LLŶR FLOATING OFFSHORE WIND PROJECT

Llŷr Floating Offshore Wind Farm

Environmental Statement

Volume 6: Appendix 4A – Outline Construction Environmental Management Plan (OCEMP)

August 2024

Prepared by: Llŷr Floating Wind Ltd

FLOVENTIS ENERGY

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Acronyms and abbreviations

Acronym or Abbreviation	Definition	Acronym or Abbreviation	Definition
ACoW	Archaeological Clerk of Works	LAeq	Equivalent Continuous Level
ADD	Acoustic Deterrent Device	LAT	Lowest Astronomical Tide
AEZ	Archaeological Exclusion Zone	Ltd	Limited
AILs	Abnormal Invisible Loads	MARPOL	International Convention for the Prevention of Pollution from Ships
AIS	Automatic Identification System	MCA	Maritime and Coastguard Agency
ALC	Agriculture Land Classification	MCAA	Marine and Coastal Access Act
ARPA	Automatic RADAR Plotting Aid	MEPC	Marine Environment Protection Committee
BEIS	Department of Business, Energy and Industrial Strategy	MGN	Marinee Guidance Notes
BS	British Standard	MLWS	Mean Low Water Springs
BWS	Ballast Water and Sediments	MMP	Materials Management Plan
CAA	Civil Aviation Authority	MMMP	Marine Mammal Mitigation Plan
CAMS	Catchment Abstraction Management Strategies	MMO	Marine Management Organisation
CCTV	Closed-circuit television	MPCP	Marine Pollution Contingency Plan
CDM	Construction Design Management	MZ	Mitigation Zone
CEM	Consent and Environment Manager	NO_x	Nitric Oxide
CEMP	Construction Environmental Management Plan	NRW	Natural Resources Wales
CL:AIRE	Contaminated Land: Applications in Real Environments	OCEMP	Outline Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management	OCT	Open Cut Trenching
CIRIA	Construction Industry Research and Information Association	OfECC	Offshore Export Cable Corridor
CMS	Content Management System	OnECC	Onshore Export Cable Corridor
CO	Carbon Monoxide	OREI	Offshore Renewable Energy Installation
COLREGS	International Regulations for Preventing Collisions at Sea	PAM	Passive Acoustic Monitoring
CO_2	Carbon Dioxide	PCC	Pembrokeshire County Council
COPA	Control of Pollution Act	PCNPA	Pembrokeshire Coast National Park Authority
COSHH	Control of Substances Hazardous to Health	PEMP	Project Environmental Management Plan
CSIP	Cable Specification and Installation Plan	$PM_{2.5}$	Particulate matter > 2.5 micrometres

Acronym or Abbreviation	Definition	Acronym or Abbreviation	Definition
CTMP	Construction Traffic Management Plan	JNCC	Joint Nature Conservation Committee
dB	Decibels	PM_{10}	Particulate matter > 10 micrometres
DEFRA	Department for Environment, Food and Rural Affairs	PPMP	Pollution Prevention Management Plan
DoWCoP	Definition of Waste Code of Practice	PTS	Permanent Threshold Shift
DP	Dynamic Positioning	SEPA	Scottish Environment Protection Agency
EA	Environment Agency	SO_x	Sulfur Oxide
ECoW	Ecological Clerk of Works	SOLAS	International Convention for the Safety of Life at Sea
EPA	Environmental Protection Act	SOPEP	Shipboard Oil Pollution Emergency Plan
ERCoP	Emergency Response Cooperation Plan	SSSI	Site of Special Scientific Interest
ES	Environmental Statement	SuDS	Sustainable Drainage System
FLCP	Fisheries Liaison and Co-existence Plan	SWMP	Site Waste Management Plan
FLO	Fisheries Liaison Officer	TBT	Toolbox Talks
FRAP	Flood Risk Activity Permit	TCC	Temporary Construction Compound
H&SP	Health and Safety Plans	TJB	Transition Joint Bay
HDD	Horizontal Directional Drilling	UKHO	United Kingdom Hydrographic Office
IAC	Inter-array cables	VMP	Vessel Management Plan
IAQM	Institute of Air Quality Management	VTS	Vessel Traffic Services
IMO	International Maritime Organisation	WAC	Waste Acceptance Criteria
INNS	Invasive Non-Native Plant Species	WSI	Written Scheme of Investigation
INNPS	Invasive Non-Native Plant Species	WTG	Wind Turbine Generators

Glossary of project terms

Term	Definition
The Applicant	The developer of the Project, Llŷr Floating Wind Limited.
Array	All wind turbine generators, inter array cables, mooring lines, floating sub-structures and supporting subsea infrastructure within the Array Area, as defined, when considered collectively, excluding the offshore export cable(s).
Array Area	The area within which the wind turbine generators, inter array cables, mooring lines, floating sub-structures and supporting subsea infrastructure will be located

Term	Definition
Floventis Energy	A joint venture company between Cierco Ltd and SBM Offshore Ltd of which Llŷr Floating Wind Limited is a wholly owned subsidiary.
Landfall	The location where the offshore export cable(s) from the Array Area, as defined, are brought onshore and connected to the onshore export cables (as defined) via the transition joint bays (TJB).
Llŷr 1	The proposed Project, for which the Applicant is applying for Section 36 and Marine Licence consents. Including all offshore and onshore infrastructure and activities, and all project phases.
Marine Licence	A licence required under the Marine and Coastal Access Act 2009 for marine works which is administered by Natural Resources Wales (NRW) Marine Licensing Team (MLT) on behalf of the Welsh Ministers.
Offshore Development Area	The footprint of the offshore infrastructure and associated temporary works, comprised of the Array Area and the Offshore Export Cable Corridor, as defined, that forms the offshore boundary for the S36 Consent and Marine Licence application
Offshore Export Cable	The cable(s) that transmit electricity produced by the WTGs to landfall.
Offshore Export Cable Corridor (OfECC)	The area within which the offshore export cable circuit(s) will be located, from the Array Area to the Landfall.
Onshore Development Area	The footprint of the onshore infrastructure and associated temporary works, comprised of the Onshore Export Cable Corridor and the Onshore Substation, as defined, and including new access routes and visibility splays, that forms the onshore boundary for the planning application.
Onshore Export Cable(s)	The cable(s) that transmit electricity from the landfall to the onshore substation
Onshore Export Cable Corridor (OnECC)	The area within which the onshore export cable circuit(s) will be located.
Project	All aspects of the Llŷr 1 development (i.e. the onshore and offshore components).
Onshore Substation	Located within the Onshore Development Area, converts high voltage generated electricity into low voltage electricity that can be used for the grid and domestic consumption.
Section 36 consent	Consent to construct and operate an offshore generating station, under Section 36 (S.36) of the Electricity Act 1989. This includes deemed planning permission for onshore works.

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4-A OUTLINE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

4.1 Introduction

1. Llŷr Floating Wind Limited (hereafter referred to as 'Applicant') has commissioned this Outline Construction Environmental Management Plan (OCEMP) in relation to the construction of the proposed Project, a floating offshore wind development located 35 kilometres (km) off the coast of Pembrokeshire, in the Celtic Sea.
2. The Applicant is seeking a Section 36 consent and Marine Licence for the offshore components and deemed planning permission as part of the Section 36 consent for the onshore components of the proposed Project. This appendix forms part of the Environmental Statement (ES) which is submitted in support of those consent applications.
3. The structure of this OCEMP is split between the offshore and onshore elements of the proposed Project, with the onshore OCEMP detailed in **Section 4.3**, and the offshore CEMP detailed in **Section 4.4.**
4. The aim of this OCEMP is to provide a clear and consistent approach to the control of construction activities in the development area. This document does not address operational or decommissioning activities, which would be subject to separate environmental management plans and procedures.
5. Key components of the proposed Project are:

    - Permanent Offshore infrastructure:
        - Up to a maximum of 10 wind turbines,
        - Floating offshore wind platforms;
        - Anchors, and the mooring arrangement for the floating offshore wind platforms;
        - Offshore inter-array cables (IAC) with one subsea connection;
        - Up to two offshore export cables which will transfer electricity generated by the turbines to the onshore cable circuits at the landfall site at Freshwater West, including associated cable protection measures. Each offshore export cable will be up to 49 km in length; and
        - Other associated infrastructure, such as navigational buoys and cable protection (if required).
    - Permanent Onshore Infrastructure:
        - Up to two Transition joint bay (TJB) to connect the offshore cables to the onshore cable;
        - Up to two onshore export cable circuits between the landfall and the onshore substation (each up to 132 kV), and then one from the onshore substation to the grid connection (of up to 400 kV). The total length of each onshore cable circuit will be, up to 7.1 km from landfall to grid connection point.
        - Onshore substation 1.5 km from the grid connection point; and
        - Other associated infrastructure such as temporary construction compounds.
6. This version of the OCEMP, and the associated outline plans contained within, is indicative and subject to refinement and change post consent, therefore it will be updated and finalised post

consent in line with any relevant planning and/or marine licence conditions and approved by Natural Resources Wales (NRW), Pembrokeshire County Council (PCC) and the Pembrokeshire Coast National Park Authority (PCNPA).

7. The OCEMP will be finalised into a Construction Environmental Management Plan (CEMP), which will form part of the induction which is mandatory for all employees, contractors and visitors attending the site. All employees and contractors shall familiarise themselves with the content of the CEMP.

4.1.1. Purpose

8. The purpose of a CEMP is to specify the overarching principles and detailed measures to minimise as far as reasonably practicable and mitigate the effects of the installation activities associated with the proposed Project on the surrounding environment. It will also ensure that construction activities cause minimum disruption to local residents and members of the public, by helping to create a safe and secure working environment. More specifically, the CEMP will:

- Ensure that relevant mitigation measures (see **Appendix 32A: Mitigation Register**) set out in the Environmental Statement (ES) as submitted in support of the Section 36 deemed planning and Marine Licence applications are implemented during all relevant construction activities;
- Take into account relevant planning policies; and
- Ensure that relevant legislation, Government and industry standards, and construction industry codes of practice and best practice standards are complied with.

9. On confirmation of a Principal Contractor, this OCEMP will be updated to reflect specific proposed construction methods and approved by the relevant authorities. The CEMP will be a live document which will continue to evolve and is subject to refinement, amendment, and expansion as necessary.

10. Compliance with the contents of the CEMP is intended to provide a systematic approach to environmental management so that environmental risks are identified, incorporated in all decision-making, and managed appropriately.

11. The final CEMP will be developed by the Applicant in consultation with NRW, PCC and PCNPA outlining the principles to be adopted by all contractors and subcontractors as explained in this Outline CEMP.

12. The implementation and management of these principles will be further developed in the specific environmental management plans that set out the procedures and records to be adopted for key areas where mitigation measures will be required. Outline onshore environmental management plans are detailed in **Section 4.3.4** and outline offshore environmental management plans in **Section 4.4.5.**

13. Each environmental management plan will be complied with by the Principal Contractor and subcontractors (or contractors) employed by the Applicant to carry out the works for each stage of the works. The Principal Contractor will be an experienced contractor in the sector who will comply with industry best practice standards and regulations.

4.1.2. Content

14. This OCEMP sets out the minimum standards to be adopted when constructing the proposed Project and includes the following:

- Description of the proposed Project;
- Description of the main activities;
- Outline of roles and responsibilities;
- Environmental training;
- Communication; and
- Outline environmental management plans for:
  - Pollution prevention;
  - Noise;
  - Dust and air quality;
  - Waste;
  - Water quality and pollution prevention;
  - Biodiversity;
  - Construction traffic;
  - Archaeology;
  - Fishing Industry;
  - Marine mammals;
  - Invasive non-native species; and
  - Decommissioning

4.2 Proposed Project

4.2.1. Site and Surroundings

15. A detailed description of the proposed Project is provided in the Environmental Statement (ES) **Chapter 04: Description of the Proposed Project**. This information is summarised below.

16. The proposed Project will be contained within the redline boundary shown in **Chapter 04: Description of the Proposed Project, Figure 4.1** and **Figure 4.2**. The Array Area is located in the Celtic Sea, approximately 35 km southwest of the Welsh coastline. Water depths range between approximately 65 m to 75 m below Lowest Astronomical Tide (LAT) across the Array Area, decreasing along the offshore export cable corridor (OfECC) (i.e. the area where the electricity export cables will be installed) towards the coastline. The **Offshore Development Area** includes the Array Area, which has an area of 45 km^2 and the OfECC. The OfECC will be up to 49 km long. The red line boundary of the OfECC extends to up to 5 km wide immediately to the north of the Array Area, and up to 1.8 km wide within the 6 km in the nearshore area.

17. The **Onshore Development Area** of the proposed Project comprises the Onshore Export Cable Corridor (OnECC) within which the onshore export cables will be located, the substation and all associated infrastructure, and is located within the administrative boundaries of both Pembrokeshire County Council (PCC) and Pembrokeshire Coast National Park Authority

(PCNPA), in southwest Wales. The Onshore Development Area extends eastwards from Mean Low Water Springs (MLWS) at the proposed landfall at Freshwater West, for approximately 7.1 km past the onshore substation location and on to the grid connection point at Pembroke Power Station. The Onshore Development Area predominantly occupies land within the PCNPA with most of the OnECC comprising of agricultural land. The OnECC was designed to minimise interactions with numerous constraints, most notably the route of the Project Erebus and Greenlink onshore cable routes as well as the presence of protected sites such as Broomhill Site of Special Scientific Interest (SSSI), while considering feedback from local community members and landowners.

4.2.2. Programme of Works

18. **Table 4A-1** outlines the indicative construction programme for the development, providing the key construction activities and when these activities are planned to take place (and not the actual time on-site).

Table 4A-1 Indicative development programme

Activity	Indicative Date
Environmental baseline surveys complete	Q1 2024
Detailed Design Complete	Q4 2025
Fabrication	Q3 2025 – Q3 2027
Construction activities start	Q1 2027 - Q4 2028
Onshore Construction Activities: Landfall HDD works Onshore cable route installation Substation	 24 - 64weeks 38 - 72 weeks 78 weeks
Offshore Construction Activities: Pre- Installation surveys Installations in Array Area Installations in OfECC	 2 weeks 1 – 14 weeks 4 - 14 weeks
Array commissioning	Q4 2028
Operational period (30 years)	2028-2058

4.3 Onshore Development

4.3.1. Legislation, Policy and Guidance

19. Considerable Environmental legislation applies to the works to be undertaken. The expectation is that all relevant legislation, including requirements for licences, permits and/or consents shall be identified and the appointed contractor will be required to provide details on how compliance is to be achieved, as part of the construction process, through the use of a Project Consents Register.

20. The relevant applicable environmental legislation and regulations will be identified from, but not limited to the list provided below. The list of relevant legislation and its applicability to the Site and the construction works will be reviewed and updated whenever necessary by the appointed contractor.

21. The following list identifies all applicable environmental legislation and regulations:

- Hazardous Substances:

- Control of Substances Hazardous to Health (COSHH) Regulations 2002 (and amended 2003, 2004) (UK Government, 2002).

- Waste:
  - Control of Waste (Dealing with Seized Property) (England and Wales) Regulations Statutory Instrument ('SI') 2015/426 (UK Government, 2015);
  - Control of Waste (Dealing with Seized Property) (England and Wales) Regulations Statutory Instrument ('SI') 2015/426 (UK Government, 2015);
  - The Environmental Permitting (England and Wales) Regulations 2010 (amended 2011, 2012, 2013, 2014, 2015 and 2016) (UK Government, 2010);
  - Hazardous Waste (England and Wales) Regulations 2005 (amended 2009) (UK Government, 2005);
  - Hazardous Waste (England and Wales) Regulations 2005 and Hazardous Waste (Miscellaneous Amendments) Regulations SI 2015/1360 (UK Government, 2005);
  - Environmental Protection (Duty of Care) Regulations 1991 (as amended, SI 1991/2839) (UK Government, 1991);
  - Environmental Protection Act (EPA) 1990: Part 2 – Waste on Land (amended 2010 and 2019) (UK Government, 1990);
  - Environmental Protection Act (EPA) 1990: Part 2a (as amended) (UK Government, 1990); and
  - Environment Act 1995 (as amended) (UK Government, 1995).
- Discharge to Water / Land:
  - Anti-Pollution Works Regulations 1999 SI 1999 / 1006 (UK Government, 1999);
  - Water Industry Act 1999 (UK Government, 1999);
  - Water Resources Act 1991 (amended 2009) (UK Government, 1991);
  - Water Act 2003 and 2014 (UK Government, 2003);
  - Groundwater (England and Wales) Regulations 2009 (UK Government, 2009);
  - Contaminated Land (Wales) (Amendment) Regulations 2006 (UK Government, 2006);
  - Building Regulations 2010 SI 2010 / 2214) (UK Government, 2010); and
  - Building (Amendment) Regulations 2016 (UK Government, 2016).
- Emissions to Air / Noise:
  - Control of Pollution Act (COPA) 1974 (Sections 60, 61) (amended 1989) (UK Government, 1974);
  - Clean Air Act 1993 (UK Government, 1993);
  - Noise and Statutory Nuisance Act 1993 (UK Government, 1993);
  - Noise Act 1996 (UK government, 1996);
  - Control of Noise at Work Regulations 2005 (UK Government, 2005);

- Construction Plant and Equipment (Harmonisation of Noise Emission Standards) Regulations 1985 (as amended 1995) (UK Government, 1995); and
- Environmental Protection Act (EPA) 1990: Part 3 – Statutory Nuisance (section 80) (UK Government, 1990).

- Transport
  - Road Vehicles (Construction and Use) Regulations 1986 (as amended 2015) (UK Government, 1986); and
  - Road Traffic (Vehicle Emissions) (Fixed Penalty) Regulations 1997 (as amended 2002 and 2003) (UK Government, 1997).
- Biosecurity
  - Water Environment (Water Framework Directive (WFD) (England and Wales)) Regulations 2017 (UK Government, 2017)
  - Flood and Water Management Act 2010 (UK Government, 2010);
  - The Groundwater (Water Framework Directive) (Wales) Directions 2016 (UK Government, 2016);
  - Control of Pollution (Oil Storage) (Wales) Regulations 2016 (UK Government, 2016);
  - Environmental Permitting (England and Wales) Regulations 2016 (UK Government, 2016);
  - Groundwater (England and Wales) Regulations 2009 (UK Government, 2009);
  - Flood Risk Regulations 2009 (UK Government, 2009);
  - Environmental Damage (Prevention and Remediation (Wales)) Regulations 2009 (UK Government, 2009); and
  - The Invasive Non-Native Species (Amendment etc.) (EU Exit) Regulations 2019 (UK Government, 2019).

4.3.2. Roles and Responsibilities

22. It is the responsibility of all staff involved with the proposed Project to ensure the correct implementation of the CEMP and the environmental mitigation contained within. The final CEMP will include details on roles and responsibilities, however, during the construction phase of the proposed Project the key environmental responsibilities are likely to be held by the following:

- **The Applicant** – responsible for ensuring compliance and adherence to the CEMP;
- **Principal Contractor** – appointed by the client. Responsible for overall control over the construction phase of the proposed Project;
- **Consent and Environment Manager (CEM) -** responsible for the overall management of environmental aspects on site, ensuring environmental legislation and best practices are complied with, and environmental mitigation and monitoring measures are identified and implemented. The CEM will oversee environmental monitoring on-site and carry out regular environmental site inspections and reporting. The CEM will liaise with relevant environmental bodies and other third parties as appropriate;

- **Health and Safety Manager** – responsible for the monitoring and controlling of health and safety compliance and related rules and regulations;
- **Ecological Clerk of Works (ECoW)** – monitor and record impacts arising from the proposed Project in accordance with this OCEMP; management of the risks to biodiversity on construction sites through provision of specialist ecological advice, guidance and technical support and providing practical solutions; engagement with other specialists, as appropriate.; and
- **Archaeological Clerk of Works (ACoW)** – coordinate archaeological site works; facilitate access and monitoring; monitor compliance to the CEMP; delivery of Toolbox talks; and monitor fieldwork at all stages.

4.3.3. Construction

23. The proposed Project will be constructed in an environmentally sensitive manner and will meet the requirements of all relevant legislation, codes of practice and standards identified in the ES.

Environmental Principles

24. The proposed Project will be built in accordance with current best practice for minimising the adverse effects of construction on the environment and the local community.
25. The environmental performance of the main construction contractors and their ability to comply with the proposed Project's environmental commitments will be a key consideration during the tender selection process.

Health and Safety Principles

26. Appropriate industry standards will be adopted and implemented for the health, safety and welfare of the construction staff on the project and arrangements will be in place for the discharge of duties under the Construction (Design and Management) Regulations 2015 (or updated as appropriate) (UK Government, 2015).
27. The Principal Contractor for the onshore works will develop Health and Safety Plans (H&SP) to address the safety of construction workers, visitors to the site and the general public for each stage of the works. The H&SPs will set out how all health and safety risks are identified and managed in accordance with legal requirements and current best practice for each stage of the onshore works.

Security

28. Site security of the onshore site (i.e. any area of works within the onshore development area) during construction will be managed by the Principal Contractor. The site security fencing will be installed at the start of the construction period and remain in place throughout the duration of the construction period. The substation will have security infrastructure including 2.4 m high galvanised steel panelised fencing, closed-circuit television (CCTV), motion sensor lighting and security alarms.
29. Any storage of materials and chemicals will be kept secure to prevent theft or vandalism. A safe system for accessing the materials storage areas will be implemented by the contractor.

Emergency Response Plan

30. An Emergency Response Plan will be developed by the Principal Contractor and will detail the procedures for responding to incidents and emergencies on site, and any reporting.

Working Hours

31. Onshore cable installation and substation construction work is expected to take place from 7 am to 7 pm, Monday to Saturday. Certain tasks may require round-the-clock work, specifically for crossings with extended disturbance lengths (e.g., road crossings); HDD crossings; HDD at the landfall; and oil filling and power transformer testing at the substation. This may also apply to areas governed by commercial agreements that specify specific working times or time windows. Where 24-hour operations are necessary, prior consent will be obtained from the local authority through Section 61 consent.

32. Should any work need to be undertaken outside of the agreed hours, the Principal Contractor will engage with PCC and PCNPA to apply for dispensation on a case-by-case basis.

Construction Site and Housekeeping

33. Good construction site housekeeping practice will be applied at all times using the following principles:

- Working areas to be kept in a clean and tidy condition;
- The site will be secured to prevent unauthorised access;
- Wheel washing facilities will be cleaned frequently;
- Open fires will be prohibited at all times;
- All necessary measures will be taken to minimise the risk of fire and the contractor will comply with the requirements of the local fire authority;
- Adequate welfare facilities will be provided for construction staff;
- Waste from the construction areas will be stored securely to prevent wind blow; and
- Waste will be removed at frequent intervals.

Welfare Facilities

34. The temporary construction compounds shall be serviced by temporary construction offices and necessary welfare facilities, including mess rooms, locker rooms, showers and toilet facilities, plus facilities for mobile construction teams in compliance with The Construction (Design and Management) Regulations 2015 (CDM 2015) (or updated as appropriate) (UK Government, 2015).

Artificial Lighting

35. As far as reasonably practicable, construction works will be limited to daylight hours only, with focused task specific lighting provided where this is not possible.

36. Temporary construction lighting, for example in the form of mobile lighting towers, will be required during core working hours within winter months. Artificial lighting would be provided to maintain sufficient security and health and safety for the proposed Project, whilst adopting mitigation principles (see **Appendix 32A: Mitigation Register**) to avoid excessive glare and minimise spill of light to nearby receptors as far as reasonably practicable.

37. It is anticipated that fixed construction lighting will be required within the compounds. Where possible, this lighting will be timed to be used only when required (except for instances of safety and security). For the substations, equipment and compounds will require lighting to the brightness of 10 lux. Fencing will require 2.2 lux and brightness of 110 lux will be used for entry points.

38. External lighting of the construction site will be designed and positioned to:

- Provide the necessary levels for safe working;
- Minimise light spillage or pollution; and
- Avoid disturbance to adjoining residents and occupiers.

39. Measures to reduce the impacts of artificial lighting include:

- Unnecessary lighting will be avoided and, following completion of the task, lighting will be switched off and/or removed where possible. All lighting will be switched off during daylight hours; and
- All lighting will be designed to avoid visual intrusion and/or light spillage. Lighting will be positioned and directed to avoid nuisance to residents and wildlife and/or causing distractions to drivers on adjacent roads. Lighting will also avoid spillage onto neighbouring habitats.

Wheel Washing

40. A wheel washing system will be implemented to minimise debris on the public road network.

Parking

41. The construction compounds will have sufficient parking spaces to ensure no vehicles are parked on the public highway.

Site Demobilisation

42. Once commissioning is complete, demobilisation and reinstatement can occur. Key expected activities include:

- Removal of haul road;
- Joint bay ground re-instatement;
- Replacement of topsoil;
- Landscaping and hedge re-planting, where appropriate; and
- Demobilisation and fence removal.

Communication

43. A Communication Strategy will be developed by the Principal Contractor or the Applicant to ensure effective and open communication is undertaken with relevant stakeholders including the relevant local planning authorities, statutory consultees, local stakeholders and the public. The Communication Strategy would be reviewed and approved by PCC and PCNPA.

44. The Communication Strategy will determine the most effective means of communicating with stakeholders. This may include, but is not limited to, information boards on the hoardings surrounding the Sites, updating local stakeholders and community via letter, leaflets and emails, as well as holding community consultation events at key points during construction.

Environmental Training

Inductions

45. All project personnel (including sub-contractors) will receive an Environmental Induction by the ECoW. No personnel, including sub-contractors, will be permitted to undertake any work on site without undertaking a site induction. The site induction will evolve to reflect changes in the CEMP as the project develops.

Toolbox Talks

46. Toolbox Talks (TBTs) on specialised topics shall supplement the Environmental Induction. TBTs shall be used to highlight issues of concern and to disseminate any new information or responsibilities. They will also be used as a means of providing basic environmental training to crews on a specialised topic, e.g. water management.

Onshore Environmental Monitoring

47. Environmental monitoring of the proposed Project and its impacts will be undertaken throughout the construction phase. **Table 4-2** presents the key parameters that may require environmental monitoring and where further details will be provided post consent and on appointment of a Principal Contractor.

48. During construction, the CEM will conduct walkover surveys to ensure all requirements of the CEMP are being met. Action from these surveys will be documented on an Environmental Action Schedule, discussed with the Contractor for programming requirements, and issued at regular intervals for actioning.

Inspections and Audits

49. A programme of regular environmental inspections and audits will be implemented to record performance and identify any corrective actions required. Where problems are identified, corrective actions will be recommended and will be implemented by the Principal Contractor within a defined time frame.

Records

50. The CEM will retain records of all environmental monitoring and implementation of the CEMP. This will allow provision of evidence that the CEMP is being implemented effectively. These records will include:

- Environmental Action Schedule;
- Licences and approvals;
- Results of routine site inspections;
- Other environmental surveys and investigations; and
- Environmental equipment test records.

51. The CEMP will be updated as necessary, with a full review. Review and approval of the CEMP will be undertaken by the Applicant. A brief report will be produced and submitted to the relevant local planning authority for information on a quarterly basis and following completion of commissioning. This will summarise the monitoring process, observed deviations from the CEMP(s) and the corrective actions taken.

Management Review

52. The CEMP will be signed off by the Principal Contractor and the Applicant on completion of the construction works, confirming that the measures within the CEMP have been implemented and complied with.

Table 4A-2 Key onshore parameters that require monitoring

Environmental Monitoring	Phase	Purpose	Frequency	Responsibility	Where further details will be provided
Daily Site Inspections	Pre-Construction and Construction	Inspection and maintenance of routine activities including the appropriate storage of materials, litter picks and general housekeeping to ensure environmental considerations are appropriately managed.	Daily	Principal Contractor	CEMP (outline version provided in **Appendix 4A: Outline CEMP**).
Waste Monitoring	Pre-Construction and Construction	Waste generated within the construction areas shall be monitored as part of its classification to ensure the appropriate treatment, handling, management, and disposal measures are applied.	Daily	Principal Contractor	Site Waste Management Plan
Water Quality Monitoring Programme	Pre-Construction and Construction	To ensure that mitigation measures are operating as planned and preventing pollution and in the case of a pollution event, facilitate quick identification and implementation of appropriate action in line with the Emergency Response Plan.	A combination of daily observations and monitoring and regular water quality sampling on a periodic basis or ad hoc depending on circumstances.	Principal Contractor	Water Quality and Pollution Management Plan
Traffic monitoring	Pre-Construction and Construction	To ensure the Construction Traffic Management Plan is being followed and to enable refinements or alterations to be made as appropriate.	To be defined by the Principal Contractor in consultation with relevant authorities.	Principal Contractor	Construction Traffic Management Plan
Noise Monitoring	Pre-Construction and Construction	To ensure that mitigation measures are appropriate and being applied, and to provide early warning of increased noise emissions to inform the cessation or modification of activities prior to impacts occurring.	Adequate and appropriate measures to be determined by the Principal Contractor in consultation with PCC and PCNPA. Likely to entail daily visual inspections and weekly recording.	Principal Contractor	Construction Noise Management Plan
Dust Monitoring	Pre-Construction and Construction	To ensure that mitigation measures are appropriate and being applied and to provide early warning of increased	Adequate and appropriate measures to be determined by the Principal Contractor in	Principal Contractor	Construction Dust and Air Quality Management Plan

Environmental Monitoring	Phase	Purpose	Frequency	Responsibility	Where further details will be provided
		dust emissions to inform the cessation or modification of activities prior to impacts occurring.	consultation with PCC and PCNPA.		
Protected Species Monitoring	Pre-Construction and Construction	Any confirmed protected species presence will be monitored by an ECoW to mitigate the likelihood and extent of disturbance.	Monitoring will be implemented as and when required based on good practice guidance relevant to the species.	Principal Contractor/ ECoW	Biodiversity Management Plan (Habitats Management Plan or specific licensing requirements)
Ornithological Monitoring	Construction	This will involve observations of birds on site during operations to ensure no signs of disturbance.	Regularly	ECoW	Biodiversity Management Plan (Breeding Birds Protection Plan)
Terrestrial invasive non-native species (INNS) Monitoring	Pre-Construction and Construction	To ensure that INNS are not being spread or introduced as a result of construction activities.	Regularly	ECoW	Biodiversity Management Plan
Archaeological Monitoring	Pre-Construction and Construction	To ensure that impacts to archaeological assets are prevented and minimised.	Daily during the preconstruction archaeological programme of works and regularly during the construction period.	ACoW	Archaeology Management Plan

4.3.4. Onshore Environmental Management Plans

53. Onshore environmental mitigation measures are provided within **Chapters 07 – 16** and summarised within **Appendix 32A: Mitigation Register.** The mitigation register covers all phases of the proposed Project as outlined in the ES. The Applicant and the Principal Contractor will adhere to these mitigation measures during construction of the proposed Project.

54. The following sections provide further information on the topic-specific Management Plans.

Outline Construction Method Statement

Introduction

55. This section addresses construction methods which are common to, or shared by, some or all of the component elements of the proposed onshore works.

56. The following component elements have been covered in other sections within this OCEMP:

- Construction Working Hours (**Paragraph 31 and 32**);
- Speed Limits (**Paragraph 208**);
- Emergency Contacts (**Paragraph 30**);
- Fuel, Chemical and Waste Handling and Storage (**Paragraph 127 to 138**);
- Ecological Management (**Paragraph 197 to 207**);
- Ground Investigation (**Paragraph 156 to 161**);
- Invasive Species (**Paragraph 207**);
- Surface Water Drainage (**Paragraph 227 and 228**);
- Flood Risk (**Paragraph 183 to 196**); and
- Restoration and Reinstatement (**Paragraph 229 to 232**).

Construction of Temporary Construction Compounds

57. Where a Temporary Construction Compound is to be constructed in association with the onshore works, the following provisions will apply.

58. The temporary construction compound base area will be constructed by removing the topsoil and setting aside for reuse, laying a geotextile membrane or similar separation membrane directly on top of the subsoil, over which layers of granular stone will be spread or alternatively use of protective matting, temporary metal road surface (i.e. trackway) or a tarmac surface could be used. Any existing services in the area will be crossed in a manner agreed with the services owner. All temporary services necessary for the activities of onshore works within a temporary construction compound will be ducted through the temporary haul road under the membrane and the location will be identified for future reference. Where an impermeable surface is used, suitable surface water drainage measures will be used.

59. Once the compound has been constructed, foundations for the site cabins will be installed. Once this work is completed, the cabins will be delivered and placed using a suitably sized all terrain crane.

60. Details regarding lighting within temporary construction compounds is provided in Paragraphs 35 to 39.

61. Material and non-static plant for the installation of the onshore cable will be stored at each compound and transported out to the active cable installation sites.

62. Each compound would be removed at the end of the project and the land reinstated to its former condition as far as reasonably practicable.

63. Temporary hard standing areas that are required for pre-commencement activities (such as undertaking clearance work or archaeological investigations), will be smaller in size, and in situ for a shorter duration. These differ in that their intended use will not be for construction works and will only be to facilitate pre-construction activities.

64. Temporary hard standing areas will utilise measures such as temporary matting, or placement of hard standing materials upon the ground surface (with a separating membrane) that would be removed after use. Temporary hard standing areas would not require foundations.

Temporary Haul Road

65. All temporary haul roads will be suitably engineered to support the axle weight from the construction vehicles. Haul roads will be periodically inspected and maintained throughout the construction phase.

66. Depending upon the ground conditions and weather conditions it may not be necessary to construct a designated haul road. Where the ground is sufficiently firm enough it may be acceptable to drive directly on the sub-soil (this will be confirmed in line with the Final Soil Management Plan).

67. The haul road will be constructed by placing successive layers of stone compacted on a layer of permeable geo-textile membrane which provides additional ground stability. In certain areas the installation of drainage measures for the haul road may be required which will be detailed at the design stage.

68. The use of the haul road will reduce road traffic movements on the local highway network between entry and exit points along the cable route.

69. Construction work across surface watercourses will require measures to ensure that the water quality and flow rates are unaffected either directly or indirectly.

70. Where the haul road crosses smaller watercourses and land drainage, measures would be discussed with the relevant stakeholders (e.g. construction access roads installed over pre-installed culverts, flumes, installation of bailey bridges).

71. Following detailed design of the scheme, the Applicant will apply to Natural Resources Wales (NRW) for a Flood Risk Activity Permits (FRAP) under the Environmental Permitting (England and Wales) Regulations 2016, for haul road watercourse crossings affecting main rivers. Works would not be undertaken until a FRAP is issued by NRW and works would be undertaken in line with the FRAP.

72. Where culverts are used, care will be taken to preserve the channel bed. If channel bed materials are excavated in order to install the culvert at an appropriate depth (to permit flow), then these will be stockpiled and stored separately to other materials and reinstated following removal of the culvert. Appropriate techniques (such as geotextiles membranes) will be used to minimise mixing of natural in situ materials with temporary imported aggregates or fill.

73. All works will be designed in accordance with recognised best practice guidance current at the time of the design, including guidance developed by NRW and other UK environment agencies (EA, SEPA) including CIRIA C689 ‘Culvert design and operation guide’ (2010).

74. During installation and removal of culverts, temporary silt mitigation measures will be put in place to avoid pollution of the watercourse with suspended solids.

75. Design, installation and removal of culverts will be in liaison with the ECoW to allow for appropriate crossings to be included, as appropriate, for mammals and aquatic species.

76. As an alternative, and only where appropriate, diversion of the land drain or watercourse may be used. It is not proposed to pipe larger or deeper watercourses. Where appropriate, another alternative which could be deployed is the use of temporary 'Bailey' bridges (steel framed modular units), or similar, supported on abutments outwith the channel.

77. At designated points along the route identified in consultation with each landowner, gated crossing points will be provided to facilitate access across the working corridor for both accesses of landowners, any directly impacted private residents, Public Rights of Way (PRoW) and livestock.

78. The haul roads and temporary watercourse crossing points will be removed at the end of the installation process and the land reinstated to its previous condition and levelled out

Landowner Liaison

79. General disruption impacts will be mitigated early in the construction planning process where possible by allowing a sufficient time period between the serving of notice for entry and the commencement of on- site activities. This will allow farmers and landowners time to adapt their working practices in anticipation of the works.

Works on Existing Drains, Sewers and Chambers

80. Where any works are carried out in connection with existing drains. adequate precautions shall be taken to ensure that no earth, rubble or foreign matter is introduced into the drains. The contractor will inspect existing drains prior to commencing work. Any existing contamination, blockage or damage shall be recorded and reported to the site manager or appropriate alternative personnel.

81. The principal contractor shall ensure that surface water is prevented from entering foul water sewers and that foul sewage is not allowed to leak or overflow into surface water drains, adjacent to sewers or elsewhere.

82. On completion of any works, the Principal Contractor shall inspect the affected drains, sewers or chambers to ensure that no contamination, blockage or damage has occurred to the drain, sewer or chamber as a consequence of the said works. Any such contamination, blockage or damage shall be made good by the principal contractor.

83. In order to connect new drainage ducts to the existing drainage system the Principal Contractor shall expose existing gully tails until they have reached a depth of about 1.5 m. A new manhole will be constructed to form the tie in.

Utilities Providers and Existing Services

84. All potentially affected utility providers will be contacted and the location of existing services will be accurately identified on the ground prior to construction or intrusive ground investigations.

85. On exposure of services the contractor shall record the position and depth of each service encountered and shall report his findings to the project manager. All measures for protection, as agreed, will be implemented before any works commence.

86. All utility crossings will be undertaken in accordance with standards agreed with the utility owner/operator, as required.

Pre-Commencement

87. General construction management measures will be adhered to in carrying out 'pre-commencement' activities (where relevant to those activities).

Onshore Export Cable Duct Installation

88. The onshore export cables will be installed in a flat formation or trefoil formation. In addition to the onshore power cables, fibre optic cables will be installed in additional, smaller ducts with each formation. Cable ducts will typically be buried to a target depth of 0.9 m to 1.1 m below ground level.

89. Sand and/or stabilised material will be used to backfill up to 75 mm above each set of cable ducts during installation. This will aid heat dissipation. This material will be delivered by lorry to the appropriate cable access points and distributed as needed along the temporary haul road during duct installation. The trench then will be covered with a minimum of 300 mm topsoil, using the native topsoil, up to the surface level, and the temporary access land is restored as close as possible to its original conditions.

90. Where open cut trenches are used for the excavation of the cable route, the following measures will be implemented:

- Deep excavations may require de-watering. Water pumped or removed from excavations would be passed through a silt-separator tank or equivalent, and discharged to ground or surface water. An environmental permit would be sought from NRW prior to undertaking such operations.
- Extended excavations would be arranged so as not to create preferential drainage pathways with the potential to cause flooding of lower land.
- Cable protection strips would be placed on top of compacted material over each set of ducts, in accordance with relevant Standards.

Onshore Export Cable Trenchless Techniques

91. Significant obstacles, such as watercourses, existing utilities or roads, may be crossed by way of HDD to avoid disturbance. With HDD, a hole is bored, and a duct installed under the crossing to emerge at a target point on the opposite side.

92. Directional drills will be installed in line with construction design drawings based on ground topography and cable design depth / spacing etc.

Onshore Export Cable Watercourse Crossings

93. The Applicant will provide the final CMS which will include the final detailed design and approach to water way crossings.

94. Following detailed design of the scheme, the Applicant will apply to NRW for a Flood Risk Activity Permits (FRAP) under the Environmental Permitting (England and Wales) Regulations 2016, for any watercourse crossing where it is proposed to install the cables across main rivers using open cut techniques (FRAP is not required for trenchless crossings of main rivers). Works would not be undertaken until a FRAP is issued by NRW and works would be undertaken in line with the FRAP.

95. The specific design and depth of each cable at every watercourse crossing will be determined in consultation and agreement with the relevant authority on a case-by-case basis in collaboration with the respective owner / operator to ensure that routine maintenance, repairs and any engineering works to adapt to climate change can be undertaken in the future.

96. Options for open cut or trenchless crossing of watercourses will be finalised following ground investigation. The Applicant acknowledges and accepts there is a risk that some watercourse crossing techniques may not be acceptable to NRW following detailed design and further appraisal. Upon further investigation it may be determined that an open-cut solution is not acceptable to NRW and a trenchless crossing option may remain the only acceptable method.

97. Clay stacks or other vertical barriers shall be constructed within trench excavations where necessary to prevent the section of preferential mitigation pathways for contaminants.

98. Where required, drainage would be installed within either side of the onshore export cables to ensure existing land drainage flow is maintained. A Final Construction Drainage Scheme will be developed prior to works commencing in agreement with the appropriate stakeholders.

99. Surface water flowing into the trenches during the construction period will be pumped via the appropriate means to remove sediment and potential contaminants, before being discharged into local ditches or drains via temporary interceptor drains. Where gradients on site are significant, where required, cable trenches will include a hydraulic brake (bentonite or natural clay seals) to reduce flow rates along trenches and hence reduce local erosion.

100. Any field drainage intercepted during the cable installation will either be reinstated following the installation of the cable or diverted to a secondary channel through agreement with the appropriate stakeholders.

101. Consideration to surface water runoff will be given when sizing stockpiles along the cable route with stockpiles kept to minimum size, where possible, with gaps to allow surface water runoff to pass through.

Onshore Export Cable Open Cut Trenching Techniques at Watercourse Crossings

102. Ducts may be installed under smaller watercourses or ditches using open-cut techniques. Such smaller watercourses or ditches may be temporarily flumed, dammed-up and over-pumped or diverted to allow installation to take place. Trench support may be required to temporarily hold open the excavated trenches either side of the ditch. Trench support would be removed prior to reinstatement, including reinstatement of the watercourse or ditch.

103. The specific design and depth of each cable at every crossing will be determined through consultation and agreement with the relevant authority on a case-by-case basis in collaboration with the respective owner / operator. In the case of ditches (that are not main rivers or ordinary watercourses), the depth of cable crossing (i.e. depth of ducts beneath the base of the ditch), would be identified with the relevant landowner and in discussion with PCC.

104. Where open-cut techniques are used, the works will be designed to minimise disturbance to the watercourse bed and the banks of the watercourse, including minimising the size of excavations and minimising the time that these are left open (to reduce degradation due to weather conditions such as heavy rain, frost, etc).

105. Where open cut techniques within the watercourse is required, mitigation measures will be agreed with PCC and installed to reinstate the existing watercourse geomorphology of the banks and / or bed.

106. Bank and bed material will be stored separately to aid reinstatement. Topsoil, subsoil and bedrock will be stored separately and replaced in sequence as part of site restoration work. Where possible spoil will be set back 5 m from watercourses to minimise potential for silt run off from the working width, and outside Flood Zones 2 or 3 where possible. Where unavoidable, heaps will be placed as far away from the watercourse as is possible and for the shortest time possible.

107. Appropriate measures will be applied to match the individual circumstances of each watercourse or ditch crossing. The techniques used will aim to provide rapid reinstatement, bank stabilisation and cable protection. In all instances, banks will be re-profiled to match the existing bank. If necessary, additional measures will be taken to ensure that the banks remain stable. The size of the bank and flow rate in the channel will determine the techniques or combination of techniques to be used, and this will be discussed with NRW and PCC.

108. All reinstatement works will be designed in accordance with recognised best practice guidance current at the time of the design, including guidance developed by NRW and other UK environment agencies (EA, SEPA).

109. There are a range of potential reinstatement techniques available. Wherever possible, the preference will be to utilise natural sustainable techniques and materials to stabilise the reinstated bank sections, such as a one or more of:

- Seeding and vegetation planting - using species appropriate to the ecological setting
- Coir matting
- Willow spiling
- Brash, root wads, etc

110. Where natural materials are considered not to provide an adequate level of protection then ‘engineering’ measures would be considered. For example:

- Reinforcement mats
- Reinforced earth (using geogrids, geotextiles and other reinforcing elements)
- Timberwork, stone revetments

111. On completion of installation and backfilling, any flume pipes or temporary dams will be carefully removed to allow the river to flow over the excavated area as slowly as possible to minimise sediment generation.

112. The reinstated watercourse will be checked subsequently to ensure that flood flows have not caused damage.

Onshore Export Cable Jointing Pits

113. The jointing equipment will be assembled on the concrete foundation base pad, constructed within the joint bay to support the cable joint. A container and small welfare facilities will be delivered to the location of the joint bay to provide a clean room for storage and some of the jointing operations.

114. During the jointing operation the joint bay is completely enclosed under a temporary jointing shelter.

115. On completion of jointing works the joint pit is backfilled in line with the normal trench backfilling method.

Onshore Export Cable Deliveries

116. The onshore cables will be delivered by road and will be held in temporary construction compounds until needed to install as and when required.

117. Specialist Low Loader lorries will deliver the loaded cable drums and remove empty drums from the compound. The drums will be off loaded using a specialist crane company. Cable drums will be transported from the compound area to each cable installation site by means of a specially designed cable trailer pulled by suitable vehicle.

Onshore Substation Platform Earthworks

118. Preliminary site works will be required before construction can commence. These may include:

- Fencing;
- Upgrade of existing or installation of new access roads;
- Utility diversions and installation of temporary site drainage where required;
- Archaeological and ecological survey and mitigation works as necessary;
- Identification of trees and other vegetation to be retained alongside appropriate protective fencing;
- Vegetation clearance; and
- Establishment of temporary construction compound, offices, welfare facilities, security, wheel wash, lighting and signage.

119. The first operation will be to strip the topsoil from the site of the substation platform.

120. Following completion of the topsoil stripping, the pre-earthworks drainage will be installed prior to cut and fill works to level the substation platform. A temporary ditch will also be installed along the relevant boundary of the substation site which will catch runoff from the substation platform during the construction period. This shall also intercept any existing land drainage crossing the substation site. At a later date a filter drain will be installed to collect surface water runoff from the substation platform. This two-stage methodology has been devised to avoid silt from exposed earthworks during construction from reducing the effectiveness of a permanent filter drain.

121. It is assumed that some of the cut material from the site can be utilised as part of the fill material requirements of the earthworks platform, subject to testing and specification requirements. This earthworks platform is created prior to the import of engineered fill materials which shall be required for the structural fill of the substation platform.

122. Excavated materials will be reused on site under the 'Definition of Waste Code of Practice' (DoWCoP) produced by Contaminated Land: Applications in Real Environments (CL:AIRE). As part of the DoWCoP a Materials Management Plan (MMP) will be produced which will detail

how the site construction materials would be managed by the appointed contractor demonstrating that the material meets the requirements of the DoWCoP.

123. The MMP will be produced prior to excavation and provide the following information:

- Details of the parties that will be involved with the implementation of the MMP;
- A description of the materials in terms of potential use and relative quantities of each category;
- The specification for use of materials against which proposed materials will be assessed, underpinned by an appropriate risk assessment related to the place where they are to be used;
- Details of where and, if appropriate, how these materials will be stored;
- Details of the intended final destination and use of these materials;
- Details of how these materials are to be tracked;
- Contingency arrangements that must be put in place prior to movement of these materials; and
- Verification Plan.

124. Before the use of excavated materials on site, a declaration will be submitted to CL:AIRE by a DoWCoP Qualified Person and a Verification Report will be provided on completion of the works demonstrating compliance with the MMP. It is typical to have some excavated material which is unsuitable for platform fill requirements. This would be determined by the pre-commencement geotechnical investigations. This excavated fill could then either be reused on site for landscaping purposes or removed from site.

125. The Applicant will set out within the final SWMP how it will appropriately manage construction waste on site in line with the waste hierarchy to ensure waste is minimised. Wherever possible, material will be re-used on site and replaced in its original location and correct depositional sequence in accordance with the outline Soil Management Plan. Material sent offsite for re-use or appropriate soil treatment/disposal will be minimized.

Onshore Substation Abnormal Indivisible Loads (AILs)

126. Due to the size and weight of the transformers' tanks, these deliveries will be classed as AILs. Such loads will require specialist delivery methods to be employed.

Outline Pollution Prevention Management Plan

Introduction

127. This section provides an overview of what will be included within the Pollution Prevention Management Plan (PPMP). Measures relating specifically to water pollution from particulates and sediments in run-off are addressed within the Outline Water Quality and Pollution Management Plan.

128. The environmental control measures defined within the PPMP apply to all personnel and all activities and operations associated with the proposed Project.

Plant and Machinery

129. All plant and machinery shall be regularly inspected and maintained to ensure they are in good working order and clean for use in a sensitive environment. Checks for leaks of fuel and

lubricants will be conducted before works with plant and machinery is allowed to commence and maintenance and servicing records will be reviewed and updated as required. This maintenance is to take place off site if possible or only in designated areas within the proposed Project site compound. Only construction equipment and vehicles free of all oil/fuel leaks will be permitted on site. Drip trays will be placed below static mechanical plant.

130. A suitable quantity of pollution control equipment, e.g. spill kits containing absorbent pads, absorbent granules, absorbent booms etc. will be kept on site in the event of an emergency. The CEM will check pollution control equipment on a weekly basis to ensure that it is adequately maintained (for example ensuring equipment is within date) within the construction areas, “Emergency Grab Packs” or spill kits to be carried in site vehicles and mobile plant and larger kits with fuel bowsers and emergency vehicles.

131. Static plant such as pumps and generators will be self-bunded or placed on drip trays wherever practicable to prevent leaking materials from contaminating the ground or surface waters. Mobile plant to be in good working order, kept clean and fitted with plant 'nappies' at all times.

132. No washing out of concrete and cement delivery vehicles will take place on-site without suitable provision for the washing out water and provision of a suitable location that is lined with a geotextile to prevent infiltration to ground. Such washing will not be allowed to flow into any drain. Wash water will be adequately contained, prevent from entering any drain, and removed from the proposed Project site for appropriate disposal at a suitably licenced waste facility.

133. The Onshore Development Area is to be secure to prevent any vandalism that could lead to a pollution incident. Further details of arrangements for dealing with spills, leaks and unplanned emissions, unplanned damage to the environment and other environmental incidents will be provided.

Storage and Handling

Fuel and Lubricants

134. All fuels shall be stored in integral bunded fuel bowsers, designed to hold at least 110% of the contents of the tank. All connections shall be situated within the bund. Fuel shall be stored at least 20 m away from any watercourse, where reasonably practicable. Plant and machinery will be refuelled in dedicated areas, with drip-trays used routinely and spill kits available. Oils and lubricants used within the construction areas will also be stored in temporary impermeable bunded areas or sealed bunded tanks designed to hold 110% of the container volumes. Construction waste/debris are to be prevented from entering any surface water drainage or water body.

Herbicides

135. Only trained sub-contractors shall apply herbicides, and only where their use is essential. Certificates of competence shall be inspected before application is allowed and a record of application made in accordance with the Control of Pesticides Regulations 1986.

Control of Substances Hazardous to Health

136. All COSHH materials will be stored and handled in accordance with the COSHH Regulations 2002 (UK Government, 2002). A secure COSHH store will be set up within the construction site

compound. COSHH assessments and Material Safety Data Sheets shall be held with the COSHH materials. A COSHH register shall be created and maintained on-site.

137. All site personnel and subcontractors will be made aware of the COSHH requirements through site inductions and specific toolbox talks. Daily site inspections will be used to review and monitor the storage and issue of materials.

Pollution Incident Response

138. As part of the PPMP, the Principal Contractor will incorporate incident response measures. These measures are likely to include:

- A suitably trained emergency environmental crew will be provided by the Principal Contractor to deal with pollution incidents in conjunction with other safety-related incidents as required; and
- An emergency contact list and spill response flowchart shall be displayed on notice boards and on fuel bowsers.

Outline Construction Noise Management Plan

Introduction

139. This section provides an overview of what will be included within the Construction Noise Management Plan, for further detail see **Chapter 15: Noise and Vibration**.

140. The noise impact levels resulting from the construction of the proposed Project must be compliant with the threshold limits defined at sensitive receptors in the Environmental Impact Assessment. The following threshold noise levels have been set using the 'ABC method' provided in BS 5228 (British Standards (BS), 2014):

- Weekday (07:00 – 19:00) and Saturday (07:00 – 13:00) daytimes – 65 dB LAeq,12h;
- Evenings (19:00 – 23:00) and Sundays (07:00 – 23:00) – 55 dB LAeq,T; and
- Night-time (23:00 – 07:00) – 45 dB LAeq,1h.

Noise Management

141. Measures to control noise as defined in Annex B of BS 5228-1 (BS, 2014) and measures to control vibration as defined in Section 8 of BS 5228-2 (BS, 2014) will be adopted where reasonably practicable.

142. The following standard mitigation measures will be implemented by the Principal Contractor to minimise noise impacts:

- Ensuring that all appropriate processes, procedures and measures are in place to minimise noise before works begin and throughout the installation programme;
- All contractors to be made familiar with current legislation and the guidance in BS 5228 (Parts 1 and 2) (BS, 2014) which should form a prerequisite of their appointment;
- Where reasonably practicable, noise and vibration are controlled at source (e.g. the selection of inherently quiet plant and low vibration equipment), review of the installation programme and methodology to consider quieter methods, consideration of the location of equipment on-site and control of working hours;
- Hydraulic techniques for breaking to be used in preference to percussive techniques, where reasonably practicable;

- Drop heights of materials will be minimised;
- Plant and vehicles will be sequentially started up rather than all together;
- Off-site pre-fabrication where reasonably practicable;
- Use of physical screening locally around significant noise producing plant and activities;
- Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturer's specifications;
- All construction plant and equipment to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use;
- Loading and unloading of vehicles, dismantling of site equipment or moving equipment or materials around the Onshore Development Area to be conducted in such a manner as to minimise noise generation, as far as reasonably practicable;
- All vehicles used on-site shall incorporate reversing warning devices as opposed to the typical tonal reversing alarms to minimise noise disturbance where reasonably practicable;
- Provision of information to the relevant local authority and local residents to advise of potential noisy works that are due to take place;
- Site access routes will be in good condition and well maintained with no potholes or other significant surface irregularities;
- Unnecessary revving of engines will be avoided, and equipment will be switched off when not in use; and
- Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise-sensitive areas where practicable. Where possible, loading and unloading will also be carried out away from such areas.
- The effect of noise and vibration on nearby sensitive receptors can be minimised through a good communication strategy. Prior to installation works being undertaken, liaison will be undertaken with occupiers of sensitive receptors within 300m of the construction works that may be adversely affected by installation noise and vibration.
- Noise complaints will be monitored and reported to the Applicant for immediate investigation and action. A display board will be installed on-site, and a website will be set up. These will include contact details for the Community Liaison Officer or alternative with whom nuisance or complaints can be lodged. A logbook of complaints will be prepared and managed by the Site Manager.

HDD Night-Time Activities

143. As requirements and locations for Horizontal Directional Drilling (HDD) activities will not be finalised until a Principal Contractor is appointed, a hierarchy of mitigation measures is proposed to ensure that significant noise effects do not occur due to potential night-time works:

- Where practicable, maximise the distance between HDD pits and sensitive receptors;
- The potential for the use of quieter equipment than listed in ES **Chapter 15: Noise and Vibration** will be investigated by the Principal Contractor; and

- Depending on the location, plant and timing of works, acoustic fencing will be installed around the HDD site boundary to screen receptors from noise emission. This mitigation could provide 10 dB of attenuation when the noise screen completely hides the sources from the receiver.

144. Where works are required outside of core daytime work periods, the Principal Contractor will submit an application to the local planning authority for prior consent to carry out noisy work under Section 61 of the Control of Pollution Act 1974 (CoPA) (UK Government, 1974) to demonstrate that noise and vibration has been minimised as far as reasonably practicable. The Section 61 application will set out the specific method of working, calculations of noise levels at nearby receptors, the actual working hours required, noise monitoring locations, details of communication measures and the mitigation measures implemented to minimise noise impacts.

Outline Construction Dust and Air Quality Management Plan

Introduction

145. This section provides an overview of what will be included within the Construction Dust and Air Quality Management Plan. The Construction Dust and Air Quality Management Plan aims to ensure that the construction of the Development is carried out such that emissions of dust and other pollutants, including odour, are limited.

146. The key activities that will generate air pollution are the use of mechanical plant and vehicles, and earthworks. Plant equipment and vehicles will generate exhaust emissions which may impact local air quality (CO_2, CO, PM_{10}, $PM_{2.5}$, NOx, SOx etc.). Dust will be generated through earthworks, such as ground-breaking, top-soil removal and storage.

147. Construction dust is not typically associated with human health effects as most dust particles are too big to be inhaled, but can cause eye, nose and throat irritation and lead to annoyance if deposited on cars, windows and other property. Under Part III, Section 79 (Statutory nuisance) of the Environmental Protection Act 1995, dust can be a statutory nuisance. However, there are no statutory standards for dust deposition which can be used to assess whether a nuisance has occurred, principally due to the normal variability of atmospheric dust, and the wide range of monitoring methods that seek to characterise the dust. Standards are therefore commonly adopted on a “custom and practice” basis (i.e., relevant to specific monitoring methods).

Dust and Air Quality Management

148. The Institute of Air Quality Management (IAQM) (IAQM, 2014) guidance standard measures for mitigating the impacts of dust during construction and demolition will be followed. The following mitigation measures will be implemented by the Principal Contractor to minimise dust and air quality impacts:

- Cutting and grinding operations, if required, will be conducted using equipment and techniques that reduce emissions and incorporate appropriate dust suppression measures;
- Damping down of dust-generating equipment and vehicles within the Site and the provision of dust suppression in all areas of the Site that are likely to generate dust;
- Use water suppression and regular cleaning during earth moving activities;

- Materials stockpiles likely to generate dust enclosed or securely sheeted, damped down or stabilised as appropriate;
- Covering materials, deliveries or loads entering and leaving the construction site;
- Mixing of grout or cement-based materials will be undertaken using appropriate techniques/ mitigation;
- Cover, seed or fence stockpiles to prevent wind whipping;
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable;
- Measures will be taken to keep roads and accesses clean; and
- Vehicle, plant and equipment maintenance records will be kept on-site and reviewed regularly.
- Monitoring and Communications
- Display the name and contact details of person(s) accountable for air quality and dust issues at the Cable Route Site. This will be the responsibility of the Principal Contractor;
- The CEM will be responsible for the following:
- Dust monitoring will be carried out on a weekly basis via visual checks to ensure minimal dust and odour impacts upon local neighbours and wildlife. These checks will be carried out and compared with previous recordings to provide a record of site conditions. These will be held as reference to any complaint;
- Carry out daily visual inspections to monitor compliance, record inspection results, and make an inspection log available when requested. Record all inspections of haul routes and any subsequent action in a log book;
- Increase the frequency of Cable Route Site inspections by the person accountable for air quality and dust issues on-site when specific activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions;
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints log available when requested;
- Record any exceptional incidents that cause dust and/or air emissions, either on or off-site, and the action taken to resolve the situation in the logbook; and
- Wind conditions shall be monitored throughout the works and backfill material shall be dampened down when dust that could affect the public, road users or surrounding habitat is likely.

Outline Site Waste Management Plan

Introduction

149. This section provides an overview of what will be included within the final Site Waste Management Plan (SWMP) that will be developed by the Principal Contractor.

150. In order to control the waste generated during site preparation and construction, the Principal Contractor will separate the main waste streams on-site, prior to transport to an approved, licensed third party waste facility for recycling or disposal.

151. A SWMP will be prepared by the Principal Contractor which will specify the waste streams to be estimated, monitored and goals set with regards to the waste produced, including any re-use and recycling of materials. The SWMP will be finalised with specific measures to be implemented prior to the start of construction.

152. Duty of Care will be ensured with respect to all waste generated on site. All waste to be removed will be undertaken by fully licensed Waste Carriers and taken to suitable licenced waste facilities and managed in line with the requirements of the Waste (England and Wales) Regulations (2011) and the Hazardous Waste Regulations (2005) (UK Government, 2005). The proposed Project will implement waste control and minimisation that is aligned to the waste management hierarchy.

Contaminated Waste/Soil Waste Disposal

153. Any contaminated waste material produced in the area of works must be disposed of appropriately by an experienced company licensed to deal with contaminated waste.

154. Where there is a requirement to dispose of surplus excavated materials off site as waste, the material will be characterised to determine firstly whether it is Hazardous or Non-Hazardous waste in accordance with the Environment Agency's Technical Guidance WM3 (Natural Resources Wales, Scottish Environment Protection Agency, Environment Agency, 2015) and then once this is established, the appropriate disposal facility will be determined through Waste Acceptance Criteria (WAC) analysis, as required.

Outline Materials Management Plan

155. The re-use of excavated materials during construction and decommissioning of the proposed Project will be governed by either a MMP developed in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011), an environmental permit or a relevant exemption. The CL:AIRE Code of Practice is a voluntary framework for excavated materials management and re-use. Following this framework results in a level of information being generated that is sufficient to demonstrate to the regulator that, on the basis investigation and risk assessment, excavated material can be re-used appropriately and is suitable for its intended use. It demonstrates that material which has been used in the development is not waste. The MMP details the procedures and measures that will be taken to classify, test, excavate, track, store, verify, reuse and where necessary selectively dispose of excavated materials that will be encountered during the construction of the proposed Project.

Ground Investigations and Construction on or Adjacent to Land Affected by Contamination

156. Ground investigations will be undertaken before construction to inform the development of the detailed design. Ground investigation works will be undertaken in accordance with UK best practice, including BS 5930:2015 + A1:2020 'Code of Practice for Ground Investigations' [1] (BS, 2020) and BS 10175:2011 + A2:2017 'Investigation of Potentially Contaminated Sites Code of Practice' (BS, 2017).

157. Earthworks including excavations and the construction of foundations, together with dewatering, that may be required, could adversely affect ground stability and, subsequently, any proposed and surrounding structures through uncontrolled settlement. There may be a requirement to provide temporary support for site excavations. Such support may include benching of excavations, shoring or the construction of retaining walls (e.g., sheet piles) or

struts to mitigate the risk of settlement or excessive spalling. It is expected that the need for such control would be established during detailed design.

158. The extent of bulk earthworks for the landfall, HDD, Onshore Substation, and for trenches for the cable installations will be determined as part of the detailed design. There will be a requirement to avoid creating pathways between potentially contaminated soils and / or groundwater within the underlying aquifers (including a principal aquifer located adjacent to the north-eastern portion of the Onshore Development Area; secondary B aquifer mapped in the southern portion of the Onshore Development Area; secondary A aquifers underlying the vast majority of the Onshore Development Area; and a secondary undifferentiated aquifer located approximately 50 m the south-westernmost spur of the Onshore Development Area. Further detail on underlying aquifers can be found in **Chapter 11: Geology and Hydrogeology**.

159. An understanding of groundwater throughout the proposed Project will be obtained from ground investigation and monitoring: including before, during and after construction. A more detailed hydrogeological assessment will be undertaken where HDD, trenchless techniques or dewatering is required in high sensitivity groundwater environments or where dewatering is required to facilitate open cut installation. Where dewatering is required, a dewatering scheme will be developed prior to construction to demonstrate that there is an effective strategy to manage water arising from the operations and, where required, sufficient proposals to treat the water prior to controlled discharge. Any such assessment will consider the effects of any drawdown or impacts on nearby abstractions or resources.

160. The ground investigation will be undertaken to provide information on the engineering properties of the ground conditions, and it will also target known and potential contaminative sources identified in **Chapter 11: Geology and Hydrogeology** of the Environmental Statement. Where risks are deemed to be unacceptable, further detailed quantitative risk assessment and if required, detailed remediation strategies will be developed accordingly, pursuant to the process set out by the planning authorities. The outcome of any ground investigation will define whether additional assessment or mitigation may be required.

161. Control measures will be implemented by the Principal Contractor for construction activities on or adjacent to the land identified as being affected by contamination. This will include the following, as appropriate:

- Additional wheel wash facilities will be provided where necessary and site traffic movements will be minimised to ensure that the contamination is not spread;
- Redundant services near potentially contaminated areas will be either removed or cut off and sealed to avoid creating migration pathways for contamination;
- Material known or suspected to be contaminated will be stockpiled and tested prior to reuse or disposal. Stockpiles will be segregated depending on the source of the material and the apparent nature of the contamination. Stockpiles will be placed on a low permeability liner, suitably protected from damage by earthmoving plant, to prevent leaching of contaminants into underlying groundwater and surface watercourses. Known or suspected contamination stockpile areas will be tested adequately prior to and after use to ensure that no cross-contamination has occurred;
- Prior to reuse of site-won materials, pre-classification testing of soils will be undertaken. Pre-classification test data will be assessed against appropriately derived criteria for

potential acceptability. The testing scope and frequency and assessment criteria are to be derived during the detailed design stage;

- Imported fill materials will be required to meet soil and leachate acceptance criteria derived in the detailed design stage;
- Piled foundations (if required) and ground improvement works located within 50 m of potential or known areas of land contamination or with potential to impact source protections zones or sensitive groundwater areas will require a site-specific environmental risk assessment and will be identified within the relevant management plans. The contractor will adhere to appropriate guidance, including the 'piling and penetrative ground improvement methods on land affected by contamination: guidance on pollution prevention' (Environment Agency, 2001).
- Within areas of known or suspected contamination, buried services will be protected from the ingress of mobile and aggressive contaminants. The ingress and migration of contamination along service ducts and drainage will be prevented. In the case of drainage runs, the infiltration of surface water into the underlying contaminated ground should be prevented and clean or lined service corridors will be installed to provide a suitable barrier to migrating ground gases adjacent to known/potential sources;
- Materials used for the scheme will be proven 'suitable for use' by adoption of acceptance criteria and will be deposited under either environmental permitting regulations or the CL:AIRE code of practice; and
- Construction activities will follow best practice guidelines to avoid contamination from leaks, spillages and inappropriate storage of materials on site. Appropriate control measures will be identified and implemented through the detailed CEMP.

Managing Unforeseen Contamination

162. In the event that unexpected soil or groundwater contamination is encountered during construction the contractor will stop works and develop a strategy to quantify the extent of the potential risk from the contamination and follow a risk-based approach in accordance with LCRM (2020) and seek approval of the strategy from the relevant local authority. Where significant risks from soil or groundwater contamination are identified, appropriate mitigation (remediation) to reduce to acceptable levels the potential short and long-term health and safety and environmental risks to sensitive receptors will be identified and implemented. Any required additional ground investigations will be undertaken in accordance with UK good practice, including BS 5930:2015 + A1:2020 'Code of Practice for Ground Investigations' (BS, 2020) and BS 10175:2011 + A2:2017 'Investigation of Potentially Contaminated Sites Code of Practice' (BS, 2017).

Outline Water Quality and Pollution Management Plan

163. This section provides an overview of what will be included within the Water Quality and Pollution Management Plan.

Management of Construction Site Runoff

- All reasonably practicable measures will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse, arising from construction activities. The measures would accord with the principles set out in industry guidelines including the Construction Industry Research and Information Association (CIRIA) report 'C532: Control of water pollution from

construction sites' (CIRIA, 2001) and CIRIA report 'C649 Control of water pollution from linear construction sites' (CIRIA, 2006). Measures may include use and maintenance of temporary lagoons, tanks, bunds and fabric silt fences or silt screens as well as consideration of the type of plant used;

- A temporary drainage system will be developed to prevent runoff contaminated with fine particulates from entering surface water drains without treatment. This will include identifying all land drains and waterbodies within Onshore Development Area and ensuring that they are adequately protected using drain covers, sand bags, earth bunds, geotextile silt fences, straw bales, or proprietary treatment (e.g. lamella clarifiers). Infiltration to ground (e.g. by spraying water onto grass fields) may also be an option;
- removal of this growth levels will be inspected;
- The relevant sections of BS 6031: Code of Practice for Earthworks (BS, 2009) will be followed for the general control of site drainage;
- Where practical, earth works will be undertaken during the drier months of the year. When undertaking earth moving works periods of very wet weather will be avoided, where practical, to minimise the risk of generating runoff contaminated with fine particulates. However, it is likely that some working during wet weather periods will be unavoidable, in which case other mitigation measures (see below) will be implemented to control fine sediment laden runoff. Water may also be required to dampen earthworks during dry weather to reduce dust impacts, and any runoff generated will need to be appropriately managed by the Contractor in accordance with the pollution prevention principles described in this chapter;
- To protect watercourses from fine sediment runoff, topsoil/subsoil will be stored a minimum of 20m from watercourses on flat lying land. Where this will not be practicable, and it is to be stockpiled for longer than a two-week period, the material will either be covered with geotextile mats, seeded to promote vegetation growth, or runoff prevented from draining to a watercourse without prior treatment;
- Appropriately sized runoff storage areas for the settlement of excessive fine particulates in runoff will be provided. Construction site runoff will be treated on site and discharged under a Water Discharge Activity Permit from NRW to controlled waters (potentially also including infiltration to ground), or removed from site for disposal at an appropriate and licensed waste facility;
- Equipment and plant are to be washed out and cleaned in designated areas within the proposed Project compound where runoff can be isolated for treatment before disposal as outlined above;
- Mud deposits will be controlled at entry and exit points to the site using wheel washing facilities and / or road sweepers operating during earthworks activities or other times as required;
- Debris and other material will be prevented from entering surface water drainage, through maintenance of a clean and tidy site, provision of clearly labelled waste receptacles, grid covers and the presence of site security fencing; and
- The SWMP will include details of pre, during and post-construction water quality monitoring. This will be based on an olfactory / visual observation and in situ monitoring using a hand held probe.

Management of Spillage Risk

164. The following mitigation measures relating to the control of spillages and leaks will be adopted during the construction works:

- Fuel will be stored and used in accordance with the Control of Substances Hazardous to Health Regulations 2002 (UK Government, 2002), and the Control of Pollution (Oil Storage) (England) Regulations 2001 (UK Government, 2001). Particular care will be taken with the delivery and use of concrete and cement as it is highly corrosive and alkaline;
- All washing down of vehicles and equipment will take place in designated areas and wash water will be prevented from passing untreated into watercourses;
- All refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses, and away from drains as far as reasonably practicable. Vehicles will not be left unattended during refuelling;
- As far as reasonably practicable, only biodegradable hydraulic oils will be used in equipment working in or over watercourses;
- All fixed plant used on the site will be self-bunded;
- Mobile plant is to be in good working order, kept clean and fitted with plant 'nappies' at all times;
- The WMP will include details for pollution prevention and will be prepared and included alongside the CEMP. Spill kits and oil absorbent material will be carried by mobile plant and located at high risk locations across the site and regularly topped up. All construction workers will receive spill response training and tool box talks;
- The site will be secure to prevent any vandalism that could lead to a pollution incident;
- Construction waste / debris are to be prevented from entering any surface water drainage or water body;
- Surface water drains on public roads trafficked by plant or within the construction compound will be identified and, where there is a risk that fine particulates or spillages could enter them, the drains will be protected (e.g. using covers or sand bags) or the road regularly cleaned by road sweeper;
- Suitable facilities for concrete wash water (e.g. geotextile wrapped sealed skip, container or earth bunded area) will be adequately contained, prevented from entering any drain, and removed from the Site for appropriate disposal at a suitably licenced waste facility; and
- Water quality monitoring of potentially impacted watercourses will be undertaken to ensure that pollution events can be detected against baseline conditions and can be dealt with effectively.

165. Any site welfare facilities will be appropriately managed, and all foul waste disposed of by an appropriate contractor to a suitably licensed facility.

Watercourse Crossings with Non-Intrusive Techniques

166. The method of non-intrusive watercourse crossings seeks to minimise the risk of pollution of nearby watercourses. The send and receive pit excavations will be located at least 10m from

the watercourse (measured from the water's/channel edge under normal flows) under which they will be directionally drilled.

167. The exact dimensions of the send and receive pits will be determined by site and ground conditions but will be kept to a safe minimum in terms of length, width and depth. The dimensions of the launch and receive pits will be no greater than 4 m by 3 m by 2 m deep. A shoring system appropriate to the ground conditions will be used to minimise water ingress into the pits. This may be timbers, sheet piling, or a modular system and will be chosen based on suitability for the site conditions.

168. The ingress of any groundwater will be carefully managed through design of the send or receive pit, shoring method, and a pumping and treatment system. Excessive ingress of water would make the pit unsafe and thus it is important that ingress is minimised and that a suitable system of managing that water is implemented.

169. Once the cable is installed beneath the watercourse the pits and any cable trenches will be backfilled to the original ground level and seeded to reduce the risk of runoff and fine sediments entering the watercourse.

170. The drill fluids used within the HDD machine will be water based, such as naturally occurring bentonite clay. The fluid component of the drilling mud will be mains water, obtained from a nearby supply and tankered to site when required. There will be some recycling of drilling muds by the drilling plant used.

171. HDD, or other trenchless techniques, will be undertaken by a specialist contractor and the water column above the drill path will be continuously monitored during drilling. It is acknowledged that drill fluid leakage into a watercourse is not a common problem. However, where any leakage of bentonite water is observed in the watercourse or there is an increased perceived risk (i.e. lack of drilling mud returns) the HDD operation would be suspended, remediation action implemented, and subsequently the methodology for that crossing re-evaluated. It may be that the excavation, or boring, in that area must take place at a deeper depth than the minimum 2 m below the bed of the watercourse. Any wastewater / drilling products which are not recycled must be stored and removed from the Site by a suitable waste management contractor and disposed of at a licenced wastewater facility.

Watercourse Crossings with Intrusive Techniques

172. Intrusive watercourse crossing techniques will only be used occasionally for more minor watercourses/drains, some of which will be dry, ephemeral channels associated with field boundaries. The water flow will be maintained by damming and, if necessary, over pumping or using temporary "flume" pipes installed in the bed of the watercourse.

173. Where HDD, or other trenchless techniques, will not be used, a pre-works hydro morphological survey will be undertaken to record channel features and provide the baseline against which reinstatement will be provided.

174. Within both methodologies (over pumping or temporary "flume" pipes) the cable is then installed in the trench and checked to ensure that a minimum cover of 2 m (rivers) and 1.7 m (ditches) exists below the clean hard bed of the watercourse and the top of the cable. The cable may be protected by thick concrete protection slabs if appropriate.

175. Where possible intrusive watercourse crossings will be carried out during drier periods of the year or during a period of dry weather where flows in the watercourse are low (this may be

baseflow or where the channels are very small and not as well connected to groundwater, they may even be dry). However, this cannot be guaranteed and so any water flow within the watercourse will need to be over-pumped/flumed through the works area to maintain a dry trench and to reduce pollution risks propagating downstream, particularly in the case of ephemeral watercourses.

176. Bank and bed sediments must be stored separately and in distinct layers as excavated on geotextile layers so they can be reinstated as found following completion of the works. The banks and the bed will need to be appropriately reprofiled with the inclusion of suitable geomorphic features with the aim to provide betterment on the original channel. Banks will be replanted with suitable riparian species. A suitable geotextile will need to be pinned in place to provide bank protection while new planting is established (or other suitable measures to prevent soil erosion and bank instability). Temporary fencing may also need to be installed where local land use will remain unchanged and fields are used for livestock (to prevent bank poaching).

177. The flume pipe and packing or bags are removed once the bed materials and bank profile is reinstated. Final bank reinstatement may require further measures to stabilise the banks and prevent erosion; Once the watercourses are reinstated, silt fences, geotextile matting or straw bales will be used initially to capture mobilised sediments until the watercourse has returned to a settled state. It will be a requirement that the watercourses are reinstated as found and water quality monitoring will be undertaken prior to, during, and following on from the construction activity. Regular observations of the watercourses will also be required post-works during vegetation re-establishment of the banks, especially following wet weather, to ensure that no adverse impacts have occurred.

Permits and Consents

178. Under the Land Drainage Act 1991 (UK Government, 1991) as amended by the Floods and Water Management Act 2010 (UK Government, 2010), Land Drainage Consents are required from the Lead Local Flood Authority (LLFA) where certain activities are proposed that may affect the flow in an Ordinary Watercourses.

179. In accordance with the Environmental Permitting Regulations (England and Wales) 2016 (UK Government, 2016) works to and close to Main Rivers may require a Flood Risk Activity Permit (FRAP) from NRW. Although, the Pembroke River Estuary and Castlemartin Corse are Main Rivers, no works are occurring in this area. Therefore, at this stage it is not considered that a FRAP will be needed.

180. Also, in accordance with the Environmental Permitting Regulations (England and Wales) 2016 (as amended), environmental permits may be needed from NRW for any discharges of uncontaminated construction site runoff, or other operation runoff to be discharged to ground or a controlled water unless there are exemptions that can be applied.

181. There may be the need for full and / or temporary water abstraction Licence(s) from NRW for water supply or where dewatering requires more than 20 m^3 per day to be removed (e.g. deep excavations). In all circumstances it may be necessary to also obtain a water activity permit(s) from NRW to discharge the water to ground or a watercourse if the water is considered to be 'unclean'.

182. A temporary or permanent water impoundment Licence under Section 25 of the Water Resources Act 1991 (UK Government, 1991) may be required if structures are proposed that require the flow in a water feature to be altered in any way.

Management of Flood Risk

Cable Route

Tidal

183. HDD compounds will be located as far away from identified tidal flood risk areas as practicable, and all mobile equipment will need to be stored outside of identified tidal flood risk areas when not required.

184. At the grid connection point (Pembroke Power Station), a site-specific Flood Emergency Plan will be developed in partnership with the Principal Contractor, which will include guidance on what actions to take during a flood event, the roles and responsibilities of those on site in the event of a flood, as well information regarding safe access and egress routes.

Fluvial

185. Intrusive methods will likely be employed to perform the majority of the watercourse crossings. Watercourses will be split into sections using barriers which span the width of the channel and water extracted and diverted downstream using over pumping. The water from the excavation will be treated to remove silt prior to being discharged downstream. Where open cut trench methods are not appropriate, an HDD method will be employed. Where this method is used, the depth of the HDDs will be such that the riverbed is undisturbed. The HDD compound areas will be located as far from flood risk areas as reasonably possible within the requirements of the HDD method to reduce the potential for impacts if flooding occurs.

186. As there is a low presence of fluvial flood risk across the Onshore Development Area, it is unlikely that any HDD compounds will be located within any fluvial floodplain areas. However, if the floodplain cannot be avoided, the following measures will be implemented to reduce the impacts on natural drainage:

- Access tracks will be at ground level; where this is not possible, drainage methods will be employed to allow natural drainage.
- Soil stored alongside the cable trenches will incorporate gaps of 3-4 m at regular intervals.
- Pre-construction drainage measures will be implemented within the working corridor to reduce disruption to natural drainage pathways.

187. Where possible the crossing of watercourses will take place during periods of normal to low flow.

188. Mobile equipment when not required, will be stored outside of any areas of identified fluvial flood risk.

189. Where access tracks result in the requirement for temporary watercourse crossing, these will be designed to maintain the existing flood flow conveyance and sediment transfer conditions. Any temporary culverts or bridges will be removed within 1 year following construction of the onshore infrastructure.

Surface Water

190. Where possible, work will be planned to be completed during months with lower rainfall levels.

191. Mobile equipment when not required will be stored outside of areas of identified surface water flood risk.

192. Cleaning of existing field drains and culverts will be completed prior to construction to reduce drainage blockages or restrictions.

193. Mitigation measures to maintain existing surface water flow should be implemented to prevent direct impacts on the hydrology and geomorphology of surface flow paths. Standard settlement management methods should be used, if appropriate.

Ground Water

194. To mitigate the risk of groundwater flooding during construction, temporary cut-off drains will be installed parallel to the proposed trenches to prevent soil and groundwater entering the trenches. Dewatering of the excavations may be required to provide safe working conditions.

Additional Mitigation

195. Weather warnings will be monitored during the construction works and appropriate action taken in the event of adverse weather conditions. Such as:

- Evacuation of personnel;
- Making the construction area safe; and
- Removal of critical plant, equipment and polluting materials as required.

196. Small parts of the onshore cable route (at Freshwater West and at the grid connection location) are located within the Pembrokeshire Coast Flood Alert Area therefore designated persons will be registered to receive flood warnings, flood alerts, and weather warnings for the local area.

Outline Biodiversity Management Plan

Introduction

197. This section provides an overview of what will be included within the Biodiversity Management Plan. Further details can be found in **Chapter 08: Ecology and Biodiversity**.

198. Due to the time that will have elapsed since the last surveys and the possibility that species presence or activity could have changed in the intervening period, pre-construction surveys will be undertaken for a number of species/ species groups.

199. The results of the pre-construction surveys will determine the need for licenses and the need for, and extent of, habitat and protected species management plans. These documents and surveys will inform the Biodiversity Management Plan and will be required for the construction phase of the proposed Project. Following completion of the surveys, the LPA will be informed of the survey results and recommendations for any associated licenses or species-specific management plans.

200. All surveys will be undertaken by suitably experienced/ licensed ecologists who are members of an appropriate professional body, e.g. Chartered Institute of Ecology and Environmental Management (CIEEM).

Overarching Mitigation

- Nuisance management to include measures in place to reduce the impacts of construction activities such as dust, noise, vibration and lighting;
- Surface and ground water protection measures and a pollution prevention plan;
- Landscape and visual impact mitigation to include retention of existing trees where possible;
- A protocol for the restoration of land which will be temporarily used for construction;
- A biosecurity plan for the prevention of spread of invasive non-native species potentially present within the site;
- Environmental training requirements and identification of responsibilities of personnel; and,
- Ecological mitigation measures including the avoidance of sensitive features

201. An Ecological Clerk of Works (ECoW) will be employed for the duration of the works to ensure that valued receptors are adequately protected and the measures set out in the CEMP are adhered to.

202. Where habitat suitable for reptiles requires removal, this will follow a precautionary working method statement. This is likely to include staged vegetation cutting in a directional manner to displace reptiles away from the working area and towards suitable retained habitat. This will avoid killing or injury of reptiles.

203. Should vegetation clearance be required within habitats suitable for dormouse, specifically woodlands, hedgerows and scrub, this will take place under the technical oversight of a licensed or accredited ECoW. A two-step process of clearance will be followed whereby vegetation will first be cut to no lower than 300 mm above ground in winter (November-March, inclusive). A second stage will then include the removal of roots and ground-level vegetation in the summer (April-October, inclusive). Prior to all works the ECoW will carry out a detailed hand search of the vegetation to be cleared to identify any signs of dormice, including their nests. This will reduce the potential for works to impact upon hibernating dormice, whilst keeping the majority of vegetation clearance outside of the breeding bird season. Should vegetation clearance be required in the summer months, this should avoid the dormouse breeding period (June-August, inclusive) as far as possible. If dormouse is encountered during the works, all works must stop until a European Protected Species Mitigation Licence (EPSML) is obtained from NRW.

204. Where possible, habitat suitable for breeding birds, including woodland, scrub and grassland, will be removed outside of the breeding bird season (March-August, inclusive) (i.e. clearance works will be undertaken between September and early February). Where this is not possible, the assigned ECoW will undertake a thorough check for the presence of breeding birds prior to the commencement of works. If an active nest is encountered, a species-appropriate protective buffer will be erected around the nest and will remain in place until all young have fully fledged. This can be up to eight weeks, and no works should take place within the buffer during this time.

205. Habitat with suitability to support future sett or holt creation by badger and otter should also be checked prior to any works by the ECoW, this includes woodland, scrub and grassland.

206. There is potential for otters within the onshore development area. Where works are required within a watercourse, and the watercourse is assessed during pe-construction surveys as being suitable for otter the following actions will be included: access along the watercourse and/or immediate banks will be retained unobstructed for otters to pass, obstacles within the watercourse (such as fencing) will be removed at the end of each shift. Works will stop 1 hour before dusk and commence no sooner than 1 hr after dawn, to avoid times of peak otter activity, Lighting will be managed to prevent light spill onto watercourses, or temporary fencing retaining dark corridors and allowing otter to continue to move through the landscape.

207. Where Invasive Non-Native Plant Species (INNPS) are identified by the ECoW during works, biosecurity measures, as identified in the CEMP, will be followed to minimise the potential spread of INNPS. Points to be included within the biosecurity measures are provided below.

- The implementation of species-specific buffer zones, in which works should not take place.
- All relevant site personnel should be provided with a toolbox talk by a suitably qualified ECoW at the onset of works, providing details on the identification of INNPS and the biosecurity requirements associated with them. All relevant personnel should be made aware of the locations of any known INNPS, and an update should be provided should any additional stands be identified during works.
- Cleaning stations must be set up at designated entry/exit points to INNPS demarcated areas, should it not be possible to avoid all works within them. A jet wash should be provided for vehicles and brushes and buckets of water should be available for all clothing and equipment. The ECoW present will identify suitable positions for these cleaning stations and provide training on their use.
- Plant and machinery should not be allowed to drive within areas which may contain soil contaminated with INNPS. Any vehicles and equipment that have potential to come into contact with INNPS should be inspected and thoroughly cleaned prior to leaving the infested area.
- All contractors required to work within areas of INNPS should be members of a recognised trade association with appropriate qualifications and have a written biosecurity protocol and method statement as part of their working practices.
- Any soil brought onto the site should only be sourced from a reputable supplier with a good track record and no history of providing soil contaminated with invasive species propagules.

Outline Construction Traffic Management Plan (CTMP)

208. Mitigation measures which the Project has implemented or is committed to implement will be described fully in the final CTMP (approved by PCC as determining highway authority) that will follow this EIA, but a summary of these is laid out below:

- There will be signage erected on the C3101 near the junction with Goldborough Road; on Goldborough Road; on the unclassified road that provides access to the onshore substation and on the B4319 to Freshwater Bay. This will highlight the potential for drivers to meet construction traffic;
- From the C3101 to the onshore substation there will be temporary speed limits implemented.

- Details of proposed Abnormal Indivisible Loads (AILs) and proposed routing arrangements;
- When transporting abnormal loads Pembrokeshire County Council (PCC) will be contacted to provide advance warning of the intention to used identified routes;
- Consultations with the police will be undertaken to agree the most appropriate times for abnormal load deliveries to the onshore substation and help to identify any specific route sections that may require police assistance;
- Prior to any construction activities route plans will be distributed to contractors to make sure vehicles stay on proposed access routes;
- There will be escorts for the movement of abnormal loads to help manage the interaction with general traffic and mitigate any impact;
- Within the vicinity of the substation a 15 mph speed limit will be implemented;
- To reduce the amount of mud and debris distributed from the site wheel washing facilities will be provided; and
- When accessing and leaving the onshore substation workers will be encouraged to share vehicles.

209. Appropriate authorities such as Pembrokeshire County Council, South Wales Police, Pembrokeshire Coast National Park Authority and Highways England will be consulted with regards to deliveries. The CTMP will outline how these consultations can be used to minimise any disruptions from these deliveries.

210. The above measures will also be provided to assist with the temporary access required for the cable laying sites. The CTMP will provide further detail on these measures.

Outline Archaeological Management Plan

211. This section provides an overview of what will be included within the final Archaeological Management Plan, to be approved by the Local Planning Authority.

212. Potential impacts on known or unknown buried archaeological remains which may survive within the offshore cable corridor relate to the possibility of disturbing, removing, or destroying in situ remains and artefacts during ground-breaking works (including excavation, installation and other works) associated with the installation of the proposed Project.

213. Standard mitigation measures which have already been implemented, or will be carried out in the future, in order to minimise potential impacts on the Historic Environment are listed below:

- Careful routeing of the proposed cable trench to avoid designated heritage assets and, where possible, non-designated assets;
- Using HDD technology to avoid physical impacts on heritage assets;
- Limiting land take within the planning application boundary to only that required to construct, operate and maintain the proposed Project – to minimise disturbance to buried archaeology;
- Limiting stripping for construction compounds, haul roads, and other associated works in areas where archaeology is recorded to avoid disturbance, and instead using geotextile and stone over topsoil;

- During construction works, protective fencing will be erected around known cultural heritage receptors to create buffer zones;
- Construction compounds will be located outside of culturally sensitive areas. This includes avoiding designated and undesignated receptors;
- The layout of construction compounds will aim to reduce temporary impacts on the settings of historic receptors and to minimise visibility in views;
- Raising the awareness of construction workers and operatives of any control and reporting procedures to be followed, should archaeological deposits be encountered during the works, for example through toolbox talks and regular briefings;
- The protection of built heritage assets and archaeological sites during construction, for example through the demarcation of buffer zones around such interests with fencing and signage;
- The control of light spillage, noise and dust within construction compounds and working areas, for example by adhering to working hours and through good site layout and working practices, to minimise impacts on the setting of heritage assets; and
- A programme of outreach/public engagement to raise awareness of the cultural heritage of the scheme.

214. A Written Scheme of Investigation (WSI) will be agreed with the PCC and the PCNPA.

Outline Soil Management Plan

215. This section of the CEMP sets out principles and procedures for good practice and bespoke mitigation measures in soil handling, storage and reinstatement to be used for the proposed Project.

216. To minimise the effects on soil resources during any earthworks, including materials management following foundation construction and excavation for the proposed Onshore Cable Route, high standards of soil handling and management will be employed with a view to minimising where possible the double handling of soils and the extent to which exposed soils will be left vulnerable to erosional processes. Guidelines are published in documents such as DEFRA's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (2009) (DEFRA, 2009) and The Institute of Quarrying Good Practice Guide for Handling Soils in Mineral Works (The Institute of Quarrying, 2021).

217. To minimise the risk of damage to soil structure, the following rules should be applied to all soil handling tasks:

- No trafficking/driving of vehicles/plant or materials storage to occur outside designated areas;
- No trafficking/driving of vehicles/plant on reinstated soil (topsoil or subsoil);
- Only direct movement of soil from donor to receptor areas (no triple handling and/or ad hoc storage);
- Soils should only be moved under the driest practicable conditions and this must take account of prevailing weather conditions;
- No mixing of topsoil, or of soil with other materials;
- Soils only to be stored in designated soil storage areas;

- Plant and machinery only work when ground or soil surface conditions enable their maximum operating efficiency;
- All plant and machinery must always be maintained in a safe and efficient working condition; and
- Daily records of operations undertaken, and site and soil conditions should be maintained.

Stop Conditions

218. In certain weather conditions, the handling of topsoil and subsoil must be effectively managed to prevent damage. If works are interrupted by a rainfall event, soil stripping should be suspended; and where the soil profile has already been disturbed, the works should be completed to the base level in that location.

219. Additionally, soil should not be handled or trafficked over/driven on when the ground is frozen or covered by snow.

Soil Stripping

220. Topsoil can be stored on either topsoil (of the same type) or on subsoil. Subsoil can only be stored on subsoil and therefore the topsoil must be stripped from subsoil storage areas in advance of subsoil stripping and subsequent storage. The stripping method should follow one of the suggested methods as described in the Institute of Quarrying's Good Practice Guide for Handling Soils in Mineral Workings (Institute of Quarrying, 2021).

221. Where the stripping operation is likely to be interrupted by rain, or there is likely to be overnight rain, nay exposed subsoil down to the basal layer should be removed before suspending operations. At the start of each day, ensure there is no ponding in the current strip or operating areas, and the basal layer is level with no ruts.

Creation of Stockpiles

222. Correct storage/stockpiling will maintain soil quality and minimise damage to soil structure and soil biota. This ensures that the soil will readily recover once re-spread, promoting timely and effective restoration. Stockpiled soil must not be vulnerable to compaction or erosion; must not cause pollution to surrounding watercourses; and must not increase flood risk to the surrounding area.

223. Potential soil erosion and water pollution can be minimised through a number of good practice measures, including, but not limited to; the avoidance of trafficking over/driving on the soil stockpiles, the seeding of stockpiles; and the use of intermittent spaces in the stockpiles.

Use of Stripped Soil

224. Where soil is expected to be stored for a period of more than six months, the stockpiles should be seeded with appropriate low maintenance grass/clover mixture of similar to protect the soil against erosion, minimise soil nutrient loss, and maintain soil biological activity.

225. In the period where vegetative cover on the stockpiles is establishing, where required during dry weather, the stockpiles will be sprayed with water to prevent wind erosion and to ensure that the seeds establish.

Stockpile Records

226. The locations and footprints of each stockpile should be accurately recorded on a plan of appropriate scale. The approximate volume of each stockpile should be recorded, along with details of the type of soil stored.

Drainage

227. Gaps shall be left between soil stockpiles where necessary to allow for surface water drainage and to avoid the catchment (ponding) of water behind stockpiles. All reasonably practicable measures, particularly maintaining vegetated buffer strips, will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse, arising from construction activities.

228. Debris and other material will be prevented from entering surface water drainage, through the use of toolbox talks to instill the benefits to soil and environment of maintenance of a clean and tidy site, aided by the provision, use and maintenance of clearly labelled waste receptacles, grid covers and the presence of site security fencing.

Restoration

229. The main objective for the restoration of agricultural land is to reinstate the land to its original (pre-construction) Agricultural Land Classification (ALC) grade. This is primarily achieved by ensuring that the full soil profile is restored in the correct sequence of horizons, and in a state where good soil profile drainage and plant root development are achieved; and by ensuring that the reinstatement works cause minimum damage to soil structure.

230. Therefore, soil restoration measures have been designed to achieve soil profiles as close to the original (pre-construction) as possible, which is a prerequisite for the maintenance of the original agricultural land quality/other prior land use.

231. In areas where land compaction has occurred, or where required by the landowner, it may be necessary to undertake subsoil restoration techniques to restore the structure of the subsoil and to assist with future drainage. Topsoil would be returned to its final location at the earliest suitable time of year. The topsoil would be levelled, cultivated and reseeded as agreed with the landowner/occupier.

232. Soil reinstatement shall be subject to the same constraints of weather and soil moisture conditions as soil stripping.

Other Mitigation Measures

233. The potential for disease and pathogen transfer between different areas of agricultural land is a biosecurity risk. The movement of soil (and incorporated seed/spore bank) is a mechanism for disease and pathogen transfer.

234. To minimise biosecurity risks, appropriate cleaning and/or disinfection of machinery, equipment, clothing and footwear between holdings to mitigate against any disease outbreak or transfer of weeds between holdings may be required. This should be undertaken after working in areas considered to be at high risk before moving into uninfected areas.

235. Security fencing will surround open excavations and will potentially guard machinery, if left in situ around excavations. These measures will help prevent any vandalism that could lead to a pollution incident.

Protection of Geological and Mineral Resources

236. Outcrops within the geologically designated area in the north-western extent of SSSI Broomhill Burrows and the Freshwater West (North) GCR, are located within the northwestern-most extent of the Onshore Development Area. The location of the HDD cable in this area is yet to be confirmed. If it is within or near the geological designated site, engagement will be undertaken with relevant parties, to agree specific mitigation requirements during construction.

237. The ground conditions will be investigated through intrusive survey. This data will be used to develop a ground model and an understanding of the engineering properties of the ground conditions which will be used to inform design development. Further investigation is required, particularly at Freshwater West, and this will include detailed HDD feasibility studies.

238. Construction of the proposed Project has the potential to affect existing mineral resources, and proposed areas of mineral exploitation. This could occur by sterilisation of the resource through direct excavation during construction of the proposed Project or through temporary and / or permanent severance or isolation that may occur during the construction phase of the proposed Project, possibly continuing through to its operational phase.

239. A plan will be discussed in advance of the construction works with the landowner, the relevant mineral planning departments at Pembrokeshire County Council and Pembrokeshire Coast National Park Authority, and any other relevant parties to assist in achieving an effective management of minerals within the affected areas of the MSZ. For example, it is possible that localised mineral extraction could be undertaken in advance of the construction of the proposed Project.

240. The management of minerals plan to be discussed with relevant parties should include the following:

- The location(s) of the mineral reserve(s) beneath the development footprint.
- The quantity of material that may be available / excavated prior to development.
- Whether there are any features that might preclude prior extraction, for example:
    - Retention of landscape features;
    - Potential damage to habitats and/or species;
    - Any potential archaeological remains;
    - Proximity of both the site and transport routes necessary for prior extraction of the mineral resource to an existing sensitive development;
    - Presence of historic buildings or structures within the site area that it is desirable to retain in conjunction with the development proposal, and taking into consideration their setting; and
    - The potential for prior extraction to have an adverse impact on a local water table or a protected water aquifer.
- If there is no reason as to why prior extraction should not take place in conjunction with development, discussion as to whether there is any market demand for the mineral resource immediately beneath the site at the time of application should be carried out.

4.4 Offshore Development

4.4.1. Legislation, Policy and Guidance

241. The offshore OCEMP will be developed for each Marine Licence, which is anticipated to include all activities, equipment, structures, and associated infrastructure, in accordance with design and manufacturer's recommendations. For a comprehensive review of the legislation, local and regional policies and guidance to be followed, see ES:

- **Chapter 02: Regulatory and Planning Context;**
- **Chapter 18: Marine Water Quality and Sediment Quality;**
- **Chapter 21: Marine Mammals;**
- **Chapter 27: Aviation and Radar; and**
- **Chapter 28: Other Sea Users.**

4.4.2. Roles and Responsibilities

242. It is the responsibility of all staff involved with the proposed Project to ensure the correct implementation of the CEMP and the environmental mitigation contained within. The final CEMP will include details on roles and responsibilities, however, during the construction phase of the proposed Project the key environmental responsibilities are likely to be held by the following:

- **The Applicant**;
- **Principal Contractor**;
- **Consent and Environment Manager (CEM) -** responsible for the overall management of environmental aspects on site, ensuring environmental legislation and best practices are complied with, and environmental mitigation and monitoring measures are identified and implemented. The CEM will oversee environmental monitoring campaigns and carry out regular inspections and reporting. The CEM will liaise with relevant environmental bodies and other third parties as appropriate;
- **Fisheries Liaison Officer (FLO)** - will be appointed to establish effective communications surrounding the proposed Project with local fishermen and other sea users. The FLO will distribute information on the safe operations of fishing activities within the Array Area and will be a contact for fishermen and other sea users during the life cycle of the proposed Project. Good practice guidance on the approach to fisheries liaison and mitigation shall be implemented as far as possible; and a procedure for the claim of loss of / or damage to fishing gear will be developed.

4.4.3. Post Consent

243. Prior to commencing construction activities for the proposed Project, the appointed Contractor and Applicant will prepare the following plans as appropriate:

- **Project Environmental Management Plan (PEMP)** – An overarching document which includes all Project considerations and method statements in accordance with those assessed within the Environmental Statement. Details the methods to avoid, minimise and mitigate potential environmental effects during the operational stage of the proposed Project, as well as all best practice guidelines and techniques;

- **Cable Specification and Installation Plan (CSIP) -** Sets out measures relating to the cable installation process including site preparation; cable burial and deployment of cable protection measures. It is proposed that the CSIP would be developed in line with standard industry approach and will therefore adopt the following structure:
    - Introduction;
    - Project Context;
    - Scope and Objectives of the CSIP;
    - Statements of Compliance;
    - Updates and Amendments to the CSIP;
    - Technical Specifications of Cables;
    - EMF Attenuation Study;
    - Cable Burial Risk Assessment (CBRA);
    - Sandwave Clearence Plan - This document will be a live document which will relate to sandwave clearance activities within designated sites;
    - Cable Laying Plan and Installation Methodology; and
    - Cable Protection Plan - This document will be a live document which will relate to installation of cable protection measures within designated sites.
- **Vessel Management Plan (VMP) -** The VMP will be prepared to address specific requirements of relevant conditions attached to the s36 consent. The VMP covers industry standards and good practice of the following:
    - The numbers, types and specifications of the vessels required;
    - Working practices that will be implemented;
    - How vessel management will be coordinated, particularly during construction but also during operation; and
    - Locations of the working port(s), how often vessels will be required to transits between port(s) and the Site and indicative vessel transit corridors proposed to be used during construction.
- **Emergency Response Cooperation Plan (ERCoP) -** Details the emergency response planning for the proposed Project;
- **Shipboard Oil Pollution Emergency Plans (SOPEP) -** A plan consisting of procedures and descriptions of actions to be taken in the event of an oil pollution incident. According to MARPOL 73/78, Annex I, reg. 26, every oil tanker of 150 tons gross tonnage and above and every ship other than an oil tanker of 400 tons gross tonnage and above shall carry on board a SOPEP approved by Administration. The purpose of the SOPEP is to provide guidance to the Master and officers on board the ship with respect to the steps to be taken when an oil pollution incident has occurred or is likely to occur.; and
- **Marine Pollution Contingency Plan (MPCP) –** Outlines procedure to protect personnel working on the proposed Project and to safeguard the marine environment. The MPCP is required to serve as an operational document that clearly sets out the actions to be taken in the event of an incident. Training will be given to all vessel crew on their responsibilities for preventing pollution and procedures to follow in the event of an

emergency incident including who should be notified. Staff will all be instructed on the use of emergency equipment and spill kits, where the kits are located and how the contaminated spill kit material should be handled after use.

4.4.4. Construction

Environmental, Health and Safety and Security Principles

244. The proposed Project will be constructed in an environmentally sensitive manner and will meet the requirements of all relevant legislation, codes of practice and standards identified in the ES.

245. The proposed Project will be built, where reasonably practicable, in accordance with current best practice for minimising the adverse effects of construction on the environment.

246. Appropriate industry standards will be adopted and implemented for the health, safety and welfare of the project associated staff and vessels crew. The Principal Contractor for the offshore works will develop Health and Safety Plans (H&SP) to address the safety of workers, potential visitors to the sites/vessels and the general public for each stage of the works. The H&SPs will set out how all health and safety risks are identified and managed in accordance with legal requirements and current best practice for each stage of the onshore works.

247. The following measures will be in place for all Project vessels to adhere to:

- All vessels will follow the International Regulations for Preventing Collisions at Sea 1972 (COLREGS) (IMO, 1972) and International Convention for the Safety of Life at Sea 1974 (SOLAS) (IMO, 1974). Compliance with these regulations will minimise the likelihood of a project vessel instigating or being involved in an incident and through assistance reduce the likelihood of significant consequences should an incident occur;
- All vessels will follow the International Convention for the Prevention of Pollution from Ships (MARPOL, 1973) regulations and will therefore be equipped with waste disposal facilities onboard. The discharging of contaminants is not permitted within 12 NM from the coast to preserve bathing waters;
- Control measures and shipboard oil pollution emergency plans (SOPEP) will be in place and adhered to under MARPOL Annex I requirements for all vessels;
- Ballast water discharges from all vessels will be managed under International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention) (IMO, 2004). Measures will be adopted to ensure that the discharge of ballast water with the potential to impact water quality during all proposed Project stages;
- All vessels will adhere to the IMO guidelines for the control and management of ships' biofouling to minimise the transfer of invasive aquatic species (Biofouling Guidelines) (resolution MEPC.207(62) (IMO, 2023);
- All vessels will display appropriate lights and shapes;
- All applicable vessels will broadcast their status on AIS at all times;
- All vessels will follow Port bylaws and General Directions, including VTS communications from ports;
- Guard vessels will use RADAR with Automatic RADAR Plotting Aid (ARPA) to monitor vessel activity and predict possible interactions, will be employed to work alongside the

installation vessel(s) during installation and maintenance work (which will also minimise anchor disturbance on the seabed);

- A temporary 500 m Recommended Clearance Zone will be established around all vessels associated with the works;
- Limits to wave height / wind speed conditions for operations / activities will be followed by all vessels; and
- Lighting on-board the vessels will be kept to the minimum level required to ensure safe operations and directed towards working areas. This will minimise disturbance to seabird species; and
- Where possible, vessels will operate with Dynamic Positioning (DP).

248. It is advised that third-party vessel operators follow the longstanding maritime guidance regarding the avoidance of demersal trawling (and anchoring) in the vicinity of submarine cables. This guidance includes:

- The Mariner's Handbook (P100) 12th Edition (UKHO, 2020);
- All Admiralty charts; and
- The recent Marine Guidance Notes (MGN) 661 and 654, published by the Maritime and Coastguard Agency (MCA) (MCA, 2021).

249. Safety zones to be established around construction activities up to 500m, centered on the Offshore Renewable Energy Installation (OREI) being worked on at the time. In addition, a 500 m safe passing distance will also be requested around the Offshore Development vessels (e.g. during cable-laying). Where appropriate, guard vessels will be used to ensure adherence with safety zones or advisory passing distances associated with project operations. This will reduce the likelihood of damage to the structures (and associated risks and accidents) associated with anchor strike, or fishing activity.

250. Offshore infrastructure will be marked on UKHO Admiralty Charts and Kingfisher Information Service – Offshore Renewable & Cable Awareness (KIS-ORCA) with associated note / warning about anchoring, trawling or seabed operations.

251. Turbines nacelle, tower, and rotor will be constructed in order to contain leaks thereby reducing the risk of spillage into the marine environment.

252. Appropriate lighting and marking of project infrastructure will assist in raising awareness of the proposed Project, including the buoyed construction area of which there will be no restrictions on entry. Lights, marks, sounds, signals and other aids to navigation will be used as required by Trinity House, Maritime and Coastguard Agency (MCA), and the Civil Aviation Authority (CAA), including a buoyed construction area around the Array Area.

253. Appropriate marking and charting will assist in raising awareness of the proposed Project.

Working Hours

254. Installation will be a 24-hour operation where viable to minimise overall installation time, maximise use of fair-weather windows, and take advantage of vessel and equipment availability.

Communication

255. Notifications of the works will be made ahead of commencement. This will include:

- Notice to Mariners, Radio Navigational Warnings, NAVTEX and / or broadcast warnings will be issued. This will include the following as a minimum:
    - Notifications to the Trinity House, the Maritime and Coastguard Agency (MCA);
    - Kingfisher Bulletin notifications and other navigational warnings to the fishing community to provide advance warning of project activities and associated Safety Zones and advisory safety distances; and
    - Regular vessel operators (e.g., ferry operators).
- Appropriate notification will be provided to advise landowners and those using the area for recreation in the close vicinity of the landfall.
- Regular consultation will be made with third-party infrastructure and asset owners to notify them of any activities associated with the Project and avoid spatial and temporal interactions between vessels.
- Agreements with third-party infrastructure and asset owners will be in place where necessary to agree the details of any infrastructure crossings or proximities (Crossing Agreements and Proximity Agreements).

Offshore Environmental Monitoring

256. To meet the requirements of the CEMP, environmental monitoring of the proposed Project and its impacts will be undertaken throughout the construction phase. **Table 4A-3** presents the environmental monitoring identified as part of the Impact Assessment of the proposed project.

Table 4A-3 Key offshore monitoring

Environmental Monitoring	Phase	Purpose
Noise Monitoring Plan (**Chapter 21: Marine Mammals**)	Pre-Construction and Construction	A noise monitoring plan will be consulted upon and agreed with the statutory advisors and the Regulator. This will include noise monitoring of, impact piling (if utilised), of UXO clearance events and of operational noise as there are so few data on FLOW systems in operation.
Mooring and Cable Monitoring (**Chapter 21: Marine Mammals** and **Chapter 22: Marine Ornithology**)	Pre-Construction and Construction	CSIP sets out measures relating to the cable installation process including site preparation; cable burial and deployment of cable protection measures. An operation and maintenance strategy for the proposed Project will be developed post consent.
Effectiveness of Archaeological exclusion zone (AEZ) (**Chapter 24: Marine Archaeology**)	Project lifetime	Review of the effectiveness of AEZs and the impact of the proposed Project on the marine archaeological resource is recommended throughout the lifetime of the Project. The archaeological review of all new geophysical survey collected for the proposed Project is therefore recommended, should any new surveys be required for engineering or maintenance purposes.

Environmental Monitoring	Phase	Purpose
AIS Traffic (**Chapter 25: Shipping and Navigation**)	Construction, operation and maintenance	Monitoring of vessel traffic via AIS will be undertaken for the duration of the construction phase and during the first three years of the operation and maintenance phase. This will allow the effectiveness of embedded mitigation measures to be suitably reviewed and any additional mitigation required to be identified.

Inspections and Audits

257. A programme of regular environmental inspections and audits will be implemented by the Principal Contractor to record performance and identify any corrective actions required. Where problems are identified, corrective actions will be recommended and will be implemented by the Principal Contractor within a defined time frame.

258. The Applicant will require that all construction and operational vessels meet the relevant, required, recognised standards and will comply with the relevant international maritime rules (as adopted by the relevant flag state) and regulations. Hence, it will conduct independent vessel audits on construction and operational vessels as necessary to check that they meet these standards and are appropriate for the purpose of their prescribed roles.

Records

259. The CEM will retain records of all environmental monitoring and implementation of the CEMP. This will allow provision of evidence that the CEMP is being implemented effectively. These records will include:

- Environmental Action Schedule;
- Licences and approvals;
- Results of any inspections;
- Notifications by other marine users and or grievances collected by FLOs;
- Other environmental surveys and investigations; and
- Environmental equipment test records.

260. The CEMP will be updated as necessary, with a full review as required throughout the construction period. A brief report will be produced and submitted to the relevant local planning authority, such as NRW, for information on a quarterly basis and following completion of commissioning. This will summarise the monitoring process, observed deviations from the CEMP(s) and the corrective actions taken.

Management Review

261. The CEMP will be signed off by an appropriately qualified person(s) to be determined by the Principal Contractor and agreed by the Applicant on completion of the construction works.

4.4.5. Offshore Environmental Management Plans

Outline Fisheries Liaison and Co-existence Plan (FLCP)

262. Prior to construction, the Applicant will develop a Fisheries Liaison and Co-existence Plan (FLCP), setting out in detail the planned approach to fisheries liaison and means of delivering any other mitigation measures relevant to commercial fishing activity. The development of an FLCP will ensure structured liaison between the Applicant and fishing industry and minimise effects on commercial fisheries. The FLCP will be developed in consultation with NRW, MMO (as appropriate) and other relevant statutory bodies and submitted to NRW for approval post-consent.

263. Based on the clear guidance that will be provided in the FLCP, it is anticipated that fishermen will operate appropriately and in line with standard maritime rules (i.e., avoiding the indicated infrastructure at the defined location) given adequate notification of the locations of any snagging hazards.

264. The FLCP will include protocols and procedures for dropped objects to minimise the risk of equipment snagging on large, dropped objects associated with the Offshore Development Area.

265. The FLCP will set out the Applicant's strategy and include a summary of the key measures proposed to facilitate and promote coexistence and co-location between the proposed Project and commercial fishing interests. The Plan will also propose the approach to fisheries liaison during the construction, operational and maintenance, and decommissioning phases. The proposed structure for the FLCP is as follows:

- Fisheries liaison: presents detail on the guidance and information used to develop the fisheries liaison strategies, with descriptions of the roles and responsibilities of those involved in implementing the strategies and details on how information will be exchanged with key commercial fisheries stakeholders;
- Mitigation and co-existence: This section provides an overview of co-existence and co-location strategy and procedures that will be implemented during the construction, operations and maintenance, and decommissioning phases of the Project.

Outline Marine Mammal Mitigation Plan

Introduction

266. This section provides an overview of what will be included within the Marine Mammal Mitigation Plan (MMMP). The primary aim of this draft MMMP is to outline planned measures to reduce the risk of Permanent Threshold Shift (PTS) auditory injury to any marine mammal species from pile driving of mooring anchors or any UXO clearance to negligible levels.

267. The MMMP establishes the principles which will be implemented during construction. Following the granting of the Section 36 Consent and Marine Licence for the proposed Project and once the final project design has been confirmed, a final MMMP will be prepared.

Mitigation Methodology

268. In order to minimise the risk of any auditory injury to marine mammals from underwater noise during anchor pile driving, there are standard mitigation measures that the Project could implement for piling. These mitigation measures include the following measures:

- Marine mammal observation;

- Passive Acoustic Monitoring (PAM); and
- Piling soft-start procedure.

269. The following sections provide a high-level methodology for each of these elements. A final MMMP will be produced prior to the relevant works commencing for approval by NRW and JNCC. Please note: the use of Acoustic Deterrent Devices (ADDs) and at-source noise abatements methods (such as bubble curtains) were considered but given the very small instantaneous PTS-onset impact ranges that require mitigation (max 280 m), these were deemed to be unnecessary.

Mitigation Zone

270. The mitigation zone (MZ) is defined as the maximum potential instantaneous PTS-onset impact ranges. The maximum instantaneous PTS-onset range for pile driven anchors is 280 m. To be precautionary, a 500 m mitigation zone (MZ) will be monitored for marine mammals around any piling location, as per the recommendations of the JNCC guidelines.

Marine Mammal Observers (MMOs)

271. The pre-piling watch for marine mammals will be conducted for a minimum of 30 minutes prior to the commencement of the soft-start procedure. The MMO will undertake visual monitoring for marine mammals within the MZ around the piling location from a suitable elevated platform. The MMO will record all periods of marine mammal observations, including start and end times. Details of environmental conditions (sea state, weather, visibility, etc.) and any sightings of marine mammals around the piling vessel will also be recorded as per JNCC marine mammal recording forms and guidelines.

272. In the event of an observation within the MZ during the MMO pre-piling watch, the soft start will be delayed for 20 minutes after the last detection within the MZ to ensure any marine mammals have left the area.

273. It is expected that one dedicated and experienced MMO will be on watch, unless they do not have access to a location that provides a good all-round view of the mitigation zone (in which case multiple MMOs may be required).

Passive Acoustic Monitoring (PAM)

274. A Passive Acoustic Monitoring System (PAMS) may be used to allow a trained PAMS operative to conduct acoustic monitoring. This may be utilised in conjunction with visual monitoring during daylight operations and/or as an alternative method of monitoring the mitigation zone during periods of reduced visibility. If a PAMS is not available for monitoring, then piling will be unable to commence during such periods of restricted visibility that are not conductive to visual monitoring as there is a greater risk of failing to detect the presence of marine mammals.

Soft-Start Procedure

275. Following the completion of the pre-piling search, a soft-start procedure will commence. This is where the piling hammer energy will gradually increase over a period of 30 minutes so that if any marine mammals are still present in the vicinity of the piling location, they are encouraged to leave by the initial low levels of underwater noise prior to the noise reaching levels which could cause PTS-onset. The MMO will continue to note detections and observations on animal behaviour during the soft-start period.

276. If a marine mammal enters the MZ during the soft start then the piling operation should either stop (if technically feasible), or the hammer energy should not be further increased until the marine mammal exits the MZ, and there is no further detection for 20 minutes. Once the soft start has been completed, there is no requirement to stop piling or reduce the hammer energy if a marine mammal is detected in the MZ.

Breaks in Piling

277. Breaks in the piling process could provide the potential for marine mammals to re-enter the mitigation zone. The guidance provided in JNCC states that "*If there is a pause in the piling operations for a period of greater than 10 minutes, then the pre-piling search and soft-start procedure should be repeated before piling recommences*".

Communications

278. This communications protocol will include, but not be limited to:

- Procedure to notify the MMO and/or PAMS operative to begin the 30-minute pre-piling search prior to soft-start commencing;
- Procedure for the MMO and/or PAMS operative to notify the installation manager that soft start can commence;
- Procedure for the MMO and/or PAMS operative to notify installation manager that a marine mammal has been detected in the MZ; and
- Procedure to notify MMO and/or PAMS operative that the piling operations have been successfully completed.

Reporting

279. A record of all piling operations, marine mammal observations and PAM detections will be maintained. Reports will include:

- Outline of the marine mammal monitoring methodology and procedures employed;
- Record of piling operations detailing date, soft-start duration, piling duration, hammer energy during soft-start and piling and any operational issues for each pile;
- Record of marine mammal observations and PAM detections including duration of the pre-piling watch, environmental conditions during the pre-piling search, description of any marine mammal sightings and any mitigating actions taken, and a record of any incidental sightings made during the pre-piling search; and
- Details of any problems encountered during the piling process including instances of noncompliance with the agreed piling protocol.
- Reports will be collated and provided to NRW and JNCC on a weekly basis. In addition, a final report will be provided which will be submitted to NRW and JNCC. The final report will include any data collected during piling operations, details of MMO watch periods and observations, a detailed description of any technical problems encountered and what, if any, actions were taken. The report will also discuss the protocols followed and put forward recommendations based on project experience that could benefit future construction projects.

Outline Marine Invasive Non-Native Species Management Plan

280. An Invasive Non-Native Species (INNS) Management Plan and Biosecurity Risk Assessment enables marine operators and contractors to understand and minimise the risks posed by activities which could introduce and spread of marine INNS.

281. **Appendix 4B: INNS Plan** of this ES presents in detail the Outline INNS Management Plan in support of Marine Licensing Applications for the proposed Project to the Natural Resources Wales (NRW) Marine Licensing Team under the Marine and Coastal Access Act 2009 (MCAA). This document and includes the following:

- Introduction;
- Project Overview and Study Area;
- Legislation, Policy and Guidance;
- Baseline Environmental Conditions;
- Risk of INNS Introduction and Identification of Pathways;
- Biosecurity Control Measures;
- Surveillance, Monitoring and Reporting Measures;
- Contingency Plan; and
- Marine INNS Biosecurity Risk Assessment Form.

4.4.6. Decommissioning

Outline Decommissioning Plan

282. Under Section 105 of the Energy Act 2004 (as amended) (UK Parliament, 2004), developers of offshore renewable energy projects are required to prepare a Decommissioning Programme for approval by the Regulator and a Section 105 notice is issued to developers by the Regulator following receipt of consent. Developers are then required to submit a detailed plan for the decommissioning of the project, including anticipated costs and financial securities.

283. This plan outlines the approach to the retirement of the facilities of the proposed Project, to be agreed with NRW at the relevant time prior to the start of offshore decommissioning.

284. The overarching principles that will be followed when developing a decommissioning strategy for the proposed Project are derived from the Department of Business, Energy and Industrial Strategy (BEIS) Guidance Note (2019) (BEIS, 2019). In line with this guidance the decommissioning strategy will consider:

- The Best Practicable Environmental Option, which is the option that delivers the most benefit or least damage to the environment at an acceptable cost, both in the short and long term. This involves balancing the reduction in environmental risk with practicability and the cost of reducing the risk:
  - Safety of surface and subsurface navigation;
  - Other uses of the sea; and
  - Health and safety considerations.

285. In addition, the proposed Project will adhere to the principles of:

- Sustainable development, and will seek to ensure that, as far as reasonably practicable, future generations do not suffer from a diminished environment, or from a compromised ability to make use of marine resources;
- The polluter pays principle, which acknowledges the proposed Project's responsibility to incur the costs associated with its impact on the environment; and
- The waste hierarchy and will seek to maximise the re-use and recycling of materials wherever possible.

286. The proposed Project has an anticipated lifetime of up to 30 years from full commissioning, and therefore advances may be made in the approach to decommissioning, or changes may be made to legislative requirements for decommissioning at this time. Details of the proposed decommissioning strategy will be agreed towards the end of the 30 years operational life of the proposed Project, in line with the applicable legislation and guidelines at that time. This will include the decommissioning programme, activities involved and the arrangements for post-decommissioning monitoring, maintenance, and management of the proposed Project. Engagement with regulators and stakeholders will also be undertaken prior to decommissioning.

287. The decommissioning phase of the proposed Project is expected to be complete within 12 months, between 2052 and 2054.

288. The decommissioning process for the proposed Project will largely mirror the installation process, in reverse as set out below:

- Wind turbine generators (WTGs) will be de-energised and inter array cables (IACs) disconnected and recovered or laid down for later recovery.
- Floating platforms will be disconnected from their moorings and the platform and WTG will be towed to local ports for disassembly.
- Anchors and moorings will be dismantled and recovered to shore for onshore disposal. However, if piles have been used as the anchor solution these will be cut off below the seabed level and the remaining structure recovered to the surface for onshore disposal; The decision to leave piles in situ would be agreed with the Regulator and relevant consultees to ensure this represented the most suitable approach.
- Both IACs and offshore export cables will be lifted from the water column or seabed using a grapnel and/or ROV and cables will be recovered to a vessel for onshore disposal. The recovery vessel will either spool the recovered cable into a carousel or will cut the cable into lengths as it is bought aboard, before being transported to shore.
- In the case of dynamic cables, buoyancy modules will also be removed and recovered to the vessel.
- Cable or scour protection will be recovered using a grab vessel and suitable barge for transport to shore.
- Once onshore project components will be processed and disposed of in accordance with relevant regulations at the time of disposal.

289. It is acknowledged that NRW has previously expressed a preference for buried cabling to be removed on decommissioning, however, there remains strong technical and environmental arguments to retain cables in-situ along with any cable and scour protection. The case for cable and cable/scour protection recovery will be the subject of an environmental and

economic assessment in the years leading up to decommissioning, including discussions with relevant stakeholders and a review of industry best practice at the time to determine the most appropriate approach for the proposed Project.

290. Should any infrastructure be decommissioned in situ, some post-decommissioning activities may be required to identify and mitigate any unexpected risks to navigation or other users of the sea. This includes, for example, anchor piles or cables becoming exposed through natural sediment movement. The requirement for any post decommissioning monitoring will be determined based on the scale of the remaining infrastructure, the risk of exposure and the risk to marine users alongside relevant guidance and industry best practice. This will be discussed and agreed with relevant stakeholders through the decommissioning strategy.

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