

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Outline offshore operations and maintenance plan

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Image of an offshore wind farm

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

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Glossary

Term	Meaning
Applicant	Morgan Offshore Wind Limited.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP).
Environmental Statement	The document presenting the results of the Environmental Impact Assessment (EIA) process for the Morgan Offshore Wind Project: Generation Assets.
Inter-array cables	Cables which connect the wind turbines to each other and to the offshore substation platforms (OSP). Inter-array cables will carry the electrical current produced by the wind turbines to the offshore substation platforms.
Interconnector cables	Cables that may be required to interconnect the OSPs in order to provide redundancy in the case of cable failure elsewhere.
Marine licence	The Marine and Coastal Access Act 2009 (MCAA) requires a marine licence to be obtained for licensable marine activities. Section 149A of the Planning Act 2008 allows an applicant for a DCO to apply for a 'deemed marine licence' as part of the DCO process.
Morgan Array Area	The area within which the wind turbines, foundations, inter-array cables, interconnector cables, scour protection, cable protection and offshore substation platforms (OSP) forming part of the Morgan Offshore Wind Project: Generation Assets will be located.
Morgan Offshore Wind Project: Generation Assets	This is the name given to the Morgan Generation Assets project as a whole (includes all infrastructure and activities associated with the project construction, operations and maintenance, and decommissioning).
Offshore Substation Platform (OSP)	A fixed structure located within the wind farm sites, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore.
The Planning Inspectorate	The agency responsible for operating the planning process for applications for development consent under the Planning Act 2008.
Wind turbines	The wind turbine generators, including the tower, nacelle and rotor.

Acronyms

Acronym	Description
CLV	Cable Lay Vessel
CTV	Crew Transfer Vessel
DCO	Development Consent Order
HNDR	Holistic Network Design Review
INNS	Invasive Non-native Species
JUV	Jack-up Vessel
MBES	Multibeam-echo sounder
MCAA	Marine and Coastal Access Act
MMO	Marine Management Organisation

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Acronym	Description
MPCP	Marine Pollution Contingency Plan
NGESO	National Grid Electricity System Operator
NSIP	Nationally Significant Infrastructure Project
NtMs	Notice to Mariners
OEMP	Offshore Environment Management Plan
OOMP	Offshore Operations and Maintenance Plan
OSP	Offshore Substation Platform
OTNR	Offshore Transmission Network Review
ROV	Remotely Operated Vehicle
SOV	Service Operation Vessel
SSS	Side Sonar Scan

Units

Unit	Description
%	Percentage
GW	Gigawatt
km	Kilometres
km ²	Square kilometres
MW	Megawatt
nm	Nautical mile

1 Outline offshore operations and maintenance plan

1.1 Introduction

1.1.1 Purpose of this plan

1.1.1.1 Morgan Offshore Wind Ltd. (the Applicant), a joint venture of bp Alternative Energy Investments Ltd (hereafter referred to as bp) and Energie Baden-Württemberg AG (hereafter referred to as EnBW) is developing the Morgan Offshore Wind Project: Generation Assets (hereafter Morgan Generation Assets). The Morgan Generation Assets is a proposed offshore wind farm located in the east Irish Sea, in English waters.

1.1.1.2 As the Morgan Generation Assets is an offshore generating station with a capacity of greater than 100 MW located wholly in English waters, it is 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 Energy Security and Net Zero. A marine licence is required before carrying out any licensable marine activity under the Marine and Coastal Access Act (MCAA). For the Morgan Generation Assets, marine licence(s) will be deemed under the DCO for licensable activities in English waters.

1.1.1.3 This outline Offshore operations and maintenance plan (OOMP) has been drafted with reference to the following definition of ‘maintain’: ‘Maintain’ includes inspect, upkeep, repair, adjust or alter the authorised development, and remove, reconstruct or replace any part of the authorised development, to the extent assessed in the Environmental Statement; and any derivative of “maintain” is to be construed accordingly.

1.1.1.4 The purpose of this outline OOMP is to provide an overview of the reasonably foreseeable offshore operations and maintenance activities that the Applicant may need to undertake, and to outline, for each activity:

- A description of the activity
- The potential environmental impact(s)
- Measures adopted as part of the Morgan Generation Assets to mitigate those potential environmental impact(s)
- How the activity is to be licensed (where relevant).

1.1.1.5 The final OOMP will be prepared post-consent following detailed design as required under the deemed marine licence(s) in the draft DCO (Document Reference C1).

1.2 Background

1.2.1 Generation assets

1.2.1.1 The Morgan Array Area (i.e. the area within which the up to 96 offshore wind turbines and up to four Offshore Substation Platforms (OSPs) will be located) is 280 km² in area and is located 22.22 km (12 nm) from the Isle of Man coastline, 37.13 km (20.1 nm) from the northwest coast of England and 58.5 km (31.6 nm) from the Welsh coastline (Anglesey) (when measured from Mean High Water Springs (MHWS)). The Morgan Array Area is located wholly within English offshore waters (beyond 12 nm from the English coast).

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1.2.1.2 The key components of the Morgan Generation Assets include:

- Offshore wind turbines
- Foundations (for wind turbines and OSPs)
- OSPs
- Scour protection
- Cable protection
- Inter-array cables linking the individual wind turbines to the OSPs
- Offshore interconnector cable(s).

1.2.1.3 The detailed design of the Morgan Generation Assets (e.g. numbers of wind turbines, layout configuration, foundation type and requirement for scour protection) will be determined post-consent. Volume 1, Chapter 3: Project description of the Environmental Statement (Document Reference F1.3) provides a description of the key components of the Morgan Generation Assets, as well as details of how it will be constructed, operated, maintained and decommissioned.

1.2.2 Transmission assets

1.2.2.1 The Morgan Offshore Wind Project was scoped into the Pathways to 2030 workstream under the Offshore Transmission Network Review (OTNR). The OTNR aims to consider, simplify and wherever possible facilitate a collaborative approach to offshore wind projects connecting to the UK National Grid. Under the OTNR, the National Grid Electricity System Operator (NGESO) is responsible for assessing options to improve the coordination of offshore wind generation connections and transmission networks and has undertaken a Holistic Network Design Review (HNDR). In July 2022, the UK Government published the 'Pathway to 2030 Holistic Network Design' documents, which set out the approach to connecting 50 GW of offshore wind to the National Grid (NGESO, 2022). A key output of the HNDR process was the conclusion that the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm should work collaboratively in connecting their two wind farms to the National Grid electricity transmission network at Penwortham in Lancashire. Although the projects are being developed by separate companies, which means it is not feasible for all aspects of both projects to be consented under a single application, the Applicant intends to deliver a coordinated grid connection with the Morecambe Offshore Windfarm, including the sharing of offshore and onshore export cable corridors and grid connection location at Penwortham.

1.2.2.2 Given the grid connection arrangements, the consenting strategy for the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm is as follows:

- A stand-alone DCO application to consent the construction, operations/maintenance and decommissioning of the generation assets of the Morgan Offshore Wind Project (this application for the Morgan Generation Assets)
- A stand-alone DCO application to consent the construction, operations/maintenance and decommissioning of the generation assets of the Morecambe Offshore Windfarm
- A separate application to consent the construction, operations/maintenance and decommissioning of the transmission assets required to enable the export of

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electricity from both the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm to the National Grid entry point at Penwortham.

- 1.2.2.3 In order to achieve this, the Applicant, together with the applicant for the Morecambe Offshore Windfarm, has requested, and been granted, a direction from the Secretary of State under section 35 of the 2008 Act to pursue a transmission assets consent (covering both projects' offshore and onshore transmission infrastructure) through the DCO process (see Volume 1, Chapter 1: Introduction of the Environmental Statement (Document Reference F1.1)).
- 1.2.2.4 The Environmental Statement therefore solely relates to the Morgan Generation Assets.

1.3 Defining the scope of licensable activities

1.3.1 Approach to defining scope of application

- 1.3.1.1 A screening exercise has been carried out to identify the offshore operations and maintenance activities to be included in the DCO application for the Morgan Generation Assets. This screening exercise involved identifying typical operations and maintenance activities carried out for offshore wind farms, informed by experience and research of publicly available marine licence applications and DCO applications, and developing a generic schedule of operations and maintenance activities that will and could occur for the Morgan Generation Assets. Following the creation of this generic schedule, it was edited and reviewed for the Morgan Generation Assets. Each identified offshore operations and maintenance activity was then assigned to one of the categories presented in
- 1.3.1.2 Table 1.1, in order to identify whether they are licensable under the MCAA.
- 1.3.1.3 A full description of the foreseeable planned offshore maintenance activities for the Morgan Generation Assets is provided in Table 1.2 and Volume 1, Chapter 3: Project description of the Environmental Statement (Document Reference F1.3). For each activity, Table 1.2 identifies whether it is licensable, and whether it has been included and assessed within the application for Development Consent.
- 1.3.1.4 Maintenance due to unexpected occurrences cannot be anticipated and therefore cannot be included within the application for Development Consent or within this plan.

Table 1.1: Categorising offshore operations and maintenance activities into licensable status.

Category	Description	Examples
Grey	An activity that does not require a marine licence (i.e. an activity that is not licensable) or is not deemed to be a licensable marine activity under the MCAA.	Routine inspections, replacement of consumables, personnel transfer, generator refuelling, moving scour protection (within the footprint of that assessed within the Environmental Statement). The potential environmental effects of these activities are covered by standard procedures (e.g. Risk Assessment Method Statements) and/or wider legislation.
Green	An activity that requires a licence and which is included in the application (i.e. an activity that is licensable under the MCAA).	Major component replacement, painting wind turbines, cable repair and replacement.

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Category	Description	Examples
Yellow	An activity that requires a marine licence or another form of approval, including activities which are listed in the application but are outside of the declared parameters. The application for such an activity would be made at the point of the activity being required, it is therefore not included in the application. This includes all activities which are currently unforeseeable.	Placement of additional cable rock protection or scour protection outside the parameters considered in this application.

1.4 Assessment of effects

- 1.4.1.1 The project design envelope for operations and maintenance activities is set out in Table 1.2. The 'Activity description' includes the methodology and frequency for each activity, over the lifetime of the Morgan Generation Assets. Operations and maintenance activities have been fully assessed within each chapter of the EIA, as relevant, with the maximum design scenarios within the relevant chapters selected from the project design envelope presented in Table 1.2. Specific chapters of the Environmental Statement are cross-referenced in Table 1.2, where relevant.

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1.5 Offshore operations and maintenance activities

Table 1.2: Morgan Generation Assets operations/maintenance activities, licensable status and whether they are covered by the application.

Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
Foundations (wind turbines and OSPs)				
Routine inspections	Inspections of foundations, including transition pieces and ancillary structures (e.g. J-tubes), above and below sea level. Inspections above the sea level will occur up to once every year and will consist of visual inspections and tests with access via service operation vessels (SOV) or crew transfer vessels (CTV). Inspections below the sea level will occur up to once within a four year period and will be conducted by subsea remote operated vehicles (ROV) from an SOV.	<p>Spill event to marine environment</p> <p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of invasive non-native species (INNS):</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 	Development of, and adherence to, an Offshore Environment Management Plan (OEMP), which includes a Marine Pollution Contingency Plan (MPCP) to minimise and manage the risk of marine pollution events	Not licensable (not deemed to be a licensable marine activity under the MCAA).
Geophysical surveys	Geophysical survey of the seabed and assets will be carried out from vessels with Side Sonar Scan (SSS), Multibeam-echo	Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing	Voluntary notification for geophysical and acoustic surveys.	Not licensable (not deemed to be a

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
	<p>sounder (MBES) and/or magnetometer equipment. Geophysical surveys will be deployed to check scour protection and cable protection coverage of subsea cables. The surveys will have no interaction with the seabed. Geophysical surveys will be conducted up to once every three years.</p>	<p>activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 		<p>licensable marine activity under the MCAA).</p>
Repairs and replacements of navigational equipment	<p>Repairs and replacements of electrical equipment such as lighting, fog horns, navigation lights and transponders. Navigational equipment maintenance will be conducted from a SOV or CTV. Transponder maintenance will be conducted from an ROV. Repairs and replacements will be carried out in line with manufacturer's requirements and as necessary to meet regulatory requirements on navigational aids.</p>	<p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) 	<p>Development and adherence to an Aids of Navigation Management Plan (ANMP) in accordance with the most recent relevant industry guidance as advised by Trinity House and MCA.</p>	<p>Repairs and replacements will be carried out as necessary to meet regulatory requirements on navigational aids. Licensable and included in this application.</p>

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
		<ul style="list-style-type: none"> Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 		
Removal of marine growth and guano	Removal of marine growth and guano from foundations, transition pieces, or access ladders. Removal of marine growth and guano will be conducted using seawater only, with ROVs, Autonomous Underwater Vehicle or divers and/or CTVs and technicians. Technicians and equipment will be deployed from a SOV, CTV or helicopter. Removal of marine growth and guano will occur up to four times per foundation per year.	<p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 	None.	Licensable and included in this application.

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
Replacement of corrosion protection anodes	Remove and replace anodes required for corrosion protection. This activity will be carried out with a SOV, CTV or diver from a dive support vessel. This activity will occur up to once every 10 years per foundation.	<p>Dropped objects to seabed and minor seabed disturbance, see:</p> <ul style="list-style-type: none"> Volume 2, Chapter 1: Physical processes of the Environmental Statement (Document Reference F2.1) Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2) Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3). <p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p>	Compliance with dropped objects procedures. All dropped objects must be reported to the Marine Management Organisation (MMO) using the Dropped Object Procedure Form. MMO guidance on scuba activities.	Licensable and included in this application.

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
		<ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 		
Painting or other coating	Application of paint or other coatings to protect the foundations from corrosion (internal/external), including surface preparation. This activity will be carried out with access via SOV or CTV. Small paint events will be conducted at each foundation up to once every three years. A full paint event will be conducted at each foundation up to once every 12 years.	<p>Spill event to marine environment. Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 	Development of, and adherence to, an OEMP, which includes a MPCP to minimise and manage the risk of marine pollution events.	Licensable and included in this application.
Replacement of access ladders and boat landings	Removal and replacement of ancillary structures (e.g. access ladders and boat landings). This activity, if required, may occur at up to one wind turbine foundation every 10 years, and one OSP foundation	<p>Dropped objects to seabed and JUV footprint, see:</p> <ul style="list-style-type: none"> Volume 2, Chapter 1: Physical processes of the Environmental 	<p>Compliance with dropped objects procedures.</p> <p>All dropped objects must be reported to the MMO using the</p>	Licensable and included in this application.

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
	<p>every 10 years, with access via a jack-up vessel (JUV) or floating crane vessel.</p> <ul style="list-style-type: none"> Footprint of seabed disturbed due to eight access ladder replacement events: 16,800 m² (see Table 2.16 within Volume 2, Chapter 2: Benthic subtidal ecology (S_D6_20)). 	<p>Statement (Document Reference F2.1)</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2) Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3). <p>Safety of navigation, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement (Document Reference F2.7). <p>Potential impact on other sea users, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 9: Other sea users of the Environmental Statement (Document Reference F2.9). <p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) 	<p>Dropped Object Procedure Form.</p> <p>Notification of construction, maintenance and decommissioning activities will be issued via Notice to Mariners (NtMs).</p>	

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
		<ul style="list-style-type: none"> Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 		
Modifications to or replacement of J-tubes	<p>Modifications to/replacement of J-tubes (e.g. during cable repair works). This activity, if required, may occur at up to one wind turbine foundation every 10 years and one OSP foundation every 10 years, with access via a JUV.</p> <ul style="list-style-type: none"> Footprint of seabed disturbed due to eight J-tube maintenance events: 16,800 m² (see Table 2.16 within Volume 2, Chapter 2: Benthic subtidal ecology (S_D6_20)). 	<p>Dropped objects to seabed and JUV footprint, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 1: Physical processes of the Environmental Statement (Document Reference F2.1) Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2) Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3). <p>Safety of navigation, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement (Document Reference F2.7). <p>Potential impact on other sea users, see specific assessments within:</p>	<p>Compliance with dropped objects procedures.</p> <p>All dropped objects must be reported to the MMO using the Dropped Object Procedure Form.</p> <p>Notification of construction, maintenance and decommissioning activities will be issued via NtMs.</p>	Licensable and included in this application.

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
		<ul style="list-style-type: none"> Volume 2, Chapter 9: Other sea users of the Environmental Statement (Document Reference F2.9). <p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 		
Wind turbines				
Routine inspections	Inspections of the interior or exterior of the wind turbines (e.g. blade inspections). This activity will be conducted up to once per year per wind turbine, with SOVs, CTVs or drones.	As per 'Foundations (wind turbines and OSPs): routine inspections' above.	None.	Not licensable (not deemed to be a licensable marine activity under the MCAA).

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
Replacement of consumables	Replacement of consumables within the wind turbines (e.g. filters, oils, lubricants). This activity will be conducted up to once per year per wind turbine, with SOVs, CTVs or drones.	<p>Dropped objects to seabed. Spill event to marine environment. Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 	<p>Compliance with dropped objects procedures. All dropped objects must be reported to the MMO using the Dropped Object Procedure Form. Development of, and adherence to, an OEMP, which includes a MPCP to minimise and manage the risk of marine pollution events.</p>	Not considered to be licensable but included in this application for completeness.
Minor repairs and replacements within the wind turbines	Minor repairs and like for like replacements within the wind turbines (e.g. motors, pumps, small electric equipment, circuit breakers, fuses). This activity will be conducted up to eight times per wind turbine per year, with access via SOVs, CTVs or helicopters.	<p>Dropped objects to seabed. Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental 	<p>Compliance with dropped objects procedures. All dropped objects must be reported to the MMO using the Dropped Object Procedure Form.</p>	Not considered to be licensable but included in this application for completeness.

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
		<p>Statement (Document Reference F2.3)</p> <ul style="list-style-type: none"> Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 		
Major component replacement	<p>Replacement of major components e.g. blades, gearboxes, transformers or generators. This activity will be undertaken from a JUV or floating crane vessel. This activity will be undertaken up to once every four years per wind turbine.</p> <ul style="list-style-type: none"> Footprint of seabed disturbed due to 840 major component replacement events: 1,764,000 m² (see Table 2.16 within Volume 2, Chapter 2: Benthic subtidal ecology (S_D6_20)). 	<p>Dropped objects to seabed, JUV footprint and minor seabed disturbance, see:</p> <ul style="list-style-type: none"> Volume 2, Chapter 1: Physical processes of the Environmental Statement (Document Reference F2.1) Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2) Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3). <p>Safety of navigation, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 7: Shipping and navigation of the Environmental 	<p>Compliance with dropped objects procedures.</p> <p>All dropped objects must be reported to the MMO using the Dropped Object Procedure Form.</p> <p>Notification of construction, maintenance and decommissioning activities will be issued via NtMs.</p>	Licensable and included in this application.

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
		<p>Statement (Document Reference F2.7).</p> <p>Potential impact on other sea users, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 9: Other sea users of the Environmental Statement. <p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 		
Painting or other coatings	Application of paint or other coatings to protect the wind turbine blades, tower and nacelle from corrosion (internal/external), including surface preparation. Technicians deployed via rope access or mobile	<p>Spill event to marine environment.</p> <p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing</p>	Development of, and adherence to, an OEMP, which includes a MPCP to minimise	Licensable and included in this application

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
	working platform from SOV or CTV. This activity will occur up to once every seven years per wind turbine.	<p>activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 	and manage the risk of marine pollution events.	
Offshore Substation Platform(s)				
Routine inspections	Inspections of the interior and exterior of the OSP(s). This activity will be carried out with access via SOV or CTV. This activity will occur up to twice per week per OSP.	As per 'Foundations (wind turbines and OSPs): routine inspections' above.	None.	Not licensable (not deemed to be a licensable marine activity under the MCAA).
Replacement of consumables	Replacement of consumables within the OSP(s) (e.g. oils, lubricants). This activity will be conducted with access via SOV or CTV. This activity will occur up to twice per week per OSP.	As per 'Wind turbines: replacement of consumables' above.	<p>Compliance with dropped objects procedures.</p> <p>All dropped objects must be reported to the MMO using the Dropped Object Procedure Form.</p>	Not considered to be licensable but included in this application for completeness.

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
			Development of, and adherence to, an OEMP, which includes a MPCP to minimise and manage the risk of marine pollution events.	
Minor repairs and replacements within the OSP(s)	Minor repairs and like for like replacements within the OSP(s) e.g. motors, pumps, small electric equipment, circuit breakers, fuses. This activity will be conducted up to once per week per OSP with access via SOV, CTV or helicopter.	As per 'Wind turbines: Minor repairs and replacements within the wind turbines' above.	Compliance with dropped objects procedures. All dropped objects must be reported to the MMO using the Dropped Object Procedure Form.	Not considered to be licensable but included in this application for completeness.
Major component replacement	Replacement of major components e.g. transformers and switchgear. This activity will be undertaken from a JUV or SOV. This activity may be undertaken up to three times per OSP over the lifetime of the Morgan Generation Assets. <ul style="list-style-type: none"> Footprint of seabed disturbed due to 12 major component replacement events: 25,200 m² (see Table 2.16 within Volume 2, Chapter 2: Benthic subtidal ecology (S_D6_20)). 	Dropped objects to seabed, JUV footprint and minor seabed disturbance, see: <ul style="list-style-type: none"> Volume 2, Chapter 1: Physical processes of the Environmental Statement (Document Reference F2.1) Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2) Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3). Safety of navigation, see specific assessments within: <ul style="list-style-type: none"> Volume 2, Chapter 7: Shipping and navigation of the Environmental 	Compliance with dropped objects procedures. All dropped objects must be reported to the MMO using the Dropped Object Procedure Form. Notification of construction, maintenance and decommissioning activities will be issued via NtMs.	Licensable and included in this application.

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
		<p>Statement (Document Reference F2.7).</p> <p>Potential impact on other sea users, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 9: Other sea users of the Environmental Statement (Document Reference F2.9). <p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 		
Painting or other coatings	Application of paint or other coatings to protect the OSP(s) from corrosion (internal/external), including surface preparation. Technicians deployed via rope	As per 'Wind turbines: painting or other coatings' above.	Development of, and adherence to, an OEMP, which includes a MPCP to minimise	Licensable and included in this application.

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
	access or mobile working platform from SOV or CTV. This activity may occur up to once every five years per OSP.		and manage the risk of marine pollution events.	
Inter-array cables				
Routine inspections	Visual inspections and performance tests of the inter-array cable and any cable protection, including at the entry into J-tubes. This activity will be conducted up to once per year with access via SOV or CTV. Inspections of cable entry into J-tubes will be conducted with an ROV.	As per 'Foundations (wind turbines and OSPs): routine inspections' above.	None	Not licensable (not deemed to be a licensable marine activity under the MCAA).
Geophysical surveys	Geophysical survey of the seabed and assets will be carried out from vessels with SSS, MBES and/or magnetometer equipment. Geophysical surveys will be deployed to check cable protection coverage of subsea cables. The surveys will have no interaction with the seabed. Geophysical surveys will be conducted up to once every three years.	As per 'Foundations (wind turbines and OSPs): geophysical surveys' above.	Voluntary notification for geophysical and acoustic surveys.	Not licensable (not deemed to be a licensable marine activity under the MCAA).
Inter-array cable repair	Repair and replacement of a section of an inter-array cable or replacement of a whole inter-array cable with Cable Lay Vessel(s) (CLVs) and ROV. Up to one repair event every three years, with replacement of up to 8 km of inter-array cable in one repair event. Undertaken via trenching with a width of up to 3 m and a depth of up to 3 m. <ul style="list-style-type: none"> Footprint of seabed disturbed during cable repair: 160,000 m² (per repair event; see Table 2.16 within Volume 2, Chapter 2: Benthic subtidal ecology (S_D6_20)) 	Seabed disturbance and temporary habitat loss, see: <ul style="list-style-type: none"> Volume 2, Chapter 1: Physical processes of the Environmental Statement (Document Reference F2.1) Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2) Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3). 	Notification of construction, maintenance and decommissioning activities will be issued via NtMs.	Licensable and included in this application.

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
	<ul style="list-style-type: none"> Sediment displaced during cable repair: 36,000 m³ (per repair event). <p>Where cable protection is required to be removed prior to repair, it shall be replaced in the same location, in accordance with the maximum design parameters set out in Volume 1, Chapter 3: Project description (S_D6_18).</p>	<p>Safety of navigation, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement (Document Reference F2.7) <p>Potential impact on other sea users, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 9: Other sea users of the Environmental Statement (Document Reference F2.10). <p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 		

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
Inter-array cable reburial	<p>Reburial of exposed inter-array cable section via pre-lay plough, plough, trenching or jetting, via CLV, ROV, SOV or CTV. Up to one reburial event of up to 20 km every five years. Undertaken via trenching with a width of up to 3 m and a depth of up to 3 m.</p> <ul style="list-style-type: none"> Footprint of seabed disturbed during cable reburial: 400,000 m² (per reburial event; see Table 2.16 within Volume 2, Chapter 2: Benthic subtidal ecology (S_D6_20)) Sediment displaced during cable reburial: 90,000 m³ (per reburial event). 	<p>Seabed disturbance, see:</p> <ul style="list-style-type: none"> Volume 2, Chapter 1: Physical processes of the Environmental Statement (Document Reference F2.1) Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2) Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3). <p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental 	<p>Notification of construction, maintenance and decommissioning activities will be issued via NtMs.</p>	<p>Licensable and included in this application.</p>

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
		Statement (Document Reference F2.2).		
Additional cable protection	Placement of additional cable protection outside the parameters considered in this Application. This is considered a highly unlikely event and consent would be sought from the MMO before commencement.	Not assessed in this application.	N/A	Licensable but not included in this application. Further consent may be needed for placement of cable protection outside the parameters of the consented envelope.

Interconnector cables

Routine inspections	Visual inspections and performance tests of the interconnector cable and any cable protection, including at the entry into J-tubes. This activity will be conducted up to once per year with access via SOV or CTV. Inspections of cable entry into J-tubes will be conducted with an ROV.	As per 'Foundations (wind turbines and OSPs): routine inspections' above.	None	Not licensable (not deemed to be a licensable marine activity under the MCAA).
Geophysical surveys	Geophysical survey of the seabed and assets will be carried out from vessels with SSS, MBES and/or magnetometer equipment. Geophysical surveys will be deployed to check cable protection coverage of subsea cables. The surveys will have no interaction with the seabed. Geophysical surveys will be conducted up to once every three years.	As per 'Foundations (wind turbines and OSPs): geophysical surveys' above.	Voluntary notification for geophysical and acoustic surveys.	Not licensable (not deemed to be a licensable marine activity under the MCAA).
Interconnector cable repair	Repair and replacement of a section of interconnector cable or replacement of a whole interconnector cable with CLV(s) and ROV, SOV, CTV or excavator. Up to three repair events every 10 years, with replacement of up to 19.63 km of interconnector cable in one event.	Seabed disturbance and temporary habitat loss, see: <ul style="list-style-type: none"> Volume 2, Chapter 1: Physical processes of the Environmental Statement (Document Reference F2.1) 	Notification of construction, maintenance and decommissioning activities will be issued via NtMs.	Licensable and included in this application.

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
	<p>Undertaken via trenching with a width of up to 3 m and a depth of up to 3 m.</p> <ul style="list-style-type: none"> Footprint of seabed disturbed during cable repair: 400,000 m² (per repair event based on 19.63 km rounded to 20 km) Sediment displaced during cable repair: 88,335 m³ (per repair event). <p>Where cable protection is required to be removed prior to repair, it shall be replaced in the same location, in accordance with the maximum design parameters set out in Volume 1, Chapter 3: Project description (S_D6_18).</p>	<ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2) Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3). <p>Safety of navigation, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 7: Shipping and navigation of the Environmental Statement (Document Reference F2.7) <p>Potential impact on other sea users, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 9: Other sea users of the Environmental Statement (Document Reference F2.9). <p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) Volume 2, Chapter 5: Offshore ornithology of the Environmental 		

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
		<p>Statement (Document Reference F2.5).</p> <p>Increased risk of introduction and spread of INNS:</p> <ul style="list-style-type: none"> Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2). 		
Interconnector cable reburial	<p>Reburial of exposed interconnector cable section via pre-lay plough, plough, trenching or jetting, via CLV, ROV, SOV, CTV or excavator. Up to one reburial event of up to 3 km every five years. Undertaken via trenching with a width of up to 3 m and a depth of up to 3 m.</p> <ul style="list-style-type: none"> Footprint of seabed disturbed during cable reburial: 60,000 m² (per reburial event) Sediment displaced during cable reburial: 13,500 m³ (per reburial event). 	<p>Seabed disturbance, see:</p> <ul style="list-style-type: none"> Volume 2, Chapter 1: Physical processes of the Environmental Statement (Document Reference F2.1) Volume 2, Chapter 2: Benthic subtidal ecology of the Environmental Statement (Document Reference F2.2) Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3). <p>Disturbance, injury (including collision risk) or displacement from vessel use and other (non-piling) sound producing activities, see specific assessments within:</p> <ul style="list-style-type: none"> Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement (Document Reference F2.3) Volume 2, Chapter 4: Marine mammals of the Environmental Statement (Document Reference F2.4) 	<p>Notification of construction, maintenance and decommissioning activities will be issued via NtMs.</p>	Licensable and included in this application

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Activity	Activity description	Potential environmental impact	Measures adopted	Licensable status
		<ul style="list-style-type: none"> Volume 2, Chapter 5: Offshore ornithology of the Environmental Statement (Document Reference F2.5). 		
Additional cable protection	Placement of additional cable protection outside the parameters considered in this Application. This is considered a highly unlikely event and consent would be sought from the MMO before commencement.	Not assessed in this application.	N/A	Licensable but not included in this application. Further consent may be needed for placement of cable protection outside the parameters of the consented envelope.