maritime and Coastguard Agency
MDS	Maximum Design Scenario
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
NPS	National Policy Statement

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Acronym	Description
NRA	Navigational Risk Assessment
NSIP	Nationally Significant Infrastructure Project
NSTA	North Sea Transition Authority
NtM	Notice to Mariners
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSI	Offshore Storage Installation
OSP	Offshore Substation Platform
OTNR	Offshore Transmission Network Review
PEIR	Preliminary Environmental Information Report
REWS	Radar Early Warning Systems
RYA	Royal Yachting Association
SOV	Service Operation Vessel
SSC	Suspended Sediment Concentration
TCE	The Crown Estate
TCPA	Time to Closest Point of Approach
UKCS	United Kingdom Continental Shelf
UKHO	United Kingdom Hydrographic Office

Units

Unit	Description
%	Percentage
m	Metres
m ²	Metres squared
m ³	Metres cubed
MW	Megawatt
nm	Nautical mile
km	Kilometres
km ²	Kilometres squared

9 Other sea users

9.1 Introduction

9.1.1 Overview

- 9.1.1.1 This chapter of the Environmental Statement presents the assessment of the potential impact of the Morgan Offshore Wind Project: Generation Assets (hereafter referred to as the Morgan Generation Assets) on other sea users. Specifically, this chapter considers the potential impact of the Morgan Generation Assets seaward of Mean High Water Springs (MHWS) during the construction, operations and maintenance, and decommissioning phases.
- 9.1.1.2 The assessment presented is informed by the following technical chapters:
- Volume 2, Chapter 1: Physical processes of the Environmental Statement
 - Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement
 - Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement
 - Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement.
- 9.1.1.3 This chapter also draws upon information contained within the following technical reports:
- Volume 3, Annex 3.1: Underwater sound technical report of the Environmental Statement.
 - Volume 4, Annex 9.1: Radar Early Warning Systems (REWS) and Microwave Communication Links technical report of the Environmental Statement.
- 9.1.1.4 Potential impacts on navigational safety are addressed in Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement. Potential impacts on helicopter access to offshore oil and gas platforms is addressed in Volume 2, Chapter 11: Aviation and radar of the Environmental Statement.

9.2 Legislative and policy context

9.2.1 Planning policy context

- 9.2.1.1 The Morgan Generation Assets will be located in English offshore waters (beyond 12 nautical miles (nm) from the English coast). As set out in Volume 1, Chapter 1: Introduction of the Environmental Statement, the Morgan Generation Assets are an offshore generating station with a capacity of greater than 100 MW located in English waters. It is therefore a Nationally Significant Infrastructure Project (NSIP) as defined by section 15(3) of the Planning Act 2008 (as amended) (the 2008 Act). As such, there is a requirement to submit an application for a Development Consent Order (DCO) to The Planning Inspectorate to be decided by the Secretary of State for the Department for Energy Security and Net Zero (DESNZ).

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

9.2.2 National Policy Statements

- 9.2.2.1 There are currently six energy National Policy Statements (NPSs), two of which contain policy relevant to offshore wind development and the Morgan Generation Assets, specifically:
- Overarching NPS for Energy (NPS EN-1) which sets out the UK Government's policy for the delivery of major energy infrastructure (DESNZ, 2023a)
 - NPS for Renewable Energy Infrastructure (NPS EN-3) (DESNZ, 2023b).
- 9.2.2.2 NPS EN-3 includes guidance on what matters are to be considered in the assessment. This is summarised in Table 9.1. NPS EN-3 also highlights a number of factors relating to the determination of an application and in relation to mitigation. These are summarised in Table 9.2.

Table 9.1: Summary of the NPS EN-3 provisions relevant to other sea users.

Summary of NPS EN-3 provision	How and where considered in the Environmental Statement
NPS EN-3	
There may be constraints imposed on the siting or design of offshore wind farms because of the presence of other offshore infrastructure, such as co-existence/co-location, oil and gas, Carbon Capture, Usage and Storage (CCUS), co-location of electrolyzers for hydrogen production, marine aggregate dredging, telecommunications, or activities, such as aviation and recreation. (EN-3, paragraph 2.8.44)	The baseline environment considering other offshore infrastructure and activities is presented in section 9.4.4. Consultation with potentially affected stakeholders has been carried out from the early stages of the Morgan Generation Assets and has continued throughout the pre-application consultation process. Details of this are presented in Table 9.4.
The scale and location of future offshore wind development around England and Wales means that development has occurred, and will continue to occur, in or close to areas where there is other offshore infrastructure. Where a potential offshore wind farm is proposed close to existing operational offshore infrastructure or has the potential to affect activities for which a licence has been issued by government, the applicant should undertake an assessment of the potential effects of the proposed development on such existing or permitted infrastructure or activities. The assessment should be undertaken for all stages of the lifespan of the proposed wind farm in accordance with the appropriate policy and guidance for offshore wind farm EIAs. (EN-3, paragraph 2.8.196 – 2.8.198)	The potential impact on existing or permitted infrastructure or activities has been considered in section 9.4 and, where applicable, an assessment of their likely significance, considering each phase of the development process (i.e. construction, operations and maintenance, and decommissioning) is provided in section 9.9.
Applicants should engage with interested parties in the potentially affected offshore sectors early in the pre-application phase of the proposed offshore wind farm, with an aim to resolve as many issues as possible prior to the submission of an application. Such stakeholder engagement should continue throughout the life of the development including construction, operation and decommissioning phases where necessary. (EN-3, paragraphs 2.8.200 – 2.8.201)	Consultation with potentially affected stakeholders has been carried out from the early stages of the Morgan Generation Assets and has continued throughout the pre-application consultation process. Details of this are presented in Table 9.4.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 9.2: Summary of NPS EN-3 policy on decision making relevant to other sea users.

Summary of EN-3 policy	How and where considered in the Environmental Statement
<p>NPS EN-3</p> <p>Where a proposed offshore wind farm potentially affects other offshore infrastructure or activity, a pragmatic approach should be employed by the Secretary of State. Much of this infrastructure is important to other offshore industries as is its contribution to the UK economy.</p> <p>In such circumstances, the Secretary of State should expect the applicant to work with the impacted sector to minimise negative impacts and reduce risks to as low as reasonably practicable.</p> <p>(EN-3, paragraphs 2.8.342 – 2.8.344)</p>	<p>Section 9.9 presents the impact assessment undertaken for the Morgan Generation Assets in relation to other sea users. Section 9.8 identifies measures adopted as part of the Morgan Generation Assets to minimise adverse impacts.</p>
<p>As such, the Secretary of State should be satisfied that the site selection and site design of the proposed offshore wind farm has been made with a view to avoiding or minimising disruption or economic loss or any adverse effect on safety to other offshore industries. Applicants will be required to demonstrate that risks to safety will be reduced to as low as reasonably practicable.</p> <p>(EN-3, paragraph 2.8.345)</p>	<p>As described in Volume 1, Chapter 4: Site selection and consideration of alternatives of the Environmental Statement, the Morgan Generation Assets have been sited to minimise potential impacts on other sea users where possible.</p> <p>Consultation with potentially affected stakeholders has been carried out from the early stages of the Morgan Generation Assets and has continued throughout the pre-application consultation process. Details of this are presented in Table 9.4.</p>
<p>Providing proposed schemes have been carefully designed, and that the necessary consultation with relevant bodies and stakeholders has been undertaken at an early stage, mitigation measures may be possible to negate or reduce effects on other offshore infrastructure or operations to a level sufficient to enable the Secretary of State to grant consent.</p> <p>(EN-3, paragraph 2.8.348)</p>	<p>The measures adopted as part of the Morgan Generation Assets reduce or negate impacts (section 9.8).</p>
<p>Detailed discussions between the applicant for the offshore wind farm and the relevant consultees should have progressed as far as reasonably possible prior to the submission of an application. As such, appropriate mitigation should be included in any application, and ideally agreed between relevant parties.</p> <p>(EN-3, paragraph 2.8.261)</p>	
<p>In some circumstances, the Secretary of State may wish to consider the potential to use requirements involving arbitration as a means of resolving how adverse impacts on other commercial activities will be addressed.</p> <p>(EN-3, paragraph 2.8.262)</p>	

9.2.3 North West Inshore and North West Offshore Marine Plans

- 9.2.3.1 The other sea users impact assessment has also been made with consideration to the specific policies set out in the North West Inshore and North West Offshore Marine Plans (The Marine Management Organisation (MMO), 2021). Key provisions are set out in Table 9.3 along with details as to how these have been addressed within the assessment.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 9.3: North West Inshore and North West Offshore Marine Plan policies of relevant to other sea users.

Policy	Key provisions	How and where considered in the Environmental Statement
NW-AGG-1	Proposals in areas where a licence for extraction of aggregates has been granted or formally applied for should not be authorised, unless it is demonstrated that the proposal is compatible with aggregate extraction.	As shown on Figure 9.2, there is no overlap between the Morgan Generation Assets and any marine aggregate extraction sites.
NW-CO-1	Proposals that may have significant adverse impacts on, or displace, existing activities must demonstrate that they will, in order of preference, avoid, minimise, or mitigate adverse impacts so they are no longer significant. If it is not possible to mitigate significant adverse impacts, proposals must state the case for proceeding.	As described in Volume 1, Chapter 4: Site selection and consideration of alternatives of the Environmental Statement, the Morgan Generation Assets have been sited to minimise potential impacts on other sea users where possible. Measures adopted as part of the Morgan Generation Assets (with relevance to other sea users) are contained in section 9.8, and an assessment of potential impacts is contained in section 9.9.
NW-CAB-1	Preference should be given to proposals for cable installation where the method of protection is burial. Where burial is not achievable, decisions should take account of protection measures for the cable that may be proposed by the applicant. Where burial or protection measures are not appropriate, proposals should state the case for proceeding without those measures.	Cable burial is one of the measures adopted as part of the Morgan Generation Assets listed in section 9.8.
NW-CAB-3	Where seeking to locate close to existing subsea cables, proposals should demonstrate compatibility with ongoing function, maintenance and decommissioning activities relating to the cable.	Cable proximity agreements are measures adopted as part of the Morgan Generation Assets listed in section 9.8.
NW-OG-1	Proposals in areas where a licence for oil and gas has been granted or formally applied for should not be authorised unless it is demonstrated that the other development or activity is compatible with the oil and gas activity.	Potential impacts on oil and gas activities are assessed in sections 9.9.3, 9.9.4 and 9.9.5.

9.3 Consultation

- 9.3.1.1 A summary of the key matters raised during consultation activities undertaken to date specific to other sea users is presented in Table 9.4 below, together with how these comments have been considered in the production of this chapter.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 9.4: Summary of key matters raised during consultation activities undertaken for the Morgan Generation Assets relevant to other sea users.

Date	Consultee and type of response	Comment	Response to comment and/or where considered in this chapter
20 April 2022	Spirit Energy response to initial invitation to comment	Pipeline, cable crossing and/or proximity agreements are anticipated to be established. Notification of the potential of the construction and placement of wind turbines to effect Radar Early Warning Systems (REWS) effectiveness for collision risk management, and the ability of REWS to detect vessels.	Proximity agreements are noted as measures adopted as part of the Morgan Generation Assets in section 9.8. Potential impact on REWS is addressed in section 9.9.4.
21 April 2022	Royal Yachting Association (RYA) consultation meeting	Consultation carried out to inform Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement. Introduction to project and discussion of data sources (including RYA Recreational Atlas).	Potential impacts on recreational activities are considered in section 9.9.2.
21 November 2022	RWE response to pre-consultation questionnaire	Information on Awel y Môr, including proposed activities, cables and future vessel access requirements.	The Awel y Môr offshore wind farm is considered in the cumulative effects assessment (section 9.10).
24 November 2022	Spirit Energy response to pre-consultation questionnaire	Information on assets in the east Irish Sea and future activity, including intent to decommission the South Morecambe platforms between 2027 and 2031.	Oil and gas receptors are described in the baseline environment (section 9.5.2), with potential impacts assessed in section 9.9.
24 November 2022	Harbour Energy response to pre-consultation questionnaire	Information on assets in the east Irish Sea and future activity, including intent to decommission Millom West and associated wells by 2024 with subsequent removals.	Oil and gas receptors are described in the baseline environment (section 9.5.2), with potential impacts assessed in section 9.9.
25 November 2022	Rhyl Charter Anglers meeting to discuss impacts of the Morgan Generation Assets and the Mona Offshore Wind Project on charter angling	Discussion of fishing within the Morgan Array Area and Mona Array Area and impacts of previously constructed wind farms in the Irish Sea (e.g. North Hoyle, Gwynt y Môr, Burbo Bank and Rhyl Flats) on charter angling. Charter anglers expressed that it was unlikely that any fishing would occur within either the Morgan Array Area or Mona Array Area, especially during construction.	Potential impacts on recreational activities, including recreational fishing, are considered in section 9.9.2.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Date	Consultee and type of response	Comment	Response to comment and/or where considered in this chapter
08 December 2022	Eni response to pre-consultation questionnaire	Information on assets in the east Irish Sea and future activity.	Oil and gas receptors are described in the baseline environment (section 9.5.2), with potential impacts assessed in section 9.9.
02 June 2023	Isle of Man Government response to PEIR	Identified plans for a second electricity interconnector between the UK and the east coast of the Isle of Man, likely within 10 years, and advised to consult with Manx Utilities. Asked if this has been assessed as appropriate.	The UK-IoM interconnector 2 is included within the CEA long list presented within Volume 3, Annex 5.1: Cumulative effects screening matrix of the Environmental Statement. Consultation with Manx Utilities has continued throughout the pre-application stage, including a meeting on 19 June 2023. Full details of all consultation on the Morgan Offshore Wind Project is presented in the Consultation Report (Document Reference E3).
02 June 2023	Isle of Man Government response to PEIR	Noted that a section of the UK-IoM interconnector runs through the northern most part of the Morgan Array Area. Raised potential for third party damage from marine activities and potential impact on maintenance and repair works.	Since the publication of the PEIR, the Morgan Array Area boundary has been revised, and the UK-IoM interconnector no longer overlaps with the Morgan Array Area. Potential impacts on existing cables are considered in section 9.9. The locations of cables and other offshore assets are marked on local admiralty charts as standard, which ensures vessels are aware of the location of such assets in their passage planning. A Vessel Traffic Management Plan will be in place for the Morgan Generation Assets which will include information on vessel routing and vessel management and coordination (including anchoring locations) (see Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement).
02 June 2023	Isle of Man Department of Infrastructure response to PEIR	Notification of the existence of the Crogga hydrocarbon licence, located in Manx waters.	The Crogga licence is shown in Figure 9.5 and is located outside of the local other sea users study area.
02 June 2023	Isle of Man Department of Infrastructure response to PEIR	Notification of the Mooir Vannin offshore wind farm site, located in Manx waters, and request that it be considered cumulatively with the Morgan Generation Assets. Notification of the licenced hydrocarbon site in Manx waters. The Seaward Production Innovate Licence was licenced to Crogga Limited (hydrocarbon block 112/25) in January 2019.	The Mooir Vannin offshore wind farm is identified as a proposed offshore wind farm in section 9.5 and is considered in the cumulative effects assessment in section 9.10. The Crogga licence is shown in Figure 9.5 and is located outside of the local other sea users study area. The location of existing cables is discussed in section 9.5 and potential impacts on existing cables are considered in section 9.9.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Date	Consultee and type of response	Comment	Response to comment and/or where considered in this chapter
		Potential impact on the interconnector cable between the Isle of Man and Blackpool, owned and operated by Manx Utilities.	
02 June 2023	Barrow Offshore Wind Limited, Morecambe Wind Limited, Walney (UK) Offshore Windfarms Limited, Walney Extension Limited response to section 42 consultation	Potential for the Morgan Offshore Wind Project turbines to interfere with wind speed or wind direction of the existing Barrow, West of Duddon Sands, Walney 1 and 2, and Walney 3 and 4 offshore wind farms, causing a reduction in energy output.	Potential for wind distribution is considered in section 9.5.
02 June 2023	Barrow Offshore Wind Limited, Burbo Extension Ltd, Ørsted Burbo (UK) Limited, Morecambe Wind Limited, Walney (UK) Offshore Windfarms Limited, Walney Extension Limited response to section 42 consultation	The need for continued access to the offshore wind assets for maintenance, and for any upgrading, repowering or decommissioning activities.	Potential impact on vessel access to infrastructure is considered in section 9.9.
02 June 2023	Chrysaor Resources (Irish Sea) Ltd (Harbour Energy) response to section 42 consultation	Provided information on decommissioning plans for the Millom West normally unmanned platform (NUI) and Millom East subsea structures and outlined the need for continued access via vessel and helicopter (from 2024 to approximately 2030 at Millom West and from 2027 to approximately 2032 at Millom East). Recognised the need for co-existence and noted commitment for continued engagement with the Applicant to share information.	Potential impact on vessel access to infrastructure is considered in section 9.9. Potential impact on helicopter access is addressed in Volume 2, Chapter 11: Aviation and radar of the Environmental Statement.
03 June 2023	Scottish Power Renewables response to section 42 consultation	Response provided in relation to the West of Duddon Sands Offshore Wind Farm. Requested that proposed survey and outline construction programmes are shared and discussed and requested a meeting to discuss potential for wind distribution.	Potential for wind distribution is considered in section 9.5.
05 June 2023	Ørsted Isle of Man (UK) Limited response to PEIR	Potential interactions and impact with the proposed Mooir Vannin offshore wind farm and potential for cumulative impact.	The proposed Mooir Vannin offshore wind farm is shown in Figure 9.8 and included in the cumulative assessment for other sea users presented in section 9.11.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Date	Consultee and type of response	Comment	Response to comment and/or where considered in this chapter
16 June 2023	BT meeting	Discussion of the potential interactions between the Morgan Generation Assets and the MT1 cable, such as crossings and proximity.	The MT1 cable is located outside of the local other sea users study area.
19 June 2023	Manx Utilities meeting	To discuss the relationship between the Morgan Generation Assets and the UK-IOI interconnector.	Potential impacts on existing cables are considered in section 9.9. Consultation with Manx Utilities has continued throughout the pre-application stage. Full details of all consultation on the Morgan Generation Assets is presented in the Consultation Report (Document Reference E3) and the Technical Engagement Plan (Document Reference E4).
19 June 2023	Harbour Energy meeting	To discuss the relationship between the Morgan Generation Assets and the Millom assets.	Potential impact on vessel access to infrastructure is considered in section 9.9. Potential impact on helicopter access is addressed in Volume 2, Chapter 11: Aviation and radar of the Environmental Statement.
07 August 2023	Harbour Energy meeting	Project update and discussion of Harbour Energy section 42 response.	Potential impact on vessel access to infrastructure is considered in section 9.9. Potential impact on helicopter access is addressed in Volume 2, Chapter 11: Aviation and radar of the Environmental Statement.
04 October 2023	Harbour Energy meeting	Follow up meeting to that held on 07 August 2023.	The potential impact on helicopter access to Harbour Energy offshore platforms is considered in Volume 2, Chapter 11: Aviation and radar of the Environmental Statement.
25 October 2023	Ørsted Burbo Limited, Burbo Extension Limited, Walney Offshore Windfarms Limited, Barrow Offshore Windfarm Limited and Walney Extension Limited meeting	Project update and discussion of section 42 responses.	Potential impact on vessel access to infrastructure is considered in section 9.9. Potential for wind distribution is considered in section 9.5.
08 November 2023	West of Duddon Sands Morecambe Wind Limited meeting	Project update and discussion of section 42 responses.	Potential impact on vessel access to infrastructure is considered in section 9.9. Potential for wind distribution is considered in section 9.5.
01 December 2023	Eni meeting	Project update and discussion of potential for interaction between Eni and Morgan Generation Assets. It was agreed that the Morgan Offshore Wind Project were not a concern for Eni.	Oil and gas receptors are described in the baseline environment (section 9.5.2), with potential impacts assessed in section 9.9.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Date	Consultee and type of response	Comment	Response to comment and/or where considered in this chapter
04 December 2023	Harbour Energy meeting	Follow up meeting to that held on 04 October 2023	The potential impact on helicopter access to Harbour Energy offshore platforms is considered in Volume 2, Chapter 11: Aviation and radar of the Environmental Statement.
08 March 2023	Manx Utilities meeting	Update Manx Utilities on the Morgan Offshore Wind Project in relation to the Manx Interconnector asset and potentially required crossing / proximity agreements in the Irish Sea region.	Potential impacts on existing cables are considered in section 9.9. Consultation with Manx Utilities has continued throughout the pre-application stage. Full details of all consultation on the Morgan Generation Assets is presented in the Consultation Report (Document Reference E3) and the Technical Engagement Plan (Document Reference E4).

9.4 Baseline methodology

9.4.1 Relevant guidance

9.4.1.1 The following guidance documents have been considered throughout the other sea users impact assessment:

- The Royal Yachting Association's (RYA's) position on offshore renewable energy developments: Paper 1 (of 4) – Wind Energy, June 2019 (RYA, 2019)
- European Subsea Cables Association (ESCA) guideline no 6, the proximity of offshore renewable energy installations and submarine cable infrastructure in UK waters (ESCA, 2016)
- Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) guidance on the decommissioning of offshore oil and gas installations and pipelines (OPRED, 2023)
- DESNZ (formerly the Department for Business, Energy and Industrial Strategy (BEIS)) response to consultation on establishing the offshore decommissioning regime for CO₂ transport and storage networks (BEIS, 2022)
- International Cable Protection Committee (ICPC) recommendations:
 - Recommendation No.2-11B: Cable routing and reporting criteria (ICPC, 2015)
 - Recommendation No.3-10C: Telecommunications cable and oil pipeline/power cables crossing criteria (ICPC, 2014)
 - Recommendation No.13-2C: The proximity of offshore renewable wind energy installations and submarine cable infrastructure in national waters (ICPC, 2013)
- Pipeline crossing agreement and proximity agreement pack (Oil and Gas UK, 2021)
- Submarine cables and offshore renewable energy installations proximity study (The Crown Estate (TCE), 2012).

9.4.2 Scope of the assessment

9.4.2.1 The scope of this Environmental Statement has been developed in consultation with relevant statutory and non-statutory consultees as detailed in Table 9.4. Taking into account the scoping and consultation process, Table 9.5 summarises the potential impacts considered as part of this assessment.

Table 9.5: Potential impacts considered within this assessment.

Activity	Potential impacts scoped into the assessment
Construction phase	
Installation of wind turbines, OSPs, cables and associated vessel movements	<ul style="list-style-type: none"> • Displacement of recreational activities • Reduction or restriction of other offshore energy activities (including offshore wind, oil and gas operations, cables and pipelines, Carbon Capture and Storage (CCS) and underground gas storage).
Safety zones associated with construction of infrastructure	<ul style="list-style-type: none"> • Displacement of recreational activities • Reduction or restriction of other offshore energy activities.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Activity	Potential impacts scoped into the assessment
Operations and maintenance phase	
The presence of wind turbines, OSPs, cables and associated maintenance vessel movements	<ul style="list-style-type: none"> Displacement of recreational activities Reduction or restriction of other offshore energy activities Interference with the performance of REWS located on oil and gas platforms Potential impact of rerouted traffic on REWS alarm rates.
Safety zones associated with maintenance	<ul style="list-style-type: none"> Displacement of recreational activities Reduction or restriction of other offshore energy activities.

9.4.2.2 Effects which are not considered likely to be significant have been scoped out of the assessment. A summary of the effects scoped out, together with justification for scoping them out and whether the approach has been agreed with key stakeholders through either scoping or consultation, is presented in Table 9.6.

Table 9.6: Impacts scoped out of the assessment for other sea users.

Potential impact	Justification
Increased Suspended Sediment Concentrations (SSCs) and associated deposition affecting aggregate areas.	As per Figure 9.2, there are no aggregate extraction or disposal sites within the regional other sea users study area (defined in section 9.4.3).
Alterations to sediment transport pathways affecting aggregate areas.	As per Figure 9.2, there are no aggregate extraction or disposal sites within the regional other sea users study area.
Increased SSCs and associated deposition affecting recreational diving and bathing sites.	As per Figure 9.3, there are no recreational diving or bathing sites within the regional other sea users study area (UK Diving, 2023).
Interference with offshore microwave fixed communication links.	The modelling results presented in Volume 4, Annex 9.1: Radar Early Warning Systems (REWS) and Microwave Communication Links technical report of the Environmental Statement show that the Morgan Array Area is located sufficiently far from the considered microwave communications links onboard Eni and Spirit Energy platforms so as not to create a potential impact. Based on the modelled parameters for the communications links and wind turbines, the modelling provides the basis for a conclusion that there will be no adverse impact from the Morgan Generation Assets.

9.4.3 Study area

9.4.3.1 The other sea users study area varies in scale depending on the receptor. The following study areas have been defined for the assessment of different groupings of other sea user receptors, as shown in Figure 9.1:

- Regional other sea users study area
- Local other sea users study area
- REWS other sea users study area.

9.4.3.2 The regional other sea users study area is based on one tidal excursion of the Morgan Array Area (as detailed in Volume 2, Chapter 1: Physical processes of the Environmental Statement) and represents the area with potential increases in

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

suspended sediments arising from activities associated with the Morgan Generation Assets. This study area is relevant to those receptors which are susceptible to increases in SSCs:

- Aggregate extraction and disposal sites
- Recreational activities such as scuba diving and bathing.

9.4.3.3 The local other sea users study area is defined as a 1 km buffer around the Morgan Array Area. The 1 km buffer is based on the potential for 500 m safety zones around existing infrastructure and 500 m safety zones to be applied for around Morgan Generation Assets infrastructure during construction or major maintenance. This area therefore includes the extent of potential direct physical overlap between activities associated with the Morgan Generation Assets and the following receptors:

- Recreational receptors (including receptors carrying out activities such as sailing and motor cruising, and recreational fishing)
- Offshore energy receptors (e.g. other offshore wind farms, oil and gas operations, cable operators, CCS and underground gas storage).

9.4.3.4 The REWS other sea users study area is based on a combination of a 30 km (16 nm) detection range from each platform with REWS installed, taken to be the minimum requirement for REWS to detect and track smaller vessels, and a 20 km boundary around the Morgan Array Area to include potential rerouted vessel traffic resulting from the Morgan Array Area location. The REWS study area is also the basis for the assessment of potential impact on microwave fixed communication links between offshore oil and gas platforms.

9.4.3.5 The cumulative other sea users study area is based on an area within 50 km of the Morgan Array Area (see section 9.10).

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

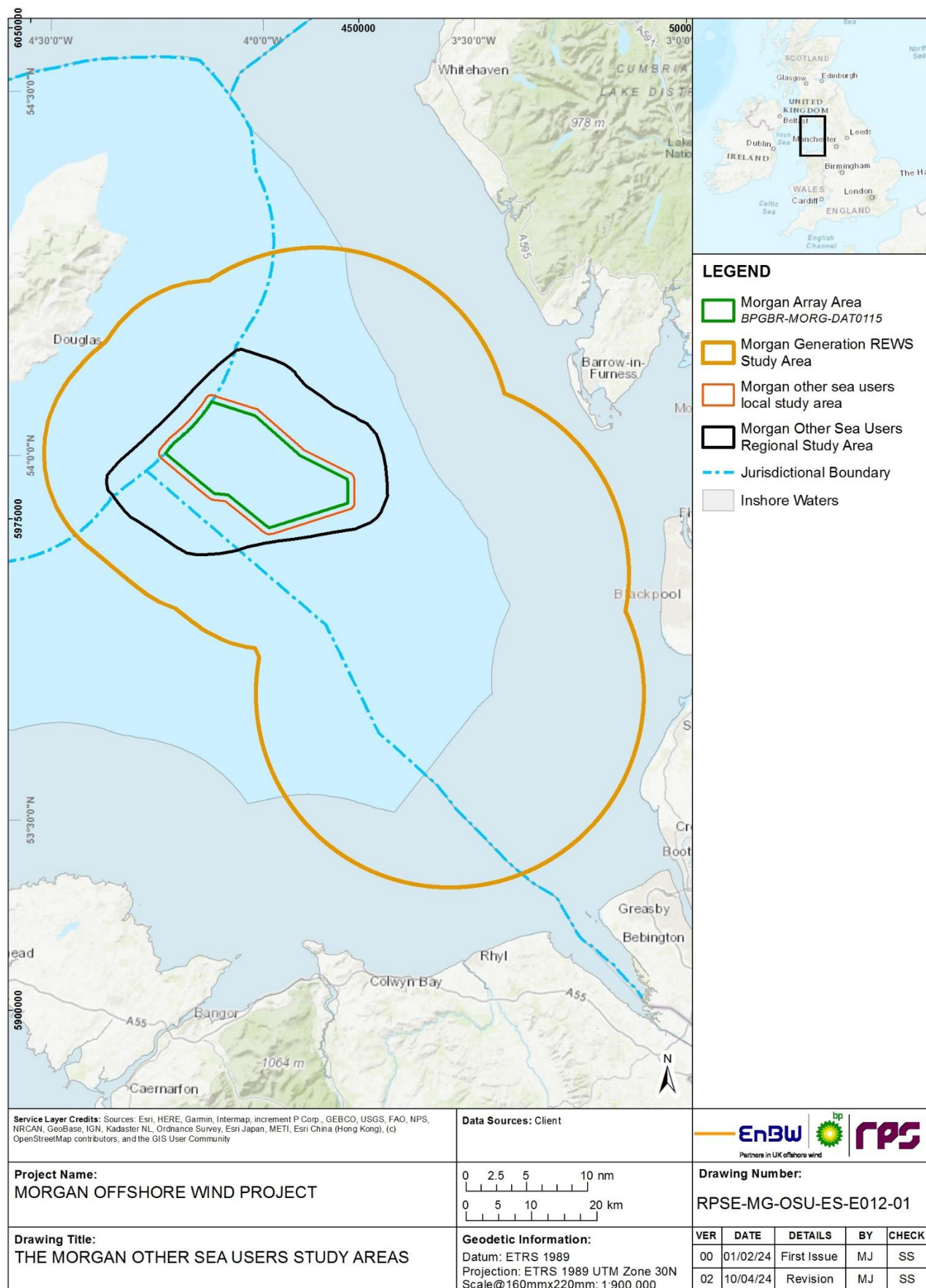


Figure 9.1: The other sea users study areas.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

9.4.4 Desktop study

9.4.4.1 Information on other sea users within the other sea users study areas was collected through a detailed desktop review of existing studies and datasets. These are summarised in Table 9.7 below.

Table 9.7: Summary of key data sources and desktop reports.

Title	Source	Year	Author
Cable routes	Kis-Orca	2021	Kis-Orca
Disposal sites	EMODnet	2015	EMODnet
Offshore wind farms	TCE	2022	TCE
Recipients of oil and gas questionnaire	TCE conflicts check	2021	TCE
Aggregate extraction areas	TCE	2022	TCE
Pipelines	North Sea Transition Authority (NSTA)	2022	NSTA
Wells	NSTA	2022	NSTA
Hydrocarbon platforms	NSTA	2022	NSTA
Subsurface structures	NSTA	2022	NSTA
Hydrocarbon fields	NSTA	2022	NSTA
Oil and gas licence blocks	NSTA	2022	NSTA
United Kingdom Continental Shelf (UKCS) block	NSTA	2022	NSTA
Marinas	UK Coastal Atlas of Recreational Boating	2018	RYA
Recreational activities	UK Coastal Atlas of Recreational Boating	2018	RYA
RYA clubs	UK Coastal Atlas of Recreational Boating	2018	RYA
RYA training centres	UK Coastal Atlas of Recreational Boating	2018	RYA
General boating areas	UK Coastal Atlas of Recreational Boating	2018	RYA
Data from marine vessel traffic surveys	MarineTraffic	2019	MarineTraffic
Wrecks (diving sites)	UK Diving: www.ukdiving.co.uk	2010	UK Diving
Communication links	Consultation	2022/2023	Platform operators
Recreational fishing	Cefas British Sea Fishing	2021 2020	Cefas British Sea Fishing

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

9.4.5 Site specific surveys

- 9.4.5.1 No site-specific surveys have been undertaken to inform the Environmental Impact Assessment (EIA) for other sea users. This is because a sufficient amount of information relating to other sea users is already available (Table 9.7). The majority of the data used to inform the EIA for other sea users has been taken from these desktop data sources, together with the results of consultation with other sea users stakeholders. Survey data from two 14-day vessel-based traffic surveys conducted at the Morgan Array Area in November/December 2021 and July 2022 was collected to inform Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement, and has been referenced within this chapter where relevant.

9.5 Baseline environment

9.5.1 Regional other sea users study area

- 9.5.1.1 As stated in section 9.4.3, the regional other sea users study area is relevant to those receptors which are susceptible to increases in SSCs:
- Aggregate extraction and disposal sites
 - Recreational receptors carrying out activities such as scuba diving and bathing.
- 9.5.1.2 The baseline environment for these receptors is described below.

Aggregate extraction and disposal sites

- 9.5.1.3 As per Figure 9.2, there are no licenced marine aggregate sites within the regional other sea users study area.
- 9.5.1.4 There are a number of dredge disposal sites located within the east Irish Sea, however there are no open disposal sites located within the regional other sea users study area. There are no disposal sites for explosive material, chemical munitions disposal sites (post 1945) or radioactive waste sites (1946 to 1993) located within the regional other sea users study area, according to DECC, 2011.

Recreational dive sites

- 9.5.1.5 As per Figure 9.3, there are no known recreational dive sites within the regional other sea users study area (www.ukdiving.co.uk).

Recreational bathing sites

- 9.5.1.6 As per Figure 9.3, there are no recreational bathing sites within the regional other sea users study area.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

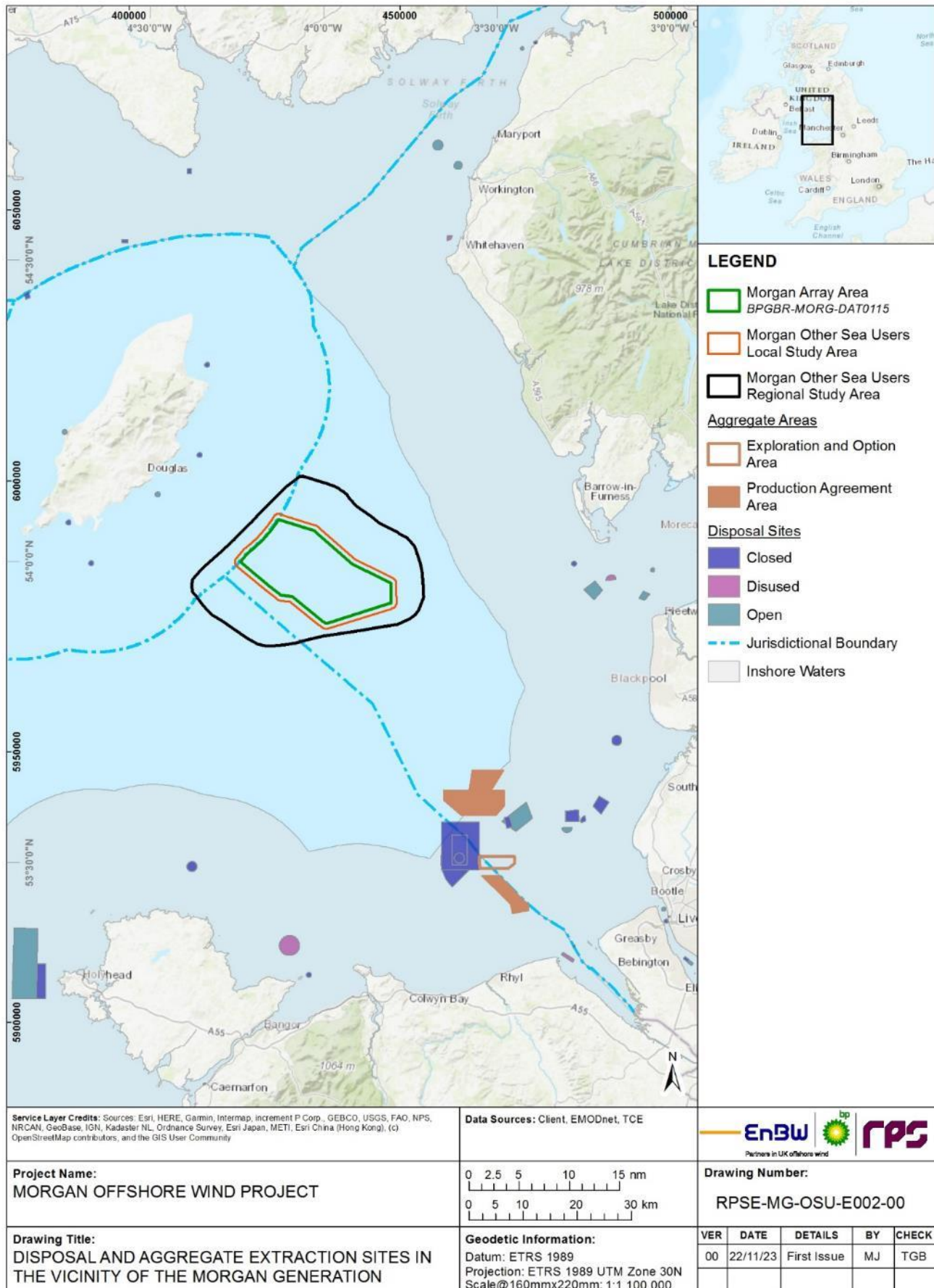


Figure 9.2: Aggregate extraction and disposal sites in the vicinity of the Morgan Generation Assets.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

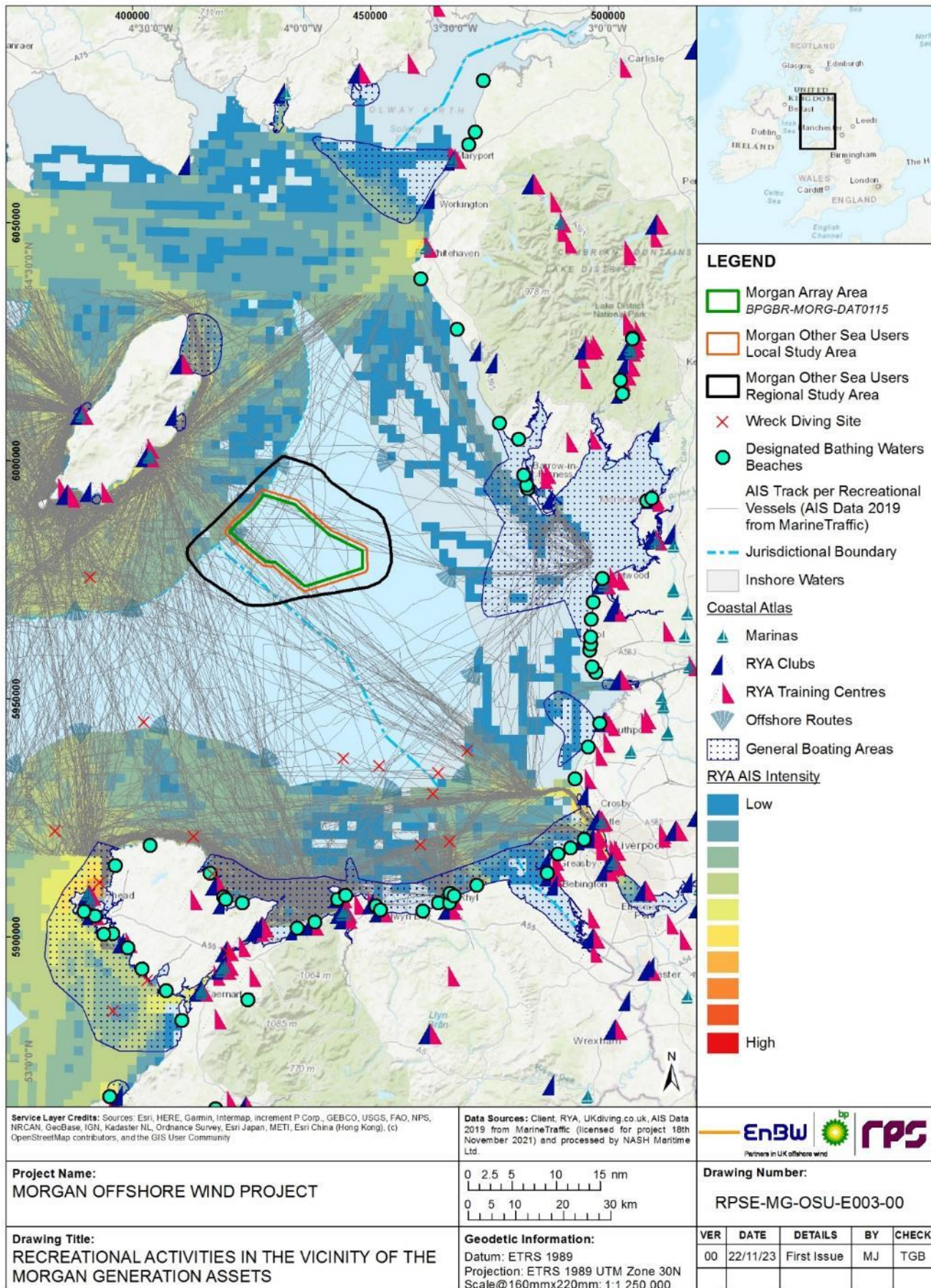


Figure 9.3: Recreational activities in the vicinity of the Morgan Generation Assets.

9.5.2 Local other sea users study area

9.5.2.1 As stated in section 9.4.3, the local other sea users study area is relevant to the following receptors:

- Recreational receptors (including receptors carrying out activities such as sailing and motor cruising, and recreational fishing)
- Offshore energy receptors (e.g. other offshore wind farms, oil and gas operations, cable operators, CCS and underground gas storage).

Recreational sailing and motor cruising and recreational fishing

9.5.2.2 Recreational sailing is generally divided into two categories: offshore and inshore. Offshore sailing is usually undertaken by yachts in the form of either cruising or organised offshore racing. Inshore sailing is typically undertaken by smaller vessels including dinghies and recreational vessels that are used for either cruising at leisure or racing. Cruising may include day trips between local ports and often includes a return journey to the home port on the same day. Inshore racing takes place around racing marks and navigational buoyage.

9.5.2.3 Navigational safety and risk to recreational vessels is considered in Volume 4, Annex 7.1: Navigational Risk Assessment (NRA) of the Environmental Statement. The other sea users Environmental Statement chapter considers receptors undertaking recreational sailing and motor cruising as an activity only. Data collection carried out to inform the NRA has been used as an additional data source to inform the other sea users assessment.

9.5.2.4 Figure 9.3 illustrates that there is low to moderate intensity recreational sailing and motor cruising in the northwest of the local other sea users study area. The RYA data is limited to inshore waters, but Automatic Identification System (AIS) data tracks show that few recreational vessels pass through the local other sea users study area compared with other areas in the east Irish Sea. Further context is provided in Volume 4, Annex 7.1: Navigational Risk Assessment (NRA) of the Environmental Statement. As described in the NRA, the Morgan Array Area is characterised by relatively sparse recreational activity, with the exception of the north section of the Morgan Array Area that shows low to moderate recreational activity. Most recreational vessels remain predominantly along the coast, particularly along the entrance to Liverpool, and around Holyhead, Douglas, and Rhyl. Inshore cruising routes are clear of the Morgan Array Area. Offshore cruising routes are present between Liverpool, Douglas, Menai Straits, and Morecambe Bay, running adjacent to, and sometimes crossing, the Morgan Array Area. Relatively few yachts were recorded during the vessel traffic surveys, with less than one per day during the summer survey and none recorded during the winter survey.

9.5.2.5 Sea fishing trips run from Conwy, North Wales and specialise in wreck fishing, deep sea fishing and reef fishing from Anglesey to Liverpool Bay (Sea Fishing Trips in North Wales, 2023). Sea fishing trips also operate from the Isle of Man (Manx Sea Fishing, 2023) and Fleetwood, Lancashire (Blue Mink Boat Charters, 2023) amongst other ports along the coasts of the east Irish Sea.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Offshore energy receptors

Offshore wind farms

- 9.5.2.6 There are a number of existing and proposed offshore wind farms in the east Irish Sea, which are shown on Figure 9.4 and listed in Table 9.8. No infrastructure associated with the existing or proposed offshore wind farms is located within the local other sea users study area. The closest operational offshore wind farm to the Morgan Generation Assets is Walney Extension, located 8.1 km to the northeast of the Morgan Array Area.
- 9.5.2.7 Four bidding areas for leasing under TCE Offshore Wind Leasing Round 4 were released in September 2019, of which the Morgan Generation Assets is one. The other two from this leasing round in the Irish Sea, are the Mona Offshore Wind Project (also being developed by a joint venture of bp Alternative Energy Investments Ltd and Energie Baden-Württemberg AG) and Morecambe Offshore Windfarm, being developed by Morecambe Offshore Windfarm Ltd. (a joint venture between Cobra Instalaciones y Servicios, S.A. and Flotation Energy Ltd). Both the Morgan Offshore Wind Project and Morecambe Offshore Windfarm have been scoped into the Pathways to 2030 workstream under the Offshore Transmission Network Review (OTNR). The output of this process concluded that the Morgan Offshore Wind Project and Morecambe Offshore Windfarm should work collaboratively in connecting the wind farms to the National Grid at Penwortham in Lancashire.
- 9.5.2.8 The proposed Mooir Vannin project is located 4.8 km to the north of the Morgan Array Area, within Isle of Man territorial waters. Ørsted submitted a scoping report to the IoM Government for the proposed Mooir Vannin project in October 2023 (Mooir Vannin Offshore Wind Farm Limited, 2023).

Table 9.8: Offshore wind farms in the east Irish Sea.

Name	Capacity (MW)	Operator	Distance to Morgan Array Area (km)
Operational			
Walney Extension (3 and 4)	659	Ørsted (Walney Extension Limited)	8.1
Walney 2	184	Ørsted (Walney (UK) Offshore Windfarms Ltd)	13.3
West of Duddon Sands	389	Morecambe Wind Limited	15.4
Walney 1	184	Ørsted (Walney (UK) Offshore Windfarms Limited)	16.3
Ormonde	150	Ormonde Energy Ltd	24.4
Barrow	90	Ørsted (Barrow Offshore Wind Limited)	30.1
Gwynt y Môr	576	RWE Renewables	51.5
Burbo Bank Extension	259	Ørsted (Burbo Extension Ltd)	56.0
Rhyl Flats	90	RWE Renewables	60.5
North Hoyle	60	RWE npower renewables	61.1
Burbo Bank	90	Ørsted Burbo (UK) Limited	61.6

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Name	Capacity (MW)	Operator	Distance to Morgan Array Area (km)
Round 4 projects			
Mona Offshore Wind Project	1,500	bp/EnBW	11.1
Morecambe Offshore Windfarm	480	Morecambe Offshore Windfarm Limited.	11.2
Consented			
Awel y Môr	1,100	RWE Renewables	46.8
Proposed			
Moor Vannin	1,400	Ørsted	4.8

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

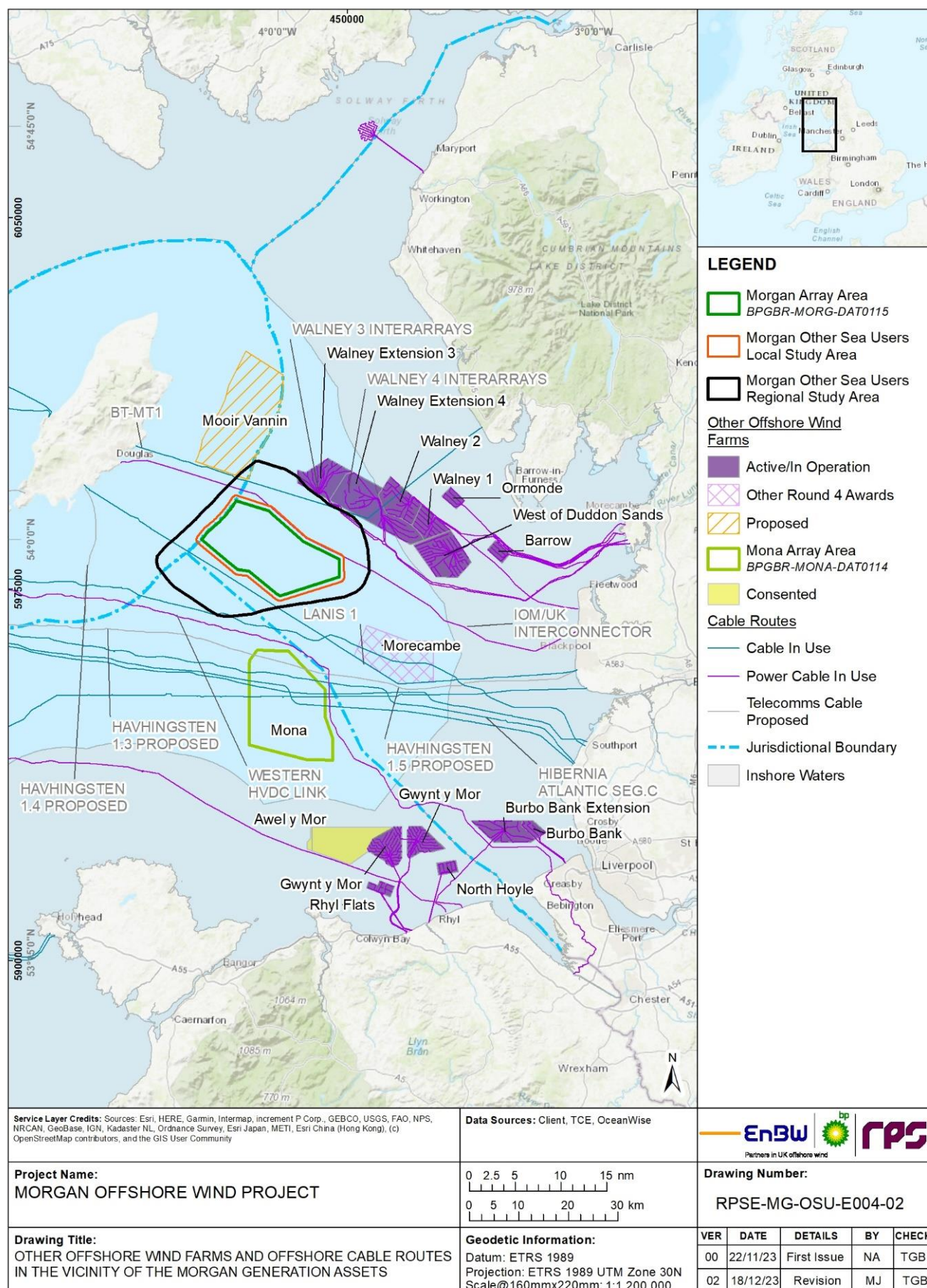


Figure 9.4: Other offshore wind farms and cables within the vicinity of the Morgan Generation Assets.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

- 9.5.2.9 Several operators of existing offshore wind farms in the east Irish Sea (see Table 9.4) have raised through consultation, the potential for the Morgan Generation Assets wind turbines to affect wind distribution in relation to the Barrow, Burbo Bank, Burbo Extension, West of Duddon Sands, Walney 1 and 2 and Walney Extension offshore wind farms. The range of distance between Morgan Generation Assets and these operational wind farms is 8.1 km to 62.2 km. The operators have highlighted that the location of the Morgan Generation Assets may affect wind distribution (direction/speed) to their offshore wind farms. This would be similar to the effects already experienced by those existing offshore wind farms on each other.
- 9.5.2.10 As the sole leasing body for offshore wind sites around England and Wales, TCE's leasing process is the determinant of the appropriate spacing between existing and new offshore infrastructure. The project boundary requirements in the Round 4 Information Memorandum (TCE, 2019) specified that no Round 4 offshore wind projects could be located within 7.5 km of an existing offshore wind farm. The Applicant notes that this was an increased distance adopted by TCE in relation to Round 4 leasing, from an initial proposed distance of 5 km (which was used in Round 3), following various stakeholders' feedback in relation to Round 4 Bidding Areas. As described in Table 9.8 and Figure 9.4, there are no operational offshore wind farms located within 7.5 km of the Morgan Array Area and the Morgan Generation Assets location adheres to the TCE spacing criterion.
- 9.5.2.11 Further to meeting TCE's spacing criterion, the Morgan Array Area has been reduced along the northeast boundary following receipt of statutory pre-application consultation responses, as described in Volume 1, Chapter 4: Site selection and consideration of alternatives of the Environmental Statement. In response to feedback, predominantly from shipping and navigation stakeholders, the distance to the nearest existing operational offshore wind farm was increased by 0.6 km to 8.1 km, which also increases the distance to the furthest existing operational offshore wind farm in the Irish Sea to over 62.2 km.
- 9.5.2.12 NPS EN-3 paragraph 2.8.196 recognises that offshore wind development will occur in or close to areas where there is other offshore infrastructure (see Table 9.1).
- 9.5.2.13 NPS EN-3 paragraphs 2.8.197 and 198 set out the requirements for an assessment on existing operational offshore infrastructure where a potential offshore wind farm is close to that infrastructure. Such an assessment should be undertaken for all stages of the lifespan of the proposed project in accordance with appropriate policy and guidance for offshore wind farm EIAs.
- 9.5.2.14 The Applicant considers that its exceedance of TCE's 7.5 km spacing criteria is such that it should not be considered to be 'close' to the other operational schemes for the purposes of paragraph 2.8.197. There is no policy or offshore wind farm EIA guidance securing the process by which to scope in and assess, in EIA or socio-economic terms, the operational effects of one offshore wind farm's wind distribution on a neighbour for all stages of the lifespan of the proposed wind farm. Further, the relevant Marine Plans do not list operational offshore wind farms as an activity that could be affected by the Morgan Generation Assets.
- 9.5.2.15 On the basis that the Morgan Generation Assets are over 8 km from the nearest existing operational offshore wind farm and as there is no offshore wind EIA policy or guidance within which an assessment for wind distribution effects can be undertaken, the potential for such effects is not considered further in this assessment.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Oil and gas operations

- 9.5.2.16 Licences for the exploration and extraction of oil and gas on the UKCS have been offered since 1964 and are granted by the North Sea Transition Authority (NSTA). These licences are granted for identified geographical United Kingdom Hydrographic Office (UKHO) areas (blocks and sub-blocks) in consecutive rounds. There are no licenced blocks overlapping with the local other sea users study area (Figure 9.5). The nearest exploration licence is 3.5 km from the Morgan Array Area, held by Spirit Energy Production UK Limited.
- 9.5.2.17 The NSTA launched the 33rd Oil and Gas Licensing Round in October 2022, inviting applications for licences to explore and potentially develop 898 blocks and part-blocks. Initially, 27 licences have been offered, with overall potential for over 100 licences being awarded. Three of these blocks overlap with the local other sea users study area (110/1, 110/2c and 113/26) (Figure 9.5).
- 9.5.2.18 Figure 9.6 shows offshore oil and gas installations and pipelines in the vicinity of the Morgan Generation Assets. There are no offshore oil and gas installations or pipelines within the local other sea users study area. The nearest offshore oil and gas platform is the Millom West platform, operated by Chrysaor Resources (Irish Sea) Limited (Harbour Energy), located 2.96 km from the Morgan Array Area. Consultation with Harbour Energy has confirmed that the Millom West platform is planned to be decommissioned and vessel access will be required from 2024 to approximately 2030. The Millom East subsea structures are also planned to be decommissioned and vessel access will be required from 2027 to approximately 2032 (Table 9.4). The South Morecambe cluster is located 12.2 km to the southeast of the Morgan Array Area, operated by Spirit Energy. Spirit Energy are planning to decommission all the platforms in the South Morecambe cluster between 2027 and 2031, as part of the development of the Morecambe Net Zero Cluster, discussed further below.

CCS and underground gas storage

- 9.5.2.19 There are no CCS or underground gas storage projects within the local other sea users study area.
- 9.5.2.20 To the east of the Morgan Array Area, Spirit Energy plans to convert its depleted South Morecambe and North Morecambe gas fields and Barrow Terminals into the Morecambe Net Zero cluster, a CCS operation (as shown on Figure 9.6).
- 9.5.2.21 In October 2020, the OGA awarded Eni a six-year appraisal licence which targets Eni's offshore fields in Liverpool Bay which are to be utilised as a permanent store for CO₂ (www.eni.com). The development is part of 'HyNet North West', a low carbon cluster project to help UK decarbonisation which also operates a CCS facility off the north coast of Wales (www.hynet.co.uk). The Eni CCS area is shown in Figure 9.6.

Cables

- 9.5.2.22 There is one operational power cable, the United Kingdom (UK)/Isle of Man (IoM) interconnector, between the Isle of Man and Blackpool, owned and operated by the Manx Utilities. A section of the interconnector runs just within and broadly parallel to the north boundary of the local other sea users study area (see Figure 9.6), 830 m to the north of the Morgan Array Area.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

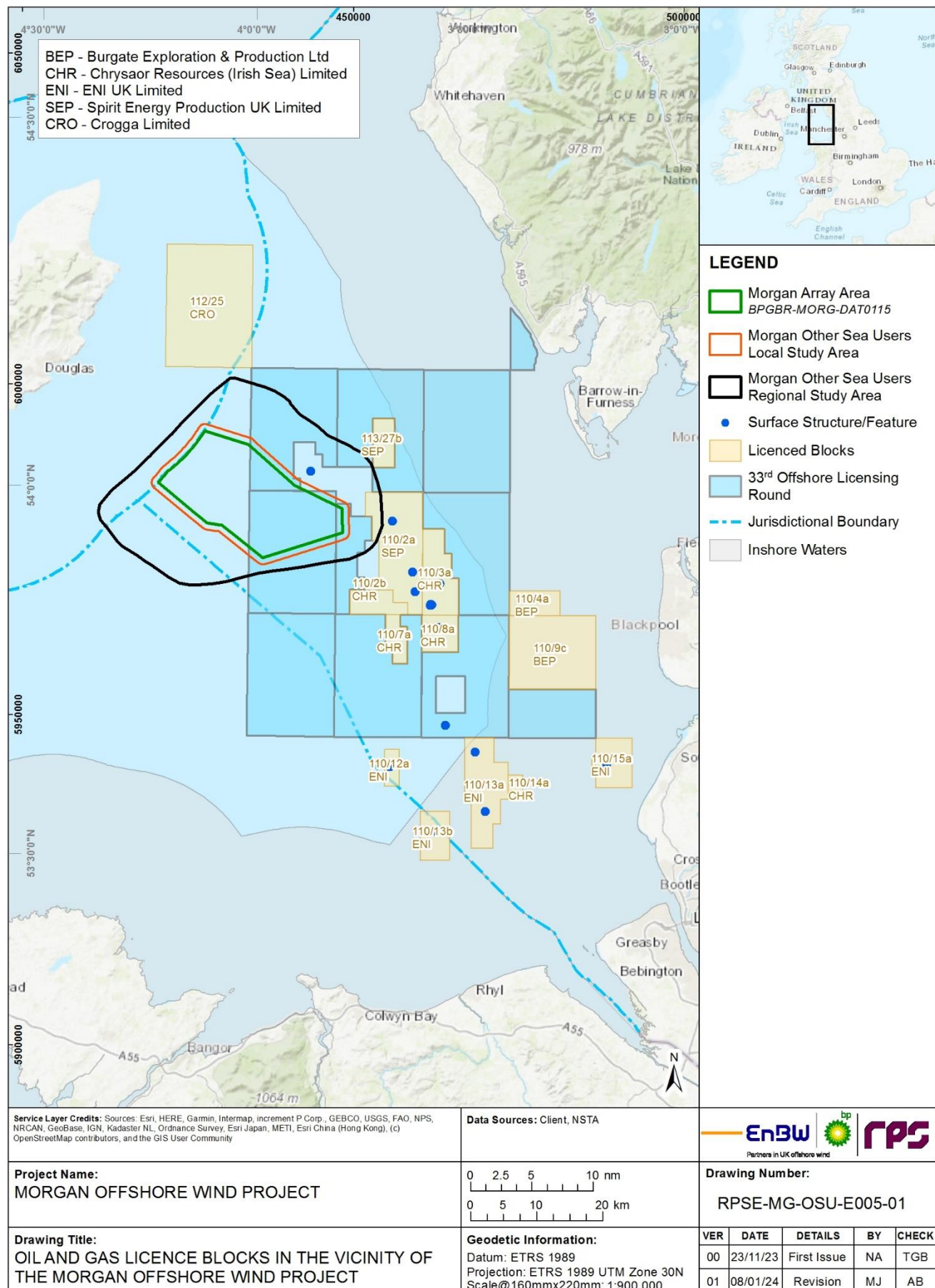


Figure 9.5: Oil and gas licence blocks and features in the vicinity of the Morgan Generation Assets.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

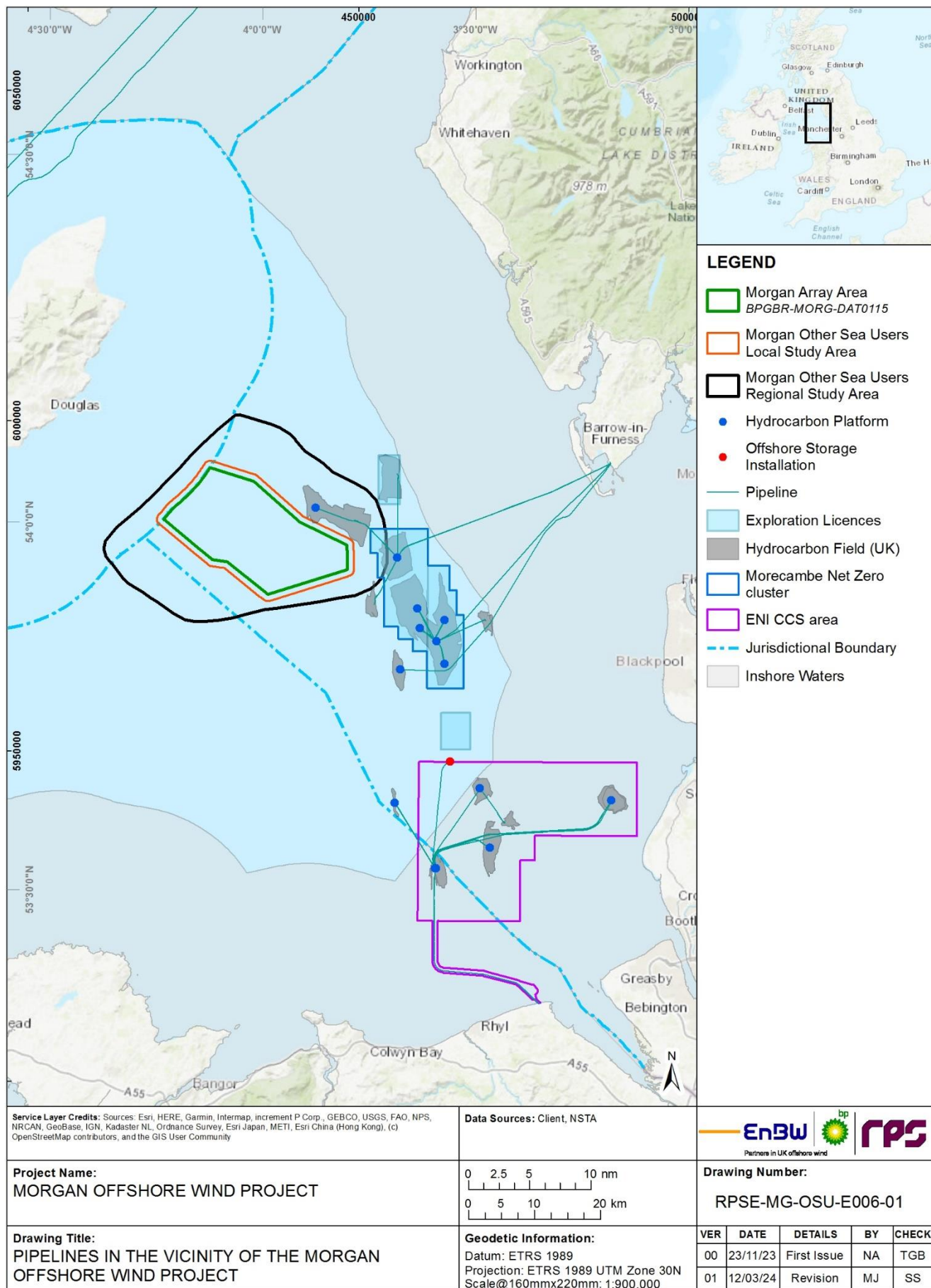


Figure 9.6: CCS and oil and gas activities in the vicinity of the Morgan Generation Assets.

9.5.3 Radar Early Warning Systems (REWS) study area

REWS

- 9.5.3.1 Radar Early Warning Systems (REWS) are a variety of early warning system used to prevent vessel collision with an offshore oil and gas platform. This system utilises radar mounted on a platform to detect and track vessels and provide collision warning when vessels are in breach of defined Closest Point of Approach (CPA) and Time to Closest Point of Approach (TCPA) parameters. When they reach a certain threshold, an alarm is triggered. This value is set in accordance with the platform operator's own performance standards and typically consists of an amber alert and a red alarm indicating when vessel intervention or emergency procedures are required. The REWS radar does not work in isolation, but together with other radar and AIS data to provide a field wide collision risk management system which protects the whole field. The REWS on one platform (and sometimes combined with the REWS on another platform) therefore protects a range of platforms.
- 9.5.3.2 The REWS located within the REWS study area are shown in Figure 9.7 together with the platforms that the REWS protect. REWS systems which may be within Line of Sight (LoS) of the Morgan Array Area include:
- Millom West platform operated by Harbour Energy
 - Douglas platform operated by Eni UK Ltd.
 - Offshore Storage Installation (OSI) operated by Eni UK Ltd.
 - South Morecambe AP1 platform operated by Spirit Energy.
- 9.5.3.3 Consultation with Harbour Energy has confirmed that the Millom West platform is planned to be decommissioned and vessel access will be required from 2024 to approximately 2030. Spirit Energy are planning to decommission all the platforms in the South Morecambe cluster between 2027 and 2031, as part of the development of the Morecambe Net Zero Cluster.
- 9.5.3.4 The technical information and modelling techniques and results informing the assessments are reported in Volume 4, Appendix 9.1: Radar Early Warning Systems (REWS) and Microwave Communication Links technical report of the Environmental Statement.
- #### **Offshore microwave fixed communication links**
- 9.5.3.5 Offshore microwave fixed links may be used to facilitate communications between offshore oil and gas platforms. Consultation with platform operators has not identified any offshore microwave fixed links crossing the Morgan Array Area.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

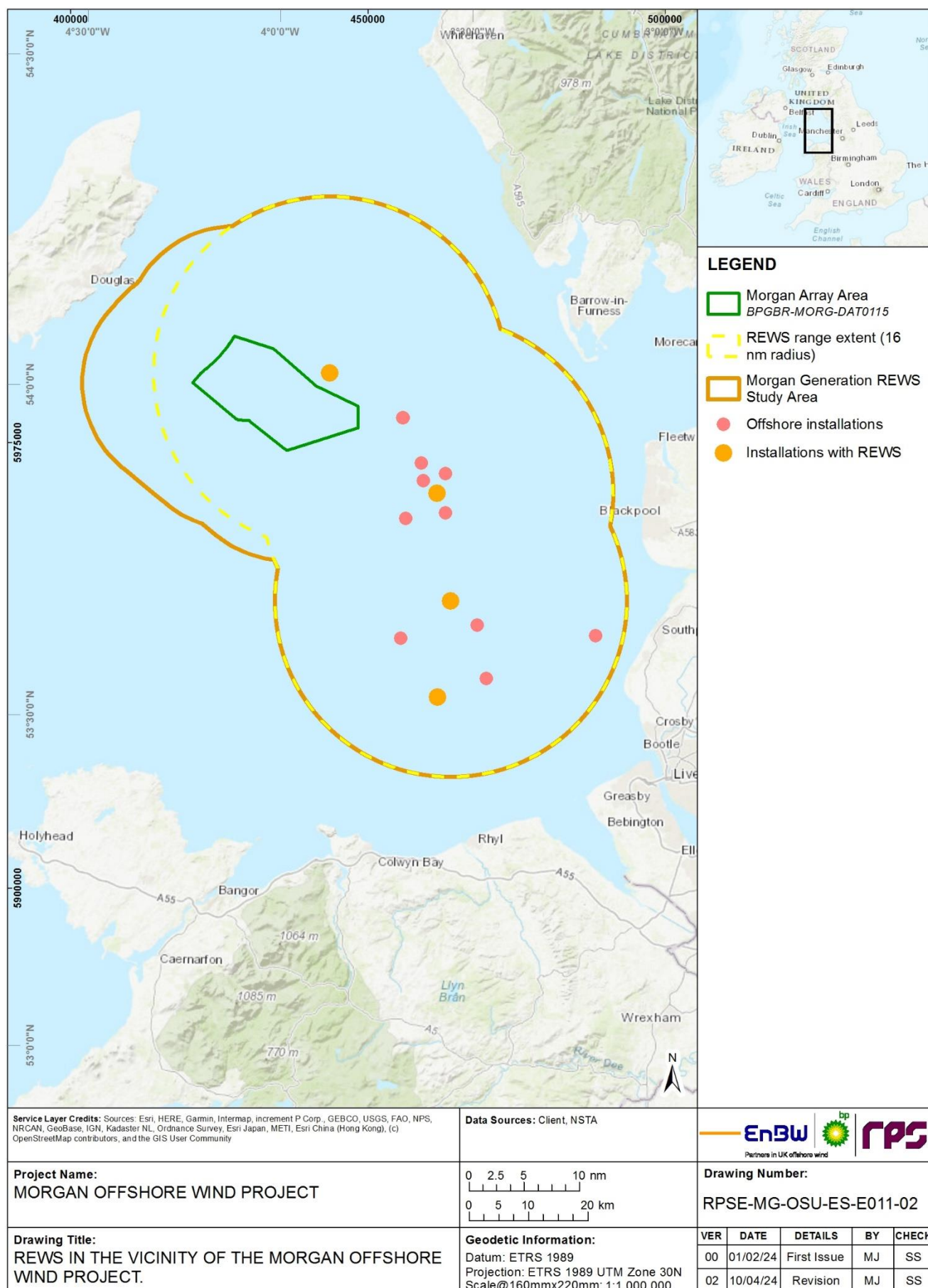


Figure 9.7: REWS in the vicinity of the Morgan Generation Assets.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

9.5.4 Future baseline scenario

- 9.5.4.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Schedule 4) requires that “*an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge*” is included within the Environmental Statement. In the event that the Morgan Generation Assts do not come forward, an assessment of the future baseline conditions has been carried out and is described within this section.
- 9.5.4.2 The future baseline scenario for recreational activities is considered unlikely to change substantially from that presented in section 9.5, in the absence of the Morgan Generation Assets. The future baseline scenario for offshore wind projects has the potential to change over time as consented projects are constructed or as existing projects are repowered or decommissioned (which will be subject to the appropriate approvals at the time). The future baseline scenario for offshore cables and marine aggregates is subject to gradual change as new projects and sites are identified. The future baseline scenario for oil and gas activities and associated development (including platforms, wells and pipelines) as well as CCS has the potential to change over time depending on, for example, acquisitions, exploration and development and decommissioning as well as potential licence applications for CCS projects.

9.5.5 Data limitations

- 9.5.5.1 The data sources used in this chapter are detailed in Table 9.7. The data used is the most up to date publicly available information which can be obtained from the applicable data sources as cited, and data that has been provided through consultation as detailed in Table 9.4. The data is therefore limited by what is available and by what has been made available at the time of writing the Environmental Statement.
- 9.5.5.2 It is considered that the data employed in the assessment is of a robust nature and is sufficient for the purposes of the impact assessment presented.

9.6 Impact assessment methodology

9.6.1 Overview

- 9.6.1.1 The other sea users impact assessment has followed the methodology set out in Volume 1, Chapter 5: EIA methodology of the Environmental Statement. Specific to the other sea users impact assessment, the guidance documents listed in section 9.4.1 have also been considered.

9.6.2 Impact assessment criteria

- 9.6.2.1 The criteria for determining the significance of effects is a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors. The terms used to define magnitude and sensitivity are based on those which are described in further detail in Volume 1, Chapter 5: EIA methodology of the Environmental Statement.
- 9.6.2.2 The criteria for defining magnitude in this chapter are outlined in Table 9.9 below.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 9.9: Definition of terms relating to the magnitude of an impact.

Magnitude of impact	Definition
High	Total loss of ability to carry on activities and/or impact is of extended physical extent and/or long term duration (i.e. total life of project) and/or frequency of repetition is continuous and/or effect is not reversible for project phase (Adverse).
Medium	Loss or alteration to significant portions of key components of current activity and/or physical extent of impact is moderate and/or medium to long term duration (i.e. operations and maintenance phase) and/or frequency of repetition is medium to continuous and/or effect is not reversible for project phase (Adverse).
Low	Minor shift away from baseline, leading to a reduction in level of activity that may be undertaken and/or physical extent of impact is low and/or short to medium term duration (i.e. construction phase) and/or frequency of repetition is low to continuous and/or effect is not reversible for project phase (Adverse).
Negligible	Very slight change from baseline condition and/or physical extent of impact is negligible and/or short term duration (i.e. less than two years) and/or frequency of repetition is negligible to continuous and/or effect is reversible (Adverse).

9.6.2.3 The criteria for defining sensitivity in this chapter are outlined in Table 9.10 below.

Table 9.10: Definition of terms relating to the sensitivity of the receptor.

Sensitivity	Definition
Very High	Receptor or the activities of the receptor is of critical importance to the local, regional or national economy and/or the receptor or the activities of the receptor is highly vulnerable to impacts that may arise from the project and/or recoverability is long term or not possible.
High	Receptor or the activities of the receptor is of high value to the local, regional or national economy and/or the receptor or the activities of the receptor is generally vulnerable to impacts that may arise from the project and/or recoverability is slow and/or costly.
Medium	Receptor or the activities of the receptor is of moderate value to the local, regional or national economy and/or the receptor or the activities of the receptor is somewhat vulnerable to impacts that may arise from the project and/or has moderate to high levels of recoverability.
Low	Receptor or the activities of the receptor is of low value to the local, regional or national economy and/or the receptor or the activities of the receptor is not generally vulnerable to impacts that may arise from the project and/or has high recoverability.
Negligible	Receptor or the activities of the receptor is of negligible value to the local, regional or national economy and/or the receptor or the activities of the receptor is not vulnerable to impacts that may arise from the project and/or has high recoverability.

9.6.2.4 The significance of the effect upon other sea users is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The particular method employed for this assessment is presented in Table 9.11. Where a range of significance of effect is presented in Table 9.11, the final assessment for each effect is based upon expert judgement.

9.6.2.5 For the purposes of this assessment, any effects with a significance level of minor or less have been concluded to be not significant in terms of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 9.11: Matrix used for the assessment of the significance of the effect.

Sensitivity of Receptor	Magnitude of Impact			
	Negligible	Low	Medium	High
Negligible	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	Negligible or Minor	Minor	Moderate	Moderate or Major
High	Minor	Minor or Moderate	Moderate or Major	Major
Very High	Minor	Moderate or Major	Major	Major

9.7 Key parameters for assessment

9.7.1 Maximum Design Scenario

- 9.7.1.1 The Maximum Design Scenarios (MDSs) identified in Table 9.12 have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. These scenarios have been selected from the Project Design Envelope provided in Volume 1, Chapter 3: Project description of the Environmental Statement. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (e.g. different infrastructure layout), to that assessed here be taken forward in the final design scheme.
- 9.7.1.2 The assessment of potential impacts on other sea users is based on the MDS as identified from a design envelope and is specific to the potential impacts identified in this chapter. The key parameters for the MDS include consideration of the maximum number of wind turbines across the largest area.
- 9.7.1.3 The MDS for impacts on other sea users assumes, as appropriate for each individual impact assessed, that the entirety of the Morgan Array Area will be populated with wind turbines (96) with a minimum spacing of 1,400 m, up to four OSPs, up to 390 km inter-array cables with up to 10 cable crossings, and up to 60 km of interconnector cables with up to 10 cable crossings. This is because the greatest number of structures represents the greatest potential for impact to other sea user receptors. Table 9.12 provides the MDS for impacts to other sea users.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 9.12: MDS considered for the assessment of potential impacts on other sea users.

^a C=construction, O=operations and maintenance, D=decommissioning

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
Displacement of recreational activities	✓	✓	✓	<p>Construction phase</p> <ul style="list-style-type: none"> Four year construction duration Installation of up to 96 wind turbines with a minimum spacing of 1,400 m, up to four OSPs, up to 390 km inter-array cables with up to 10 cable crossings, and up to 60 km of interconnector cables with up to 10 cable crossings. Safety zones: 500 m safety zones around wind turbines and Offshore Substation Platforms (OSPs) during their construction. 50 m safety zone around each infrastructure during the construction phase where no construction works are taking place on that infrastructure (for example, where a wind turbine is incomplete or is in the process of being tested before commissioning). Rolling advisory clearance distances of 500 m around vessels installing inter-array cables and interconnector cables <ul style="list-style-type: none"> Temporary restrictions to fishing activity and/or anchoring, will also be required in areas where full cable burial to target depth has not yet been achieved and/or surface-laid cable exists (prior to cover by external cable protection). In such areas of temporarily shallow buried/surface-laid cable, the restricted areas will be monitored by guard vessels Construction vessels: Up to 1,929 installation vessel movements (return trips) during construction (521 main installation/support vessels, 74 tug/anchor handlers, 56 cable lay installation and support vessels, 50 guard vessels, 31 survey vessels, 19 seabed preparation vessels, 1,135 crew transfer vessels (CTVs), 41 scour protection installation vessels and two cable protection installation vessels). <p>Operations and maintenance phase</p> <ul style="list-style-type: none"> 35 year operations and maintenance phase Presence of up to 96 wind turbines with a minimum spacing of 1,400 m and up to four OSPs Safety zones: 500 m safety zones around infrastructure (e.g. wind turbines) during periods of major maintenance. Advisory clearance distances of 500 m around vessels carrying out cable repair/reburial activities Vessels: Up to a total of 16 operations and maintenance vessels on site at any one time (five CTVs/workboats, three jack-up vessels, three cable repair vessels, four service operation vessels (SOVs) or similar and one excavator/backhoe dredger). Up to 719 operations and maintenance 	The greatest number of structures and associated minimum spacing and the greatest extent of safety zones and advisory clearance distances, over the longest construction, operations and maintenance, and decommissioning phases represents the greatest potential for displacement of recreational activities.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				<p>vessel movements (return trips) each year (608 CTVs/workboats, 25 jack-up vessels, six cable repair vessels, 78 SOV or similar and two excavators/backhoe dredgers)</p> <ul style="list-style-type: none"> Cable repair/reburial activities: <ul style="list-style-type: none"> Inter-array cables: repair of up to 8 km of cable in one event every three years. Reburial of up to 20 km of cable in one event every five years Interconnector cables: repair of up to 4 km of cable in each of three events every 10 years. Reburial of up to 3 km of cable in one event every five years. <p>Decommissioning phase</p> <ul style="list-style-type: none"> Removal of up to 96 wind turbines with a minimum spacing of 1,400 m and up to four OSPs Associated safety zones and advisory clearance distances, as per the construction phase Decommissioning vessel movements. 	
Reduction or restriction of other offshore energy activities	✓	✓	✓	As for 'Displacement of recreational activities' – see above.	The greatest number of structures and associated minimum spacing and the greatest extent of safety zones and advisory clearance distances, over the longest construction, operations and maintenance, and decommissioning period represents the greatest potential for reduction or restriction of other offshore energy activities.
Interference with the performance of REWS located on oil and gas platforms	×	✓	×	<p>Operations and maintenance phase</p> <ul style="list-style-type: none"> Presence of up to 96 wind turbines, with a rotor diameter of 250 m and minimum spacing 1,400 m. 	Parameters representing the greatest number of wind turbines with the greatest radar cross-section.
Potential impact of rerouted traffic on REWS alarm rates	×	✓	×	<p>Operations and maintenance phase</p> <ul style="list-style-type: none"> 35 year operations and maintenance duration Morgan Array Area 280 km² Presence of up to 96 wind turbines, with a minimum spacing of 1,400 m and up to four OSPs. 	Parameters that represent the greatest potential to impact vessel routing (area and duration). Potential impact on vessel routing is fully discussed in Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

9.8 Measures adopted as part of the Morgan Generation Assets

9.8.1.1 For the purposes of the EIA process, the term ‘measures adopted as part of the project’ is used to include the following measures (adapted from Institute of Environmental Management and Assessment (IEMA), 2016):

- Measures included as part of the project design. These include modifications to the location or design of the Morgan Generation Assets which are integrated into the application for consent. These measures are secured through the consent itself through the description of the development and the parameters secured in the DCO and/or marine licence(s) (referred to as primary mitigation in IEMA, 2016)
- Measures required to meet legislative requirements, or actions that are generally standard practice used to manage commonly occurring environmental effects and are secured through the DCO requirements and/or the conditions of the marine licence(s) (referred to as tertiary mitigation in IEMA, 2016).

9.8.1.2 A number of measures (primary and tertiary) have been adopted as part of the Morgan Generation Assets to reduce the potential for impacts on other sea users. These are outlined in Table 9.13 below. As there is a commitment to implementing these measures, they are considered inherently part of the design of Morgan Generation Assets and have therefore been considered in the assessment presented in section 9.9 below (i.e. the determination of magnitude and therefore significance assumes implementation of these measures).

Table 9.13: Measures adopted as part of the Morgan Generation Assets.

Measures adopted as part of the Morgan Generation Assets	Justification	How the measure will be secured
Primary measures: Measures included as part of the project design		
Use of safety zones (WTG/OSP) during construction/decommissioning and periods of major maintenance, as per the Safety Zone Statement	<p>To ensure navigational safety and minimise risk, 500 m safety zones will be implemented around wind turbines and OSPs during their construction/decommissioning and periods of major maintenance.</p> <p>50 m safety zones will also be implemented around each item of infrastructure during the construction phase, where no construction works are taking place on that infrastructure (for example, where a wind turbine is incomplete or is in the process of being tested before commissioning).</p> <p>During the operations and maintenance phase, 500 m advisory clearance distances will also be implemented around any vessel involved in major maintenance works.</p> <p>Whilst no formal application for a safety zone around cable laying operations is possible under Section 95 of the Energy Act 2004, wherever possible, it is the Applicant's intention to propose rolling advisory clearance distances of up to 500 m around vessels installing inter-array cables and interconnector cables in the interests of the safety of all users of the sea, and to provide clearance of 500 m from laid cables until burial is confirmed in case of interaction with anchors or fishing gear.</p> <p>Application and use of safety zones in accordance with the Safety Zone Statement (Document Reference J5).</p>	An application for safety zones will be made under The Energy Act 2004 and The Electricity (Offshore Generating Stations) (Safety Zones) (Applications Procedures and Control of Access) Regulations 2007, as per the Safety Zone Statement (document reference J5).

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Measures adopted as part of the Morgan Generation Assets	Justification	How the measure will be secured
Tertiary measures: Measures required to meet legislative requirements, or adopted standard industry practice		
Notification of construction, maintenance and decommissioning activities through the use of Notice to Mariners (NtMs)	To ensure that the appropriate authorities and stakeholders are informed of works being carried out in waters adjacent to the Morgan Generation Assets, as soon as reasonably practicable in advance of offshore works.	NtMs is secured as a condition of the deemed marine licence(s) within the draft DCO (Document Reference C1).
Site marking and marine charting.	To ensure other sea users receptors are aware of the location of the infrastructure associated with the Morgan Generation Assets. Site is marked on nautical charts including an appropriate chart note to facilitate safe passage planning around the Morgan Generation Assets.	Secured within the deemed marine licence(s) within the draft DCO (Document Reference C1).
Development and adherence to an Aids to Navigation Management Plan (ANMP) to ensure adequate navigational markers (including lighting and a buoyed construction area), in accordance with the most recent relevant industry guidance and agreed prior to commencement of offshore construction.	To ensure navigational safety and minimise risk, suitable AtoN lighting and marking of the Morgan Array Area shall be undertaken complying with IALA Recommendations G1162 (IALA, 2021), to be finalised and approved in consultation with Maritime and Coastguard Agency (MCA) and Trinity House through the preparation of an AtoN Management Plan. Fog horns to alert vessels to the position of structures when visibility is poor. Wind turbine informal naming/associated markings shall not interfere with formal AtoN's. AIS transponders to be placed on periphery corner wind turbines.	The ANMP is secured within the deemed marine licence(s) within the draft DCO (Document Reference C1).
Continued communication with other offshore energy operators to promote and maximise cooperation between parties and minimise both spatial and temporal interactions between conflicting activities.	Continued communication with other offshore energy operators will ensure relevant parties are kept informed of planned activities in order to minimise disruption to either party's operations and to maximise coexistence.	In line with standard industry practice.
Proximity agreements will be negotiated and agreed with relevant cable operators, to minimise the potential for any impact in accordance with recognised industry good practice.	This will ensure close communication and planning between both parties to ensure disruption of activities is minimised.	In line with standard industry practice.
Development and adherence to an Offshore Construction Method Statement (CMS) which includes a Cable Specification and Installation Plan (CSIP) and details of cable monitoring to ensure under keel clearance (UKC) is maintained and no more than a 5% reduction in water depth	To ensure that the cable remains secure, is not a hazard to other sea users and does not risk becoming exposed and damaged by tidal currents. To ensure navigational safety and minimise risk of gear snagging, a CSIP will be prepared (in line with consent conditions) prior to installation of the Morgan Generation Assets. This will include a detailed cable laying plan, including geotechnical data, cable laying techniques, cable protection, monitoring of cables. This will be informed by a Cable Burial Risk Assessment (CBRA), which will include	A CSIP as part of the Offshore CMS is secured within the deemed marine licence(s) within the draft DCO (Document Reference C1).

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Measures adopted as part of the Morgan Generation Assets	Justification	How the measure will be secured
(referenced to Chart Datum) will occur as a result of cable protection at any point over cables without prior written approval from the Licensing Authority	<p>details on minimum target burial depths to be undertaken pre-construction, including consideration of UKC.</p> <p>All subsea cables will be either fully buried at least 0.5 m (where ground conditions permit and burial tool performance allows), partially buried (buried but not to target depth) with rock protection, or surface laid with cable protection.</p> <p>Selected methods will be based on the risk assessment and the protection will be periodically monitored and maintained as practicable.</p> <p>Information distribution will be aimed to be provided no less than three days for notification of buried cables becoming exposed on or above the seabed to regional fisheries contacts and 24 hours for notification of damage to the Morgan Generation Assets.</p>	

9.9 Assessment of significant effects

9.9.1 Overview

- 9.9.1.1 The impacts of the construction, operations and maintenance, and decommissioning phases of the Morgan Generation Assets have been assessed on other sea users. The potential impacts arising from the construction, operations and maintenance, and decommissioning phases of the Morgan Generation Assets are listed in Table 9.12, along with the MDS against which each impact has been assessed.
- 9.9.1.2 A description of the potential effect on other sea users receptors caused by each identified impact is given below.

9.9.2 Displacement of recreational activities

- 9.9.2.1 Construction, operations and maintenance, and decommissioning of the wind turbines, OSPs, associated foundations and cables may lead to the displacement of recreational activities such as sailing and motor cruising, and recreational fishing. The MDS is represented by the greatest amount of the largest infrastructure and associated minimum spacing, and the greatest extent of safety zones and advisory clearance distances, over the longest construction, operations and maintenance, and decommissioning phases. This is summarised in Table 9.12.

Construction phase

Magnitude of impact

- 9.9.2.2 The installation of infrastructure and the presence of safety zones and advisory clearance distances may result in the displacement of recreational activities from the Morgan Array Area.
- 9.9.2.3 The Morgan Generation Assets may be constructed over a period of up to four years. The spatial extent of the Morgan Array Area is 280 km². There is also potential for safety zones and advisory clearance distances to extend 500 m beyond this area. The impact of safety zones and advisory clearance distances is mostly reversible as once

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

each structure has been installed and commissioned these will be removed. The spatial extent of the potential impact will be relatively small in the context of the available sailing and recreational fishing area in the east Irish Sea, with the potential for localised displacement of recreational craft from the individual safety zones and advisory clearance distances.

9.9.2.4 The Morgan Array Area is 22.2 km from the nearest coastline (the Isle of Man), and accordingly the level of recreational activity within the local other sea users study area is considered to be low to moderate (see section 9.5.2). The frequency of impact is therefore considered to be low.

9.9.2.5 Underwater sound associated with the construction of the Morgan Generation Assets has the potential to affect fish and shellfish, which subsequently has the potential to impact upon recreational fishing. Further information on underwater sound is presented in Volume 3, Annex 3.1: Underwater sound technical report of the Environmental Statement. Potential impacts on fish and shellfish behaviour associated with underwater sound have been assessed as minor adverse following mitigation in Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement.

9.9.2.6 The impact is predicted to be of local spatial extent, short to medium term duration, intermittent and low reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **low**.

Sensitivity of the receptor

9.9.2.7 As described in section 9.5.2, there is low to moderate intensity of recreational activity within the local other sea users study area.

9.9.2.8 Recreational vessels are able to alter their route, dependent on the target destination. Notices to Mariners will be publicised regularly during the construction phase, advising of the location and nature of construction works, ensuring that recreational activities can be planned accordingly. There are other locations available for sailing and fishing in the east Irish Sea such that alternatives are available if required during the construction phase.

9.9.2.9 The receptor is deemed to be of low vulnerability, high recoverability and low value. The sensitivity of the receptor is therefore, considered to be **low**.

Significance of the effect

9.9.2.10 Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of **minor adverse** significance, which is not significant in EIA terms.

Operations and maintenance phase

Magnitude of impact

9.9.2.11 The presence of infrastructure, including wind turbines and OSPs, and safety zones and advisory clearance distances associated with maintenance works, may result in the displacement of recreational craft and recreational fishing vessels.

9.9.2.12 The Morgan Generation Assets will be operational for of up to 35 years. The spatial extent of the Morgan Array Area is 280 km², and there is also potential for temporary 500 m safety zones and advisory clearance distances around infrastructure such as wind turbines during periods of major maintenance. As described in paragraph 9.9.2.3, the spatial extent of the potential impact will be relatively small in the context of the

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

available sailing and recreational fishing area in the east Irish Sea, with the potential for localised displacement of recreational craft.

9.9.2.13 The Morgan Array Area is 22.2 km from the nearest coastline (the Isle of Man), and accordingly the level of recreational activity within the regional other sea users study area is considered to be low to moderate (see section 9.5.2). The frequency of impact is therefore considered to be low.

9.9.2.14 The impact is predicted to be of local spatial extent, long term duration, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **low**.

Sensitivity of receptor

9.9.2.15 As described in section 9.5.2, there is low to moderate intensity recreational activity within the local other sea users study area.

9.9.2.1 Recreational vessels will be able to access and transit through the Morgan Array Area during the operations and maintenance phase, if deemed safe to do so by the vessel master. If required, recreational vessels are able to alter their route, dependent on the target destination. Notices to Mariners will be publicised during the operations and maintenance phase, advising of the location and nature of any major maintenance works, ensuring that recreational activities can be planned accordingly. There are other locations available for sailing and fishing in the east Irish Sea such that alternatives are available if required during the operations and maintenance phase.

9.9.2.2 The receptor is deemed to be of low vulnerability, high recoverability and low value. The sensitivity of the receptor is therefore, considered to be **low**.

Significance of effect

9.9.2.3 Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of **minor adverse** significance, which is not significant in EIA terms.

Decommissioning phase

Significance of effect

9.9.2.4 The effects of decommissioning activities are expected to be the same or similar to the effects from construction. The effect will, therefore, be of **minor adverse** significance, which is not significant in EIA terms.

9.9.3 Reduction or restriction of other offshore energy activities

9.9.3.1 The construction, operations and maintenance, and decommissioning of the wind turbines, OSPs, associated foundations and cables may lead to the reduction or restriction of other offshore energy activities in the local other sea users study area. The MDS is represented by the greatest amount of the largest infrastructure and associated minimum spacing, and the greatest extent of safety zones and advisory clearance distances, over the longest construction, operations and maintenance, and decommissioning phases. This is summarised in Table 9.12.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Construction phase

Magnitude of impact

- 9.9.3.2 Installation of the wind turbines, OSPs and cables may lead to the reduction or restriction of other offshore energy activities in the local other sea users study area. Such activities may include surveys, drilling or vessel access to infrastructure for maintenance or decommissioning.
- 9.9.3.3 Installation of the Morgan Generation Assets and the presence of safety zones and advisory clearance distances may reduce or restrict the ability to carry out seismic surveys and drilling within the offered blocks overlapping the Morgan Array Area (110/1, 110/2c and 113/26). As infrastructure is installed, the area available for seismic surveys and drilling will be restricted, and the presence of safety zones and advisory clearance distances around infrastructure and vessels may also further restrict the ability to use certain alternative survey methods. The impact of safety zones and advisory clearance distances is mostly reversible as once each structure has been installed and commissioned these will be removed. As shown in Figure 9.5, there is still area available within these blocks for survey and drilling activities.
- 9.9.3.4 The UK/IoM interconnector cable is located along the north edge of the local other sea users study area, 830 m to the north of the Morgan Array Area. A proximity agreement is anticipated to be negotiated and agreed with the relevant cable operator (Manx Utilities), to minimise the potential for any impact in accordance with recognised industry good practice. This will ensure close communication and planning between both parties to ensure disruption of activities is minimised.
- 9.9.3.5 As shown on Figure 9.5 and Figure 9.6, there is no other infrastructure associated with any other offshore energy project within the local other sea users study area, such that vessel access is not anticipated to be restricted to any existing offshore energy asset.
- 9.9.3.6 The impact is predicted to be of local spatial extent, short to medium term duration, intermittent and low reversibility over the construction phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **low**.

Sensitivity of receptor

- 9.9.3.7 There is potential for activity in blocks licenced in the future, for example through the 33rd Oil and Gas Licensing Round, but the assessment of the potential impacts on those receptors is complicated by a degree of uncertainty as these blocks have not yet been awarded.
- 9.9.3.8 Continued communication with other offshore energy operators as described in Table 9.13 will ensure relevant parties are kept informed of planned activities in order to minimise both spatial and temporal interactions between conflicting activities and maximise coexistence.
- 9.9.3.9 The receptor is deemed to be of low vulnerability, moderate recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be **low**.

Significance of effect

- 9.9.3.10 Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of **minor adverse** significance, which is not significant in EIA terms.

Operations and maintenance phase

Magnitude of impact

- 9.9.3.11 The presence of wind turbines, OSPs and any temporary safety zones or advisory clearance distances associated with maintenance activities may lead to the reduction or restriction of other offshore energy activities in the local other sea users study area. As described in paragraph 9.9.3.3, the presence of the Morgan Generation Assets and any safety zones and advisory clearance distances associated with maintenance activities may reduce or restrict the ability to carry out seismic surveys and drilling within the offered blocks overlapping the Morgan Array Area during the operations and maintenance phase. The area available for seismic surveys and drilling will be restricted. As described in paragraph 9.9.3.3, there is still area available within these blocks for survey and drilling activities.
- 9.9.3.12 The UK/IoM interconnector cable is located within the local other sea users study area. A proximity agreement is anticipated to be negotiated and agreed with the relevant cable operator (Manx Utilities), to minimise the potential for any impact in accordance with recognised industry good practice. This will ensure close communication and planning between both parties to ensure disruption of activities is minimised.
- 9.9.3.13 As shown on Figure 9.5 and Figure 9.6, there is no other infrastructure associated with any other offshore energy project within the local other sea users study area, such that vessel access is not anticipated to be restricted to any existing offshore energy asset.
- 9.9.3.14 The impact is predicted to be of local spatial extent, long term duration, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **low**.

Sensitivity of receptor

- 9.9.3.15 There is potential for activity in blocks licenced in the future, for example through the 33rd Oil and Gas Licensing Round, but the assessment of the potential impacts on those receptors is complicated by a degree of uncertainty as these blocks have not yet been awarded.
- 9.9.3.16 Continued communication with other offshore energy operators as described in Table 9.13 will ensure relevant parties are kept informed of planned activities in order to minimise both spatial and temporal interactions between conflicting activities and maximise coexistence.
- 9.9.3.17 The receptor is deemed to be of low vulnerability, moderate recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be **low**.

Significance of effect

- 9.9.3.18 Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of **minor adverse** significance, which is not significant in EIA terms.

Decommissioning phase

Significance of effect

- 9.9.3.19 The effects of decommissioning activities are expected to be the same or similar to the effects from construction. The effect will, therefore, be of **minor adverse** significance, which is not significant in EIA terms.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

9.9.4 Interference with the performance of REWS located on oil and gas platforms

- 9.9.4.1 Radar Early Warning Systems (REWS) located on offshore oil and gas platforms use radar returns to monitor and track vessels navigating in the vicinity of offshore oil and gas platforms within the detection region. The REWS will alert the operator when a proximity violation or an allision threat is detected.
- 9.9.4.2 During the operations and maintenance phase of the Morgan Generation Assets, wind turbines and offshore structures within the LoS of the REWS could interfere with radar performance and degrade the ability of the REWS to distinguish between wind turbines and associated offshore structures, and returns from targets of interest. If the REWS is unable to detect and track vessels within the Morgan Array Area, it may cause the REWS to issue delayed Time to Closest Point of Approach (TCPA) alarms, resulting in insufficient response times to deal with potential allision threats.
- 9.9.4.3 The MDS is represented by the maximum number of wind turbines. This is summarised in Table 9.12. A summary of the MDS parameters applied to the REWS modelling assessment reported in this section is provided in Volume 4, Annex 9.1: Radar Early Warning Systems (REWS) and Microwave Communication Links technical report of the Environmental Statement.

Operations and maintenance phase

Magnitude of impact

- 9.9.4.4 The Morgan Generation Assets will be operational for up to 35 years. There are four REWS located on offshore oil and gas platforms within the REWS study area, operated by Eni, Harbour Energy and Spirit Energy to monitor and protect their assets. The region has a number of regular vessels travelling along routes passing through the area. The potential impact of offshore wind farms on REWS may arise from a number of factors such as high radar returns from the wind turbines and associated offshore structures, increased number of detections, false alarm/track generation and potential masking other targets in the area.
- 9.9.4.5 To establish the potential impact of the Morgan Generation Assets on REWS installed in the REWS study area (and the ability of REWS to detect vessels within the vicinity of the Morgan Array Area), a modelling assessment has been undertaken. The technical information, modelling techniques and results from this analysis are reported in full in Volume 4, Annex 9.1: Radar Early Warning Systems (REWS) and Microwave Communication Links technical report of the Environmental Statement. A summary of the findings is provided in this section.
- 9.9.4.6 The results from the REWS modelling indicate that the raw, single scan detection performance of the REWS due to the presence of the Morgan Generation Assets will be affected adversely within the wind farm regions. Radar detection of vessels travelling within the Morgan Array Area may be lost temporarily as they move close to the modelled turbines located within the radar range. The loss of detection is mainly caused by the elevated threshold levels due to the presence of the wind turbines, while a small number of losses are expected to occur due to shadowing.
- 9.9.4.7 The results show that at close ranges, the REWS easily detects a test vessel as the returns are above the detection threshold. Once the vessel is travelling within the nearby wind farm, the raised threshold over the cells around each wind turbine can cause loss of detection. This effect, in combination with the shadowing effects, may cause the REWS to lose tracks of the vessels.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

- 9.9.4.8 Typically, in terms of tracking vessels within the wind farm, tracker software is expected to compensate for most of the detection losses of the vessels. Additionally, the integration of AIS data with the REWS provides an alternative source of vessel information and location which can complement the data when temporary radar losses are experienced. Therefore, the impact of the Morgan Generation Assets in isolation on nearby REWS installations is expected to be relatively low and manageable without the need for mitigation measures.
- 9.9.4.9 The overall results show that the REWS can easily detect the test vessel over the majority of the coverage region. Once a vessel is travelling within a wind farm, the raised threshold over the cells around each wind turbine can cause loss of detection. A temporary loss of the radar detection of vessels is expected close to the modelled turbine within the radar range.
- 9.9.4.10 As described in section 9.5.3, the Millom West platform is planned to be decommissioned by approximately 2030 and the South Morecambe platforms are planned to be decommissioned by 2031. The potential impact may therefore occur over an approximately one to two year period for these platform operators, as the Applicant intends for the Morgan Generation Assets to be fully operational by 2030 (see Volume 1, Chapter 3: Project description of the Environmental Statement). The duration of the potential impact on REWS will therefore depend on the duration of overlap between the operation of the REWS and the Morgan Generation Assets operations and maintenance phase.
- 9.9.4.11 The impact is predicted to be of local spatial extent (within the REWS study area), long term duration/short term duration for those platforms to be decommissioned, continuous and low reversibility for the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **low**.

Sensitivity of receptor

- 9.9.4.12 There are four platforms with REWS installed near the Morgan Array Area and regular vessels travel along routes that pass through the area. REWS are important tools for incident/disaster risk reduction and the protection and management of infrastructure for offshore oil and gas platforms. The performance of REWS and radar detection of vessels travelling within the Morgan Array Area may be lost temporarily.
- 9.9.4.13 The detection performance of the REWS due to the presence of the Morgan Generation Assets will be affected adversely within the wind farm regions. Tracker software and the integration of AIS data with the REWS is expected to counter most of the detection losses of the vessels. Therefore, the impact of the Morgan Generation Assets in isolation on nearby REWS installations is expected to be relatively low and manageable without the need for mitigation measures.
- 9.9.4.14 The receptor is deemed to be of moderate vulnerability, high recoverability and high value. The sensitivity of the receptor is therefore, considered to be **medium**.

Significance of effect

- 9.9.4.15 Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **minor adverse** significance, which is not significant in EIA terms.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

9.9.5 Potential impact of rerouted traffic on REWS alarm rates

- 9.9.5.1 REWS provide coverage over offshore oil and gas platforms and early warning to the operators when vessels breach the alarm settings. REWS use the radar returns to monitor and track vessels within the detection region and alert the operator when a proximity violation or an allision threat is detected. REWS provide early warning to the operators according to a defined set of rules (pre-set allision alarm rules) to identify a breach of the Closest Point of Approach (CPA) and TCPA.
- 9.9.5.2 During the operations and maintenance phase of the Morgan Generation Assets, some existing shipping routes will be altered by the physical presence of the Morgan Generation Assets. The predicted changes to the existing shipping traffic routes are described in detail within Volume 4, Annex 7.1: Navigational Risk Assessment of the Environmental Statement. Vessels may be rerouted nearer existing platforms covered by the REWS as they deviate around the Morgan Generation Assets. This may cause an increase in the CPA/TCPA alarm rates.
- 9.9.5.3 As an alarm will activate operational safety procedures to protect the platform, a change in CPA and TCPA alarms on oil and gas platforms protected by REWS can represent disruption to operations on oil and gas platforms. There are two aspects that need to be considered; the number of alarms the REWS operator has to deal with, and the system's ability to respond to potential risks of allision.
- 9.9.5.4 The effect of the rerouting of vessel traffic on REWS alarm rates has been considered based on the existing traffic in the region and the predicted alterations to the traffic around the Morgan Generation Assets. The MDS for the Navigational Risk Assessment (see Volume 4, Annex 7.1: Navigational Risk Assessment of the Environmental Statement) is therefore relevant. The MDS is otherwise represented by the maximum parameters for disruption to vessels over the greatest area for the longest duration during the operations and maintenance phase. This is summarised in Table 9.12.

Operations and maintenance phase

Magnitude of impact

- 9.9.5.5 The Morgan Generation Assets will be operational for up to 35 years. To establish the potential impact of rerouted traffic on REWS alarms, a modelling assessment has been undertaken. The technical information and modelling techniques and results from this analysis are reported in full in Volume 4, Annex 9.1: Radar Early Warning Systems (REWS) and Microwave Communication Links technical report of the Environmental Statement. A summary of the findings is provided in this section.
- 9.9.5.6 The effect of rerouted shipping routes was assessed for existing offshore platforms protected by REWS (i.e. Conway, Douglas DA, Douglas DW, Hamilton, Hamilton North, Lennox, Calder, Millom West, North Morecambe DPPA, South Morecambe AP1, South Morecambe CPP1, South Morecambe DP1, South Morecambe DP6, South Morecambe DP8 and the OSI). For each of the platforms considered, the assessment referred to the CPA/TCPA parameters (these are set out in Volume 4, Annex 9.1: Radar Early Warning Systems (REWS) and Microwave Communications Links technical report of the Environmental Statement. A TCPA/CPA alarm was assumed to be raised whenever a vessel breached the alarm rules.
- 9.9.5.7 The modelling looked at the number of alarms each platform is expected to have in a one-year period and estimated the difference in alarm rates relative to the base case. The modelling results indicate that for the Morgan Generation Assets, the estimated

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

change in yearly alarm rates against the base case would represent either a beneficial (i.e. a reduction in alarm rates), or small increase in alarm rates. The results for those platforms that showed a daily increase in alarm rates are shown in Table 9.14. The largest increase in amber alarms occurred on the South Morecambe DP6 platform, where the predicted change was an increase in alarm rates of 274 over the year (an increase of 0.75 alarms/day). Although this increase may need manual intervention and therefore increase the workload of the REWS operator covering South Morecambe DP6, overall, this is considered to be acceptable and the system's ability to respond to potential risks of allision would not be compromised. It is expected that most alarms will be generated by vessels that frequently use the same routes and are known by the REWS operator and are easily contactable. Upon identification and radio contact, the REWS operator may resolve the warning and temporarily switch off the alarm for that particular vessel.

Table 9.14: Estimated change in yearly alarm rates against the base case for platforms where an increase in alarms was observed.

Platform	Increase in yearly alarm rates (amber alarms)	Increase in yearly alarm rates (red alarms)	Approximate base case for yearly alarm rates
Douglas Complex	0.02 per day	-	Over 1,000 total
Hamilton	-	0.04 per day	Over 5,000 total
Calder	0.06 per day	-	Under 20 total
South Morecambe DP4	0.04 per day	-	0 total
South Morecambe DP3	0.60 per day	-	0 total
South Morecambe Complex	0.57 per day	0.09 per day	0 total
South Morecambe DP6	0.75 per day	0.39 per day	0 total
South Morecambe DP8	0.61 per day	0.20 per day	Under 30 total

- 9.9.5.8 Many of the route changes will see a resulting reduction in the probability of alarms affecting platforms. For other platforms, the increase in alarms is not considered a material change or is one that could be accommodated within existing and standard operations.
- 9.9.5.9 As described in paragraph 9.9.4.10, the South Morecambe platforms are planned to be decommissioned by 2031. The potential impact may therefore occur over an approximately two year period for this platform operator, as the Applicant intends for the Morgan Generation Assets to be fully operational by 2030 (see Volume 1, Chapter 3: Project description of the Environmental Statement). The duration of the potential impact on REWS alarm rates will therefore depend on the duration of overlap between the operation of the REWS and the Morgan Generation Assets operations and maintenance phase.
- 9.9.5.10 The impact is predicted to be of local spatial extent, long term duration/short term duration for the operator of those platforms to be decommissioned, intermittent and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **low**.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Sensitivity of receptor

- 9.9.5.11 Traffic rerouted around the Morgan Generation Assets is predicted to cause an adverse change (increase) in CPA and TCPA alarm rates on oil and gas platforms protected by REWS. The CPA and TCPA alarms form an important part of the REWS that provide asset and personnel management to oil and gas platforms in the region.
- 9.9.5.12 The modelling results indicate that while some platforms will see a small increase of alarm rates due to the rerouting of traffic around the Morgan Array Area, others will experience a beneficial effect. The REWS does not work in isolation, but together with other radar and AIS data that provide information for the wider risk management system.
- 9.9.5.13 The receptor is deemed to be of medium vulnerability, medium recoverability and high value. The sensitivity of the receptor is therefore, considered to be **medium**.

Significance of effect

- 9.9.5.14 Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **minor adverse** significance, which is not significant in EIA terms.

9.9.6 Future monitoring

- 9.9.6.1 No monitoring to test the predictions made within the other sea users impact assessment is considered necessary.

9.10 Cumulative effects assessment methodology

9.10.1 Methodology

- 9.10.1.1 The Cumulative Effects Assessment (CEA) takes into account the impact associated with the Morgan Generation Assets together with the Morgan and Morecambe Offshore Wind Farms: Transmission Assets, the Morecambe Offshore Windfarm: Generation Assets, and other projects and plans. The projects and plans selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise (see Volume 3, Annex 5.1: CEA screening matrix of the Environmental Statement). Each project has been considered on a case by case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.
- 9.10.1.2 The other sea users CEA methodology has followed the methodology set out in Volume 1, Chapter 5: EIA methodology of the Environmental Statement. The cumulative assessment considers three scenarios:
- Scenario 1: Morgan Generation Assets plus Morgan and Morecambe Offshore Wind Farms: Transmission Assets
 - Scenario 2: Morgan Generation Assets plus Morgan and Morecambe Offshore Wind Farms: Transmission Assets and the Morecambe Offshore Windfarm: Generation Assets
 - Scenario 3: Morgan Generation Assets plus Morgan and Morecambe Offshore Wind Farms: Transmission Assets alongside all other projects, plans and activities. This assessment has been allocated into 'tiers' reflecting the current stage of the other projects, plans and activities within the planning and development process. This tiered approach is adopted to provide a clear

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

assessment of the Morgan Generation Assets and the Morgan and Morecambe Offshore Wind Farms: Transmission Assets alongside other projects, plans and activities:

- Tier 1: includes projects, plans and activities at the following stages:
 - Under construction
 - Permitted application
 - Submitted application
 - Those currently operational that were not operational when baseline data were collected, and/or those that are operational but have an ongoing impact.
- Tier 2: includes projects, plans and activities at the following stages:
 - Scoping report has been submitted and is in the public domain.
- Tier 3: includes projects, plans and activities at the following stages:
 - Scoping report has not been submitted and is not in the public domain
 - Identified in a relevant Development Plan
 - Identified in other plans and programmes.

9.10.1.1 This approach to CEA has been developed to provide an assessment of the Morgan Generation Assets together with the Morgan and Morecambe Offshore Wind Farms: Transmission Assets (Scenario 1) and the Morecambe Offshore Windfarm: Generation Assets (Scenario 2) in order to identify, as far as possible, the combined effects of these three applications separately from the assessment that includes all other projects, plans and activities (Scenario 3).

9.10.1.2 The specific projects, plans and activities scoped into the CEA, are outlined in Table 9.15.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 9.15: List of other projects, plans and activities considered within the CEA.

Project/plan	Status	Distance from the Morgan Array Area (km)	Description of project/plan	Dates of construction (if applicable)	Dates of operation (if applicable)	Dates of construction and operation (if applicable) and overlap with the Morgan Offshore Wind Project: Generation Assets
Morgan and Morecambe Offshore Wind Farms Transmission Assets						
Morgan and Morecambe Offshore Wind Farms Transmission Assets	Pre-application	0.0	Morgan and Morecambe Offshore Wind Farms Transmission Assets	1 January 2028 to 31 December 2029	1 January 2030 to 31 December 2065	Project construction phase overlaps with the Morgan Generation Assets construction phase. Project operations and maintenance phase overlaps with the Morgan Generation Assets operations and maintenance phase.
Tier 1						
Mona Offshore Wind Project	Application	11.1	Proposed offshore wind farm. Maximum of 96 wind turbines and four OSPs, with minimum spacing between wind turbines of 1,400 m. Area: 300 km ² .	1 January 2028 to 31 December 2029	1 January 2030 to 31 December 2065	Project construction phase overlaps with the Morgan Generation Assets construction phase. Project operations and maintenance phase overlaps with the Morgan Generation Assets operations and maintenance phase.
Awel y Môr	Consented	46.8	Awel y Môr offshore wind farm, planning to comprise up to 50 wind turbines and array area of 78 km ² .	Anticipated to commence in 2026	1 January 2030 to 1 January 2055	Project construction phase overlaps with the Morgan Generation Assets construction phase. Project operations and maintenance phase overlaps with the Morgan Generation Assets operations and maintenance phase.
Tier 2						
Morecambe Offshore Windfarm Generation Assets	Pre-application	11.2	Morecambe Offshore Windfarm Generation Assets: planning to comprise up to 35 wind turbines and indicative minimum	1 January 2028 to 31 December 2029	1 January 2030 to 31 December 2065	Project construction phase overlaps with the Morgan Generation Assets construction phase. Project operations and maintenance phase overlaps with the Morgan Generation Assets operations and maintenance phase.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Project/plan	Status	Distance from the Morgan Array Area (km)	Description of project/plan	Dates of construction (if applicable)	Dates of operation (if applicable)	Dates of construction and operation (if applicable) and overlap with the Morgan Offshore Wind Project: Generation Assets
			spacing between rows of wind turbines of 1,400 m. Area: 87 km ² .			
Moor Vannin Offshore Wind Farm	Pre-application	4.8	The Moor Vannin offshore wind farm, located off the east coast of the Isle of Man. Maximum of 100 wind turbines in an area of 253 km ² .	Construction anticipated to start in 2030	Planning to be operational from 2032	Project construction phase overlaps with the Morgan Generation Assets operations and maintenance phase. Project operations and maintenance phase overlaps with the Morgan Generation Assets operations and maintenance phase.
Eni Hynet – Carbon Capture Project	Pre-application	31.0	CCS project in the east Irish Sea. Works will include installation of a new cable, a new Douglas CCS platform and work on the existing Hamilton, Hamilton North and Lennox wellhead platforms.	Unknown	Unknown	Unknown
Tier 3						
Morecambe Net Zero Cluster	Pre-application	3.5	Spirit Energy are planning to convert their depleted South Morecambe and North Morecambe gas fields and Barrow Terminals into a carbon storage cluster.	Unknown	Unknown	Unknown

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Project/plan	Status	Distance from the Morgan Array Area (km)	Description of project/plan	Dates of construction (if applicable)	Dates of operation (if applicable)	Dates of construction and operation (if applicable) and overlap with the Morgan Offshore Wind Project: Generation Assets
Mares Connect	Pre-application	48.2	Mares Connect is a proposed 750 MW subsea and underground electricity interconnector system linking the electricity grids in Ireland and Great Britain.	Unknown	Unknown	Unknown

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

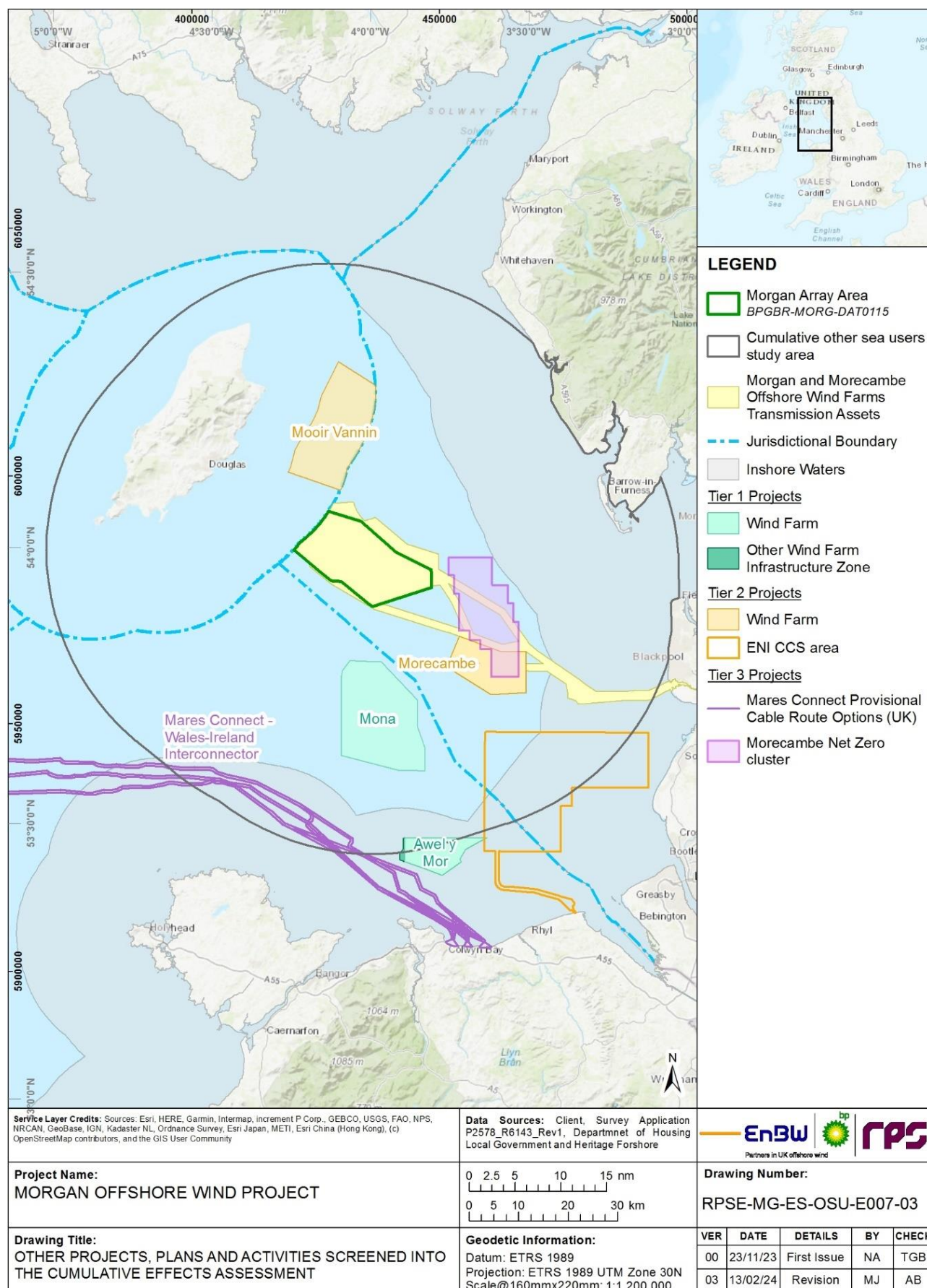


Figure 9.8: Other projects, plans and activities screened into the CEA.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

9.10.2 Maximum Design Scenario

- 9.10.2.1 The MDSs identified in Table 9.16 have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. The scenarios presented and assessed in this section have been selected from the Project Design Envelope provided in Volume 1, Chapter 3: Project description of the Environmental Statement as well as the information available on other projects and plans, in order to inform an MDS. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (e.g. different wind turbine layout), to that assessed here, be taken forward in the final design scheme.
- 9.10.2.2 The CEA has considered the Morgan Generation Assets and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, alongside the Mona Offshore Wind Project and the Morecambe Offshore Windfarm Generation Assets. The CEA has been undertaken on the basis of the information included within the Preliminary Environmental Information Report (PEIR) for the Morgan and Morecambe Offshore Wind Farms Transmission Assets (Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Limited, 2023), the application for the Mona Offshore Wind Project (Mona Offshore Wind Ltd, 2024) and the PEIR for the Morecambe Offshore Windfarm Generation Assets (Morecambe Offshore Windfarm Ltd., 2023). Updated boundaries for the Mona Offshore Wind Project and the Morecambe Offshore Windfarm Generation Assets were published in September 2023 in project newsletters. The updated project boundary for the Mona Offshore Wind Project has been considered in the CEA. The updated boundaries for the Morecambe Offshore Windfarm Generation Assets have not been included within the CEA as the project has not published updated assessments with these boundaries.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 9.16: MDS considered for the assessment of potential cumulative effects on other sea users.

^a C=construction, O=operations and maintenance, D=decommissioning

Potential Cumulative Effect	Phase			Maximum Design Scenarios	Justification
	C	O	D		
Displacement of recreational activities	✓	✓	✓	<p>Scenario 1 Maximum design scenario as described for the Morgan Generation Assets (Table 9.16) assessed cumulatively with the Morgan and Morecambe Offshore Wind Farms Transmission Assets.</p> <p>Scenario 2 Maximum design scenario as described for the Morgan Generation Assets (Table 9.16) assessed cumulatively with the Morgan and Morecambe Offshore Wind Farms Transmission Assets and the Morecambe Offshore Windfarm Generation Assets.</p> <p>Scenario 3 Maximum design scenario as described for the Morgan Generation Assets (Table 9.16) assessed cumulatively with the Morgan and Morecambe Offshore Wind Farms Transmission Assets and the following other projects/plans:</p> <p><u>Tier 1</u></p> <ul style="list-style-type: none"> • Awel y Môr • Mona Offshore Wind Project <p><u>Tier 2</u></p> <ul style="list-style-type: none"> • Morecambe Offshore Windfarm Generation Assets • Mooir Vannin offshore wind farm • Eni Hynet – Carbon Capture Project. <p><u>Tier 3</u></p> <ul style="list-style-type: none"> • Morecambe Net Zero Cluster • Mares Connect. 	<p>Outcome of the CEA will be greatest when the activities of other projects/plans occur within the same recreational area creating the greatest area that will be restricted at any one time for any single receptor.</p> <p>Activities associated with existing operational offshore wind farms are considered to be part of the baseline and are therefore not assessed. Oil and gas activities within existing licenced areas (with the exception of decommissioning activities) are considered to be part of the baseline and are therefore not assessed.</p> <p>Operational activities associated with cables and pipelines (e.g. cable repair activities) are not assessed on the basis that such activities are likely to be of limited spatial extent, infrequent, temporary and short term.</p>
Reduction or restriction of other offshore energy activities	✓	✓	✓	<p>Scenario 1 Maximum design scenario as described for the Morgan Generation Assets (Table 9.16) assessed cumulatively with the Morgan and Morecambe Offshore Wind Farms Transmission Assets.</p> <p>Scenario 2</p>	<p>Outcome of the CEA will be greatest when the activities of adjacent projects/plans occur concurrently with those at the Morgan Generation Assets leading to the largest restricted areas.</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Potential Cumulative Effect	Phase			Maximum Design Scenarios	Justification
	C	O	D		
				<p>Maximum design scenario as described for the Morgan Generation Assets (Table 9.16) assessed cumulatively with the Morgan and Morecambe Offshore Wind Farms Transmission Assets and the Morecambe Offshore Windfarm Generation Assets.</p> <p>Scenario 3</p> <p>Maximum design scenario as described for the Morgan Generation Assets (Table 9.16) assessed cumulatively with the Morgan and Morecambe Offshore Wind Farms Transmission Assets and the following other projects/plans:</p> <p><u>Tier 1</u></p> <ul style="list-style-type: none"> • Mona Offshore Wind Project. <p><u>Tier 2</u></p> <ul style="list-style-type: none"> • Morecambe Offshore Windfarm Generation Assets • Mooir Vannin offshore wind farm. <p><u>Tier 3</u></p> <ul style="list-style-type: none"> • No Tier 3 projects/plans screened into the CEA for this potential impact. 	Operational activities associated with cables and pipelines (e.g. cable repair activities) are not assessed on the basis that such activities are likely to be of limited spatial extent, infrequent, temporary and short term.
Interference with the performance of REWS located on oil and gas platforms	x	✓	x	<p>Scenario 1</p> <p>Maximum design scenario as described for the Morgan Generation Assets (Table 9.16) assessed cumulatively with the Morgan and Morecambe Offshore Wind Farms Transmission Assets.</p> <p>Scenario 2</p> <p>Maximum design scenario as described for the Morgan Generation Assets (Table 9.16) assessed cumulatively with the Morgan and Morecambe Offshore Wind Farms Transmission Assets and the Morecambe Offshore Windfarm Generation Assets.</p> <p>Scenario 3</p> <p>Maximum design scenario as described for the Morgan Generation Assets (Table 9.16) assessed cumulatively with the Morgan and Morecambe Offshore Wind Farms Transmission Assets and the following other projects/plans:</p> <p><u>Tier 1</u></p> <ul style="list-style-type: none"> • Awel y Môr 	<p>Outcome of the CEA will be greatest when considered alongside other projects/plans that create the greatest potential interference to radar affected by the Morgan Generation Assets.</p> <p>Radar modelling was carried out on the cumulative effect of the Morgan Generation Assets and the Mona Offshore Wind Project. The cumulative impact of Awel y Môr and the Morecambe Offshore Windfarm Generation Assets could not be modelled as the required model inputs (wind turbine size parameters and wind turbine layouts) are not in the public domain. A qualitative assessment</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Potential Cumulative Effect	Phase			Maximum Design Scenarios	Justification
	C	O	D		
				<ul style="list-style-type: none"> Mona Offshore Wind Project. <u>Tier 2</u> <ul style="list-style-type: none"> Morecambe Offshore Windfarm Generation Assets. <u>Tier 3</u> <ul style="list-style-type: none"> No Tier 3 projects/plans screened into the CEA for this potential impact. 	has been made for these wind farms.
Potential impact of rerouted traffic on REWS alarm rates	x	✓	x	<p>Scenario 1</p> <p>Maximum design scenario as described for the Morgan Generation Assets (Table 9.16) assessed cumulatively with the Morgan and Morecambe Offshore Wind Farms Transmission Assets.</p> <p>Scenario 2</p> <p>Maximum design scenario as described for the Morgan Generation Assets (Table 9.16) assessed cumulatively with the Morgan and Morecambe Offshore Wind Farms Transmission Assets and the Morecambe Offshore Windfarm Generation Assets.</p> <p>Scenario 3</p> <p>Maximum design scenario as described for the Morgan Generation Assets (Table 9.16) assessed cumulatively with the Morgan and Morecambe Offshore Wind Farms Transmission Assets and the following other projects/plans:</p> <u>Tier 1</u> <ul style="list-style-type: none"> Awel y Môr Mona Offshore Wind Project. <u>Tier 2</u> <ul style="list-style-type: none"> Morecambe Offshore Windfarm Generation Assets. <u>Tier 3</u> <ul style="list-style-type: none"> No Tier 3 projects/plans screened into the CEA for this potential impact. 	Outcome of the CEA will be greatest when considered with scenarios that create the greatest potential for rerouted vessel traffic already affected by the Morgan Generation Assets.

9.11 Cumulative effects assessment

- 9.11.1.1 A description of the significance of cumulative effects upon other sea users receptors arising from each identified impact is given below.
- 9.11.1.2 The CEA for the Morgan Generation Assets is presented in a series of tables (one for each potential cumulative impact).

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

9.11.2 Displacement of recreational activities

Table 9.17: Displacement of recreational activities.

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
Construction phase			
Magnitude of impact	<p>The cumulative effects assessment for Scenario 1 considers the following:</p> <ul style="list-style-type: none"> Displacement of recreational activities due to the installation of the Morgan Generation Asset infrastructure as described in section 9.9.2. Displacement of recreational activities due to the installation of the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described in Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Limited (2023). The spatial extent of the potential impact will be relatively small in the context of the available sailing and recreational fishing area in the east Irish Sea, with the potential for localised displacement of recreational craft from the individual safety zones/advisory clearance distances associated with the construction of each project. <p>The cumulative effect is predicted to be of regional spatial extent, short to medium term duration, intermittent and low reversibility. It is predicted that the impact will affect the</p>	<p>The cumulative effects assessment for Scenario 2 considers the following:</p> <ul style="list-style-type: none"> Displacement of recreational activities due to the installation of the Morgan Generation Asset infrastructure and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1. Displacement of recreational activities due to the installation of the Morecambe Offshore Windfarm Generation Assets, as described in Morecambe Offshore Windfarm Ltd. (2023). Recreational vessels may be displaced by construction activities underway at multiple offshore wind projects, however the frequency of the potential impact is low as individual offshore cruising routes and activities are unlikely to cross multiple project areas. The spatial extent of the potential impact is therefore expected to be similar to that described for Scenario 1. <p>The cumulative effect is predicted to be of regional spatial extent, short to medium term duration, intermittent and low reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>	<p>Tier 1</p> <p>The Tier 1 cumulative effects assessment for Scenario 3 considers the following:</p> <ul style="list-style-type: none"> Displacement of recreational activities due to the installation of the Morgan Generation Asset infrastructure and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1. Displacement of recreational activities due to the installation of the Awel y Môr offshore wind project and the Mona Offshore Wind Project as described in RWE Renewables UK (2022) and Mona Offshore Wind Ltd. (2024). Recreational vessels may be displaced by construction activities underway at multiple offshore wind projects, however the frequency of the potential impact is considered to be low as individual offshore cruising routes and activities are unlikely to cross multiple project areas. The spatial extent of the potential impact is therefore expected to be similar to that described for Scenario 1. <p>The cumulative effect is predicted to be of regional spatial extent, short to medium term duration, intermittent and low reversibility. It is predicted that</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
	receptor directly. The magnitude is therefore, considered to be low .		<p>the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p> <p>Tier 2/Tier 3</p> <p>The Tier 2/Tier 3 cumulative effects assessment for Scenario 3 considers the following:</p> <ul style="list-style-type: none"> • Displacement of recreational activities due to the installation of the Morgan Generation Asset infrastructure and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1. • Displacement of recreational activities due to the installation of the Tier 1 projects in addition to the Morecambe Offshore Windfarm Generation Assets, as described in Morecambe Offshore Windfarm Ltd. (2023), Eni Hynet, Morecambe Net Zero Cluster and Mares Connect. • The Mooir Vannin offshore wind project construction phase does not overlap with the Morgan Generation Assets construction phase. • The spatial extent of the potential impact is expected to be similar to that described for Tier 1 above. <p>The cumulative effect is predicted to be of regional spatial extent, short to medium term duration, intermittent and low reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>
Sensitivity of receptor	Recreational activities in the vicinity of the projects within offshore and inshore areas of the east Irish Sea are low to moderate, as described in each of the project assessments (see section 9.9.2, RWE Renewables UK (2022), Mona Offshore Wind Ltd. (2024), Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Limited (2023) and Morecambe Offshore Windfarm Ltd. (2023)). Cumulative effects are only likely to be experienced offshore (rather than inshore) where more than one project may be encountered when sailing offshore routes.		

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
	<p>Recreational vessels are able to alter their route, dependent on the target destination. Notices to Mariners will be publicised regularly during the construction phase of each project in line with industry standard, advising of the location and nature of construction works, ensuring that recreational activities can be planned accordingly. There are other locations available for sailing and fishing in the east Irish Sea such that alternatives are available if required during the construction phase.</p> <p>The receptor is deemed to be of low vulnerability, high recoverability and low value. The sensitivity of the receptor is therefore, considered to be low.</p>		
Significance of effect	Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.	Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.	Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.

Operations and maintenance phase

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
Magnitude of impact	<p>The cumulative effects assessment for Scenario 1 considers the following:</p> <ul style="list-style-type: none"> Displacement of recreational activities due to the presence of the Morgan Generation Asset infrastructure as described in section 9.9.2. Displacement of recreational activities due to the presence of the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described in Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Limited (2023). The spatial extent of the potential impact will be relatively small in the context of the available sailing and recreational fishing area in the east Irish Sea, with the potential for localised displacement of recreational craft around installed infrastructure and any 	<p>The cumulative effects assessment for Scenario 2 considers the following:</p> <ul style="list-style-type: none"> Displacement of recreational activities due to the presence of the Morgan Generation Asset infrastructure and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1. Displacement of recreational activities due to the presence of the Morecambe Offshore Windfarm Generation Assets, as described in Morecambe Offshore Windfarm Ltd. (2023). Recreational vessels may be displaced by the presence of multiple offshore wind projects, however the frequency of the potential impact is low as individual offshore cruising routes and activities are unlikely to cross multiple project areas. The spatial extent of the potential impact is therefore expected to be similar to that described for Scenario 1. 	<p>Tier 1</p> <p>The Tier 1 cumulative effects assessment for Scenario 3 considers the following:</p> <ul style="list-style-type: none"> Displacement of recreational activities due to the presence of the Morgan Generation Asset infrastructure and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1. Displacement of recreational activities due to the presence of the Awel y Môr offshore wind project and the Mona Offshore Wind Project, as described in RWE Renewables UK (2022) and Mona Offshore Wind Ltd. (2024). Recreational vessels may be displaced by the presence of multiple offshore wind projects, however the frequency of the potential impact is considered to be low as individual offshore cruising routes and activities are unlikely to cross multiple project areas. The spatial extent of the

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
<p>safety zones/advisory clearance distances associated with maintenance activities.</p> <p>The cumulative effect is predicted to be of regional spatial extent, long term duration, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>	<p>The cumulative effect is predicted to be of regional spatial extent, long term duration, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>	<p>potential impact is therefore expected to be similar to that described for Scenario 1.</p> <p>The cumulative effect is predicted to be of regional spatial extent, long term duration, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p> <p>Tier 2/Tier 3</p> <p>The Tier 2 cumulative effects assessment for Scenario 3 considers the following:</p> <ul style="list-style-type: none"> • Displacement of recreational activities due to the presence of the Morgan Generation Asset infrastructure and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1. • Displacement of recreational activities due to the presence of the Tier 1 projects in addition to the Morecambe Offshore Windfarm Generation Assets and Mooir Vannin offshore wind project, as described in Morecambe Offshore Windfarm Ltd. (2023) and Ørsted (2023), and the installation/presence of Eni Hynet, Morecambe Net Zero Cluster and Mares Connect. • The spatial extent of the potential impact is expected to be similar to that described for Tier 1 above. <p>The cumulative effect is predicted to be of regional spatial extent, long term duration, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact</p>

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
			will affect the receptor directly. The magnitude is therefore, considered to be low .
Sensitivity of receptor	<p>Recreational activities in the vicinity of the projects within offshore and inshore areas of the east Irish Sea are low to moderate, as described in each of the project assessments (see section 9.9.2, Mona Offshore Wind Ltd. (2024), Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Limited (2023) and Morecambe Offshore Windfarm Ltd. (2023)). Cumulative effects are only likely to be experienced offshore (rather than inshore) where more than one project may be encountered when sailing offshore routes.</p> <p>Recreational vessels are able to alter their route, dependent on the target destination. Notices to Mariners will be publicised during the operations and maintenance phase of each project in line with industry standard, advising of the location and nature of any maintenance works, ensuring that recreational activities can be planned accordingly. There are other locations available for sailing and fishing in the east Irish Sea such that alternatives are available if required during the operations and maintenance phase.</p> <p>The receptor is deemed to be of low vulnerability, high recoverability and low value. The sensitivity of the receptor is therefore, considered to be low.</p>		
Significance of effect	Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.	Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.	Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.
Decommissioning phase			
Significance of effect	The cumulative effects of decommissioning activities are expected to be the same or similar to the effects from construction. The effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.	The cumulative effects of decommissioning activities are expected to be the same or similar to the effects from construction. The effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.	The cumulative effects of decommissioning activities are expected to be the same or similar to the effects from construction. The effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

9.11.3 Reduction or restriction of other offshore energy activities

Table 9.18: Reduction or restriction of other offshore energy activities.

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
Construction			
Magnitude of impact	<p>The cumulative effects assessment for Scenario 1 considers the following:</p> <ul style="list-style-type: none"> Reduction or restriction of other offshore energy activities due to the installation of the Morgan Generation Asset infrastructure as described in section 9.9.3. Reduction or restriction of other offshore energy activities due to the installation of the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described in Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Limited (2023). Other offshore energy activities may include surveys, drilling or vessel access to infrastructure. Three offered blocks overlap with both the Morgan Generation Assets local other sea users study area and the Morgan and Morecambe Offshore Wind Farms Transmission Assets (Figure 9.5), however there is still area available within these blocks for survey and drilling activities. 	<p>The cumulative effects assessment for Scenario 2 considers the following:</p> <ul style="list-style-type: none"> Reduction or restriction of other offshore energy activities due to the installation of the Morgan Generation Asset infrastructure and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1. Reduction or restriction of other offshore energy activities due to the installation of the Morecambe Offshore Windfarm Generation Assets, as described in Morecambe Offshore Windfarm Ltd. (2023). Other offshore energy activities may include surveys, drilling or vessel access to infrastructure. One offered block overlaps with the Morgan Generation Assets local other sea users study area, the Morgan and Morecambe Offshore Wind Farms Transmission Assets, and the Morecambe Offshore Windfarm Generation Assets (Figure 9.5), however there is still area available within this block for survey and drilling activities. There is no other infrastructure associated with any other offshore energy project overlapping with the Morgan Generation Assets local other sea users study area and the Morgan and Morecambe Offshore Wind Farms Transmission Assets alongside the Morecambe Offshore Windfarm Generation Assets, 	<p>Tier 1</p> <p>The Tier 1 cumulative effects assessment for Scenario 3 considers the following:</p> <ul style="list-style-type: none"> Reduction or restriction of other offshore energy activities due to the installation of the Morgan Generation Assets infrastructure and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1. Reduction or restriction of other offshore energy activities due to the installation of the Mona Offshore Wind Project, as described in Mona Offshore Wind Ltd., 2024. Other offshore energy activities may include surveys, drilling or vessel access to infrastructure. One offered block overlaps with the Morgan Generation Assets local other sea users study area, the Morgan and Morecambe Offshore Wind Farms Transmission Assets, and the Morecambe Offshore Windfarm Generation Assets, as described for Scenario 2. There is no other infrastructure associated with any other offshore energy project overlapping with the Morgan Generation

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
<ul style="list-style-type: none"> The UK/IoM interconnector cable overlaps with both the Morgan Generation Assets local other sea users study area and the Morgan and Morecambe Offshore Wind Farms Transmission Assets. There is no other infrastructure associated with any other offshore energy project overlapping with both the Morgan Generation Assets local other sea users study area and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, such that vessel access is not anticipated to be restricted to any existing offshore energy asset. <p>The cumulative effect is predicted to be of local spatial extent, short to medium term duration, intermittent and low reversibility over the construction phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>	<p>such that vessel access is not anticipated to be restricted to any existing offshore energy asset.</p> <p>The cumulative effect is predicted to be of regional spatial extent, short to medium term duration, intermittent and low reversibility over the construction phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>	<p>Assets local other sea users study area and Morgan and Morecambe Offshore Wind Farms Transmission Assets alongside the Tier 1 projects, such that vessel access is not anticipated to be restricted to any existing offshore energy asset.</p> <p>The cumulative effect is predicted to be of regional spatial extent, short to medium term duration, intermittent and low reversibility over the construction phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p> <p>Tier 2</p> <p>The Tier 2 cumulative effects assessment for Scenario 3 considers the following:</p> <ul style="list-style-type: none"> Reduction or restriction of other offshore energy activities due to the installation of the Morgan Generation Asset infrastructure and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1. Reduction or restriction of other offshore energy activities due to the installation of the Tier 1 projects in addition to the Morecambe Offshore Windfarm Generation Assets, as described in Morecambe Offshore Windfarm Ltd. (2023). The Mooir Vannin offshore wind project construction phase does not overlap with the Morgan Generation Assets construction phase

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
			<ul style="list-style-type: none"> Other offshore energy activities may include surveys, drilling or vessel access to infrastructure. One offered block overlaps with the Morgan Generation Assets local other sea users study area, the Morgan and Morecambe Offshore Wind Farms Transmission Assets, and the Morecambe Offshore Windfarm Generation Assets, as described for Scenario 2. There is no other infrastructure associated with any other offshore energy project overlapping with the Morgan Generation Assets local other sea users study area and Morgan and Morecambe Offshore Wind Farms Transmission Assets alongside the Tier 1 and Tier 2 projects, such that vessel access is not anticipated to be restricted to any existing offshore energy asset. <p>The cumulative effect is predicted to be of regional spatial extent, short to medium term duration, intermittent and low reversibility over the construction phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>
Sensitivity of receptor	<p>There is potential for activity in blocks licenced in the future, however any assessment is complicated by a degree of uncertainty as these blocks have not yet been awarded. The UK/IoM interconnector cable overlaps with both the Morgan Generation Assets local other sea users study area and the Morgan and Morecambe Offshore Wind Farms Transmission Assets. A proximity agreement is anticipated to be negotiated and agreed with the relevant cable operator (Manx Utilities), to minimise the potential for any impact in accordance with recognised industry good practice. There is no other infrastructure associated with any other offshore energy project which overlaps with the Morgan Generation Assets local other sea users study area and the Morgan and Morecambe Offshore Wind Farms Transmission Assets alongside other projects (plus 1 km buffer), such that vessel access is not anticipated to be restricted to any existing offshore energy asset.</p>		

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
	Continued communication with other offshore energy operators as described in Table 9.13 and in line with industry standard will ensure relevant parties are kept informed of planned activities in order to minimise both spatial and temporal interactions between conflicting activities and maximise coexistence. The receptor is deemed to be of low vulnerability, moderate recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be low.		
Significance of effect	Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.	Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of minor adverse significance, which is/is not significant in EIA terms.	Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.

Operations and maintenance

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
Magnitude of impact	<p>The cumulative effects assessment for Scenario 1 considers the following:</p> <ul style="list-style-type: none"> Reduction or restriction of other offshore energy activities due to the presence of the Morgan Generation Asset infrastructure as described in section 9.9.3 and the Morgan and Morecambe Offshore Wind Farms Transmission Assets (as described for the construction phase above). Other offshore energy activities may include surveys, drilling or vessel access to infrastructure. Offshore energy assets overlapping with both the Morgan Generation Assets local other sea users study area and the Morgan and Morecambe Offshore Wind Farms 	<p>The cumulative effects assessment for Scenario 2 considers the following:</p> <ul style="list-style-type: none"> Reduction or restriction of other offshore energy activities due to the presence of the Morgan Generation Asset infrastructure and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1, and the Morecambe Offshore Windfarm Generation Assets (as described for the construction phase above). Other offshore energy activities may include surveys, drilling or vessel access to infrastructure. Offshore energy assets overlapping with the Morgan Generation Assets local other sea users study area, the Morgan and Morecambe Offshore Wind Farms Transmission Assets and the Morecambe Offshore Windfarm Generation Assets as described for the construction phase above. 	<p>Tier 1</p> <p>The Tier 1 cumulative effects assessment for Scenario 3 considers the following:</p> <ul style="list-style-type: none"> Reduction or restriction of other offshore energy activities due to the presence of the Morgan Generation Asset infrastructure and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1, and the Mona Offshore Wind Project (as described for the construction phase above). Other offshore energy activities may include surveys, drilling or vessel access to infrastructure. Offshore energy assets overlapping with the Morgan Generation Assets local other sea users study area, the Morgan and Morecambe Offshore Wind Farms

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
	<p>Transmission Assets as described for the construction phase above.</p> <p>The cumulative effect is predicted to be of local spatial extent, long term duration, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>	<p>The cumulative effect is predicted to be of regional spatial extent, long term duration, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>	<p>Transmission Assets and the Morecambe Offshore Windfarm Generation Assets as described for the construction phase above.</p> <ul style="list-style-type: none"> There is no other infrastructure associated with any other offshore energy project overlapping with the Morgan Generation Assets local other sea users study area and Morgan and Morecambe Offshore Wind Farms Transmission Assets alongside the Tier 1 projects, such that vessel access is not anticipated to be restricted to any existing offshore energy asset. <p>The cumulative effect is predicted to be of regional spatial extent, long term duration, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p> <p>Tier 2</p> <p>The Tier 2 cumulative effects assessment for Scenario 3 considers the following:</p> <ul style="list-style-type: none"> Reduction or restriction of other offshore energy activities due to the presence of the Morgan Generation Asset infrastructure and the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1, the Tier 1 projects, and the Morecambe Offshore Windfarm Generation Assets and Moir Vannin offshore wind project.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
			<ul style="list-style-type: none"> Other offshore energy activities may include surveys, drilling or vessel access to infrastructure. Offshore energy assets overlapping with the Morgan Generation Assets local other sea users study area, the Morgan and Morecambe Offshore Wind Farms Transmission Assets and the Morecambe Offshore Windfarm Generation Assets as described for the construction phase above. There is no other infrastructure associated with any other offshore energy project overlapping with the Morgan Generation Assets local other sea users study area and Morgan and Morecambe Offshore Wind Farms Transmission Assets alongside the Tier 1 and Tier 2 projects, such that vessel access is not anticipated to be restricted to any existing offshore energy asset. <p>The cumulative effect is predicted to be of regional spatial extent, long term duration, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>
Sensitivity of receptor	<p>As described above for the construction phase.</p> <p>Continued communication with other offshore energy operators as described in Table 9.13 and in line with industry standard will ensure relevant parties are kept informed of planned activities in order to minimise both spatial and temporal interactions between conflicting activities and maximise coexistence.</p> <p>The receptor is deemed to be of low vulnerability, moderate recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be low.</p>		

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
Significance of effect	Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of minor adverse significance, which is/is not significant in EIA terms.	Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of minor adverse significance, which is/is not significant in EIA terms.	Overall, the magnitude of the cumulative impact is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will, therefore, be of minor adverse significance, which is/is not significant in EIA terms.
Decommissioning			
Significance of effect	The cumulative effects of decommissioning activities are expected to be the same or similar to the effects from construction. The effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.	The cumulative effects of decommissioning activities are expected to be the same or similar to the effects from construction. The effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.	The cumulative effects of decommissioning activities are expected to be the same or similar to the effects from construction. The effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

9.11.4 Interference with the performance of REWS located on oil and gas platforms

Table 9.19: Interference with the performance of REWS located on oil and gas platforms.

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
Operations and maintenance			
Magnitude of impact	<p>The cumulative effects assessment for Scenario 1 considers the following:</p> <ul style="list-style-type: none"> Interference with the performance of REWS located on oil and gas platforms due to the operation of the Morgan Generation Asset wind turbines as described in section 9.9.4. No potential for interference with the performance of REWS due to the presence of the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as stationary objects (e.g. OSPs) are not normally detected by radar. <p>As such, there is no potential for a cumulative effect on REWS arising from Scenario 1. The potential for cumulative effects arising from Scenario 1 is not considered further.</p>	<p>The cumulative effects assessment for Scenario 2 considers the following:</p> <ul style="list-style-type: none"> Interference with the performance of REWS located on oil and gas platforms due to the operation of the Morgan Generation Asset wind turbines as described in section 9.9.4. No potential for interference with the performance of REWS due to the presence of the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1. Cumulative assessment as described in Volume 4, Annex 9.1: Radar Early Warning Systems (REWS) and Microwave Communication Links technical report of the Environmental Statement. Based on a qualitative assessment, the presence of both the Morgan Generation Assets and the Morecambe Offshore Windfarm Generation Assets in the REWS study area may add to the overall impact on the REWS, however it is expected that the Morgan Generation Assets contribution to the impact will be relatively low, and predicted to be manageable without the need for further mitigation measures. 	<p>The cumulative effects assessment for Scenario 3 considers the following:</p> <p>Tier 1/Tier 2</p> <ul style="list-style-type: none"> Interference with the performance of REWS located on oil and gas platforms due to the operation of the Morgan Generation Asset wind turbines as described in section 9.9.4. No potential for interference with the performance of REWS due to the presence of the Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1. Cumulative assessment as described in Volume 4, Annex 9.1: Radar Early Warning Systems (REWS) and Microwave Communication Links technical report of the Environmental Statement. Modelling has predicted that the presence of the Morgan Generation Assets and Mona Offshore Wind Project may result in small gaps in the detection map due to elevated thresholds and shadowing effects from the wind turbines. Based on a qualitative assessment, the presence of the Morgan Generation Assets

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
		<ul style="list-style-type: none"> As described in section 9.9.4.10, the Millom West and South Morecambe platforms are planned to be decommissioned. The potential cumulative impact may therefore occur over an approximately one to two year period for these platform operators. <p>The cumulative effect is predicted to be of regional spatial extent, long term duration/short term duration for the operators of those platforms to be decommissioned, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>	<p>alongside the Tier 1 and Tier 2 projects in the REWS study area may add to the overall impact on the REWS, however it is expected that the Morgan Generation Assets contribution to the impact will be relatively low and predicted to be manageable without the need for further mitigation measures.</p> <ul style="list-style-type: none"> As described in section 9.9.4.10, the Millom West and South Morecambe platforms are planned to be decommissioned. The potential cumulative impact may therefore occur over an approximately one to two year period for these platform operators. <p>The cumulative effect is predicted to be of regional spatial extent, long term duration/short term duration for the operators of those platforms to be decommissioned, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>
Sensitivity of receptor	There is no potential for a cumulative effect on REWS arising from Scenario 1, as described above. The potential for cumulative effects arising from Scenario 1 is not considered further.	<p>REWS are important tools for incident/disaster risk reduction and the protection and management of infrastructure for offshore oil and gas platforms. The detection performance of the REWS due to the presence of the Morgan Generation Assets alongside other offshore wind projects may be affected adversely within the wind farm regions.</p> <p>There is potential for these effects to be largely mitigated by the advanced tracking techniques within the REWS and AIS data that provides an alternative source of vessel information and location within the zones where the REWS may lose detection.</p> <p>The receptor is deemed to be of moderate vulnerability, moderate recoverability and high value. The sensitivity of the receptor is therefore, considered to be medium.</p>	

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
Significance of effect	There is no potential for a cumulative effect on REWS arising from Scenario 1, as described above. The potential for cumulative effects arising from Scenario 1 is not considered further.	Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.	Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.

9.11.5 Potential impact of rerouted traffic on REWS alarm rates

Table 9.20: Potential impact of rerouted traffic on REWS alarm rates.

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
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Operations and maintenance

Magnitude of impact	<p>The cumulative effects assessment for Scenario 1 considers the following:</p> <ul style="list-style-type: none"> Potential impact of rerouted traffic on REWS alarm rates due to the presence of the Morgan Generation Assets as described in section 9.9.5. There are no anticipated changes in commercial ship routing post-installation as a result of the Morgan and Morecambe 	<p>The cumulative effects assessment for Scenario 2 considers the following:</p> <ul style="list-style-type: none"> Potential impact of rerouted traffic on REWS alarm rates due to the presence of the Morgan Generation Assets as described for Scenario 1. A cumulative effect on REWS alarm rates is not anticipated due to the presence of the Morgan and Morecambe Offshore Wind 	<p>The cumulative effects assessment for Scenario 3 considers the following:</p> <p>Tier 1/Tier 2</p> <ul style="list-style-type: none"> Potential impact of rerouted traffic on REWS alarm rates due to the presence of the Morgan Generation Assets as described for Scenario 1. A cumulative effect on REWS alarm rates is not anticipated due to the presence of the
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MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
	<p>Offshore Wind Farms Transmission Assets. The number of surface structures and the spacing mean that there is sufficient sea room for vessels to navigate safely (Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Limited, 2023), such that a cumulative effect on REWS alarm rates is not anticipated.</p> <p>As such, the potential for cumulative effects arising from Scenario 1 is not considered further.</p>	<p>Farms Transmission Assets, as described for Scenario 1.</p> <ul style="list-style-type: none"> • Cumulative assessment as described in Volume 4, Annex 9.1: Radar Early Warning Systems (REWS) and Microwave Communication Links technical report of the Environmental Statement. • Based on a qualitative assessment, the presence of both the Morgan Generation Assets and the Morecambe Offshore Windfarm Generation Assets in the REWS study area may result in some REWS operators experiencing higher alarm rates due to the rerouted traffic whereas others will experience lower alarm rates. Any increase under standard conditions is considered to be within acceptable parameters. The number of alarms and the risk of allision can become a more significant issue during adverse weather conditions, however it is judged that operators will be able to manage any related potential increased impact on REWS through implementation of their existing adverse weather operational procedures. As such it is expected that the Morgan Generation Assets contribution to the impact will be relatively low and predicted to be manageable without the need for further mitigation measures. • As described in section 9.9.4.10, the South Morecambe platforms are planned to be decommissioned. The potential cumulative impact may therefore occur over an 	<p>Morgan and Morecambe Offshore Wind Farms Transmission Assets, as described for Scenario 1.</p> <ul style="list-style-type: none"> • Cumulative assessment as described in Volume 4, Annex 9.1: Radar Early Warning Systems (REWS) and Microwave Communication Links technical report of the Environmental Statement. • Modelling has predicted that the presence of the Morgan Generation Assets and Mona Offshore Wind Project may result in an elevated number of alarms at the following platforms: Douglas Complex, Hamilton, Calder, South Morecambe DP4, South Morecambe DP3, South Morecambe Complex, South Morecambe DP6, South Morecambe DP8. • Based on a qualitative assessment, the presence of the Morgan Generation Assets alongside the Tier 1 and Tier 2 projects in the REWS study area may result in some REWS operators (see above) experiencing higher alarm rates due to the rerouted traffic whereas others will experience lower alarm rates. Any increase under standard conditions is considered to be within acceptable parameters. The number of alarms and the risk of allision can become a more significant issue during adverse weather conditions, however it is judged that operators will be able to manage any related potential increased impact on REWS through implementation of their existing adverse

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

	Scenario 1: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Scenario 2: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Morecambe Offshore Windfarm: Generation Assets	Scenario 3: Morgan Generation Assets + Morgan and Morecambe Offshore Wind Farms: Transmission Assets + Tier 1, Tier 2, Tier 3 projects
		<p>approximately one to two year period for these platform operators.</p> <p>The cumulative effect is predicted to be of regional spatial extent, long term duration/short term duration for the operators of those platforms to be decommissioned, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>	<p>weather operational procedures. As such it is expected that the Morgan Generation Assets contribution to the impact will be relatively low and predicted to be manageable without the need for further mitigation measures.</p> <ul style="list-style-type: none"> As described in section 9.9.4.10, the South Morecambe platforms are planned to be decommissioned. The potential cumulative impact may therefore occur over an approximately one to two year period for these platform operators. <p>The cumulative effect is predicted to be of regional spatial extent, long term duration/short term duration for the operators of those platforms to be decommissioned, continuous and low reversibility over the operations and maintenance phase. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.</p>
Sensitivity of receptor	There is no potential for a cumulative effect from Scenario 1, as described above. The potential for cumulative effects arising from Scenario 1 is not considered further.	<p>The CPA and TCPA alarms form an important part of the REWS that provide asset and personnel management to oil and gas platforms in the region.</p> <p>The REWS does not work in isolation, but together with other radar and AIS data that provide information for the wider risk management system.</p> <p>The receptor is deemed to be of medium vulnerability, medium recoverability and high value. The sensitivity of the receptor is therefore, considered to be medium.</p>	
Significance of effect	There is no potential for a cumulative effect from Scenario 1, as described above. The potential for cumulative effects arising from Scenario 1 is not considered further.	Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.	Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of minor adverse significance, which is not significant in EIA terms.

9.12 Transboundary effect

- 9.12.1.1 A screening of transboundary impacts has been carried out and has identified that there was no potential for significant transboundary effects with regard to other sea users from the Morgan Generation Assets upon the interests of other states.

9.13 Inter-related effects

- 9.13.1.1 Inter-relationships are considered to be the impacts and associated effects of different aspects of the proposal on the same receptor. These are considered to be:

- Project lifetime effects: Assessment of the scope for effects that occur throughout more than one phase of the Morgan Generation Assets (construction, operations and maintenance, and decommissioning), to interact to potentially create a more significant effect on a receptor than if just assessed in isolation in these three phases (e.g. subsea noise effects from piling, operational wind turbines, vessels and decommissioning)
- Receptor-led effects: Assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor. As an example, all effects on other sea users may interact to produce a different, or greater effect on this receptor than when the effects are considered in isolation. Receptor-led effects may be short term, temporary or transient effects, or incorporate longer term effects.

- 9.13.1.2 A description of the likely interactive effects arising from the Morgan Generation Assets on other sea users is provided in Volume 2, Chapter 11: Inter-related effects of the Environmental Statement.

9.14 Summary of impacts, mitigation measures and monitoring

- 9.14.1.1 Information on other sea users within the local, regional and REWS other sea users study areas was collected through consultation and desktop reviews of available datasets.
- Table 9.21 presents a summary of the potential impacts, measures adopted as part of the Morgan Generation Assets and residual effects in respect to other sea users. Overall, it is concluded that there will be no significant effects arising from the Morgan Generation Assets during the construction, operations and maintenance, or decommissioning phases
 - Table 9.22 presents a summary of the potential cumulative impacts, mitigation measures and residual effects. Overall, it is concluded that there will be no significant cumulative effects from the Morgan Generation Assets alongside other projects/plans
 - No potential transboundary impacts have been identified in regard to effects of the Morgan Generation Assets on other sea users.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 9.21: Summary of potential environmental effects, mitigation and monitoring.

^a C=construction, O=operations and maintenance, D=decommissioning

Description of impact	Phase ^a			Measures adopted as part of the Morgan Generation Assets	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
Displacement of recreational activities	✓	✓	✓	<ul style="list-style-type: none"> Publicising information advising on the nature, timing and location of activities, including through Notices to Mariners Navigational aids and marine charting. 	C: Low O: Low D: Low	C: Low O: Low D: Low	C: Minor adverse O: Minor adverse D: Minor adverse	None	C: Minor adverse O: Minor adverse D: Minor adverse	None
Reduction or restriction of other offshore energy activities	✓	✓	✓	<ul style="list-style-type: none"> Publicising information advising on the nature, timing and location of activities, including through Notices to Mariners Navigational aids and marine charting Proximity agreements Continued communication with other offshore energy infrastructure operators to promote and maximise cooperation between parties and minimise both spatial and temporal interactions between conflicting activities. 	C: Low O: Low D: Low	C: Low O: Low D: Low	C: Minor adverse O: Minor adverse D: Minor adverse	None	C: Minor adverse O: Minor adverse D: Minor adverse	None
Interference with the performance of REWS located on oil and gas platforms	✗	✓	✗	<ul style="list-style-type: none"> None. 	O: Low	O: Medium	O: Minor adverse	None	O: Minor adverse	None
Effect of rerouted traffic on REWS alarm rates	✗	✓	✗	<ul style="list-style-type: none"> None. 	O: Low	O: Medium	O: Minor adverse	None	O: Minor adverse	None

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Table 9.22: Summary of potential cumulative environmental effects, mitigation and monitoring.

^a C=construction, O=operations and maintenance, D=decommissioning

Description of impact	Phase ^a			Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
Scenario 1										
Displacement of recreational activities	✓	✓	✓	<ul style="list-style-type: none">Publicising information advising on the nature, timing and location of activities, including through Notices to MarinersNavigational aids and marine charting.	C: Low O: Low D: Low	C: Low O: Low D: Low	C: Minor adverse O: Minor adverse D: Minor adverse	None	C: Minor adverse O: Minor adverse D: Minor adverse	None
Reduction or restriction of other offshore energy activities	✓	✓	✓	<ul style="list-style-type: none">Publicising information advising on the nature, timing and location of activities, including through Notices to MarinersNavigational aids and marine chartingCommunication with other offshore energy infrastructure operators.	C: Low O: Low D: Low	C: Low O: Low D: Low	C: Minor adverse O: Minor adverse D: Minor adverse	None	C: Minor adverse O: Minor adverse D: Minor adverse	None
Interference with the performance of REWS located on oil and gas platforms	✗	✓	✗	<ul style="list-style-type: none">None.	O: N/A	O: N/A	O: N/A	None	O: N/A	None
Effect of rerouted traffic on REWS alarm rates	✗	✓	✗	<ul style="list-style-type: none">None.	O: N/A	O: N/A	O: N/A	None	O: N/A	None

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Description of impact	Phase ^a			Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							

Scenario 2

Displacement of recreational activities	✓	✓	✓	<ul style="list-style-type: none"> Publicising information advising on the nature, timing and location of activities, including through Notices to Mariners Navigational aids and marine charting. 	C: Low O: Low D: Low	C: Low O: Low D: Low	C: Minor adverse O: Minor adverse D: Minor adverse	None	C: Minor adverse O: Minor adverse D: Minor adverse	None
Reduction or restriction of other offshore energy activities	✓	✓	✓	<ul style="list-style-type: none"> Publicising information advising on the nature, timing and location of activities, including through Notices to Mariners Navigational aids and marine charting Communication with other offshore energy infrastructure operators. 	C: Low O: Low D: Low	C: Low O: Low D: Low	C: Minor adverse O: Minor adverse D: Minor adverse	None	C: Minor adverse O: Minor adverse D: Minor adverse	None
Interference with the performance of REWS located on oil and gas platforms	×	✓	×	<ul style="list-style-type: none"> None. 	O: Low	O: Medium	O: Minor adverse	None	O: Minor adverse	None
Effect of rerouted traffic on REWS alarm rates	×	✓	×	<ul style="list-style-type: none"> None. 	O: Low	O: Medium	O: Minor adverse	None	O: Minor adverse	None

Scenario 3

Tier 1

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Description of impact	Phase ^a			Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
Displacement of recreational activities	✓	✓	✓	<ul style="list-style-type: none"> Publicising information advising on the nature, timing and location of activities, including through Notices to Mariners Navigational aids and marine charting. 	C: Low O: Low D: Low	C: Low O: Low D: Low	C: Minor adverse O: Minor adverse D: Minor adverse	None	C: Minor adverse O: Minor adverse D: Minor adverse	None
Tier 2/Tier 3										
Displacement of recreational activities	✓	✓	✓	<ul style="list-style-type: none"> Publicising information advising on the nature, timing and location of activities, including through Notices to Mariners Navigational aids and marine charting. 	C: Low O: Low D: Low	C: Low O: Low D: Low	C: Minor adverse O: Minor adverse D: Minor adverse	None	C: Minor adverse O: Minor adverse D: Minor adverse	None
Reduction or restriction of other offshore energy activities	✓	✓	✓	<ul style="list-style-type: none"> Publicising information advising on the nature, timing and location of activities, including through Notices to Mariners Navigational aids and marine charting Communication with other offshore energy infrastructure operators. 	C: Low O: Low D: Low	C: Low O: Low D: Low	C: Minor adverse O: Minor adverse D: Minor adverse	None	C: Minor adverse O: Minor adverse D: Minor adverse	None
Interference with the performance of REWS located on oil and gas platforms	×	✓	×	<ul style="list-style-type: none"> None. 	O: Low	O: Medium	O: Minor adverse	None	O: Minor adverse	None
Effect of rerouted traffic	×	✓	×	<ul style="list-style-type: none"> None. 	O: Low	O: Medium	O: Minor adverse	None	O: Minor adverse	None

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Description of impact	Phase ^a			Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
on REWS alarm rates										

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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