



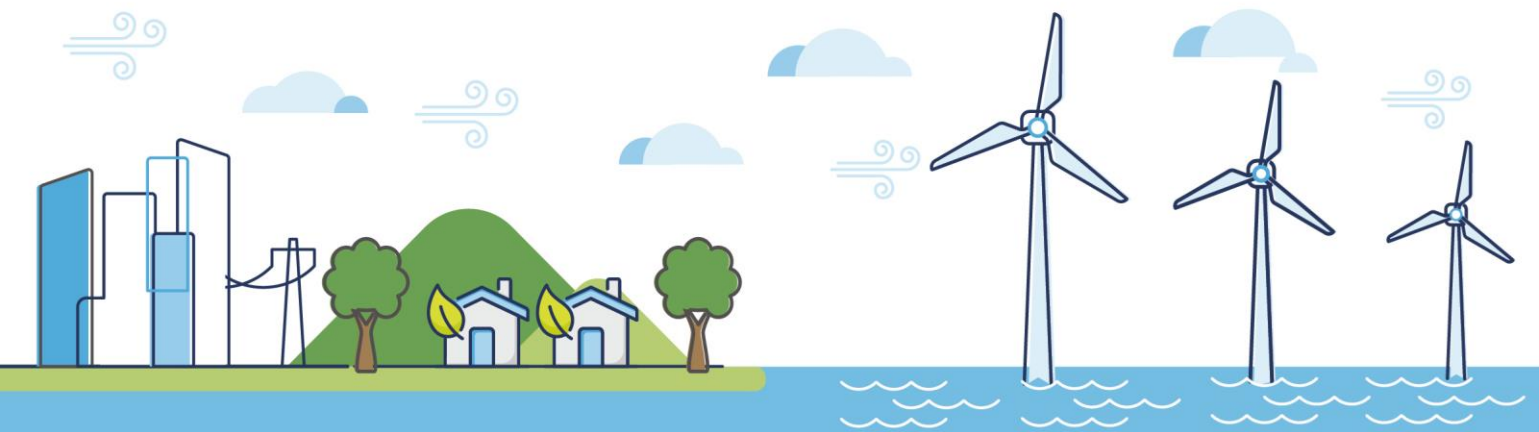
Morecambe Offshore Windfarm: Generation Assets Examination Documents

Volume 9

Outline Underwater Sound Management Strategy

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Glossary of Acronyms

ADD	Acoustic Deterrent Devices
CEA	Cumulative Effect Assessment
DCO	Development Consent Order
dML	Deemed Marine Licence
EIA	Environmental Impact Assessment
EPS	European Protected Species
ES	Environmental Statement
JNCC	Joint Nature and Conservation Committee
MA	Monitoring Area
ML	Marine Licence
MMMP	Marine Mammal Mitigation Protocol
MMO	Marine Management Organisation
MMObs	Marine Mammal Observers
OSP	Offshore Substation Platform
OWF	Offshore Wind Farm
PAM	Passive Acoustic Monitoring
PDE	Project Design Envelope
PEIR	Preliminary Environmental Information Report
SNCB	Statutory Nature Conservation Body
UWSMS	Underwater Sound Management Strategy
UXO	Unexploded Ordnance
WTG	Wind Turbine Generators

Glossary of Terminology

Applicant	Morecambe Offshore Windfarm Ltd
Agreement for Lease (AfL)	Agreements under which seabed rights are awarded following the completion of The Crown Estate tender process.
Generation Assets (the Project)	Generation assets associated with the Morecambe Offshore Windfarm. This is infrastructure in connection with electricity production, namely the fixed foundation wind turbine generators (WTGs), inter-array cables, offshore substation platform(s) (OSP(s)) and possible platform link cables to connect OSP(s).
High-order detonation	An explosive donor charge will be attached to or placed next to the unexploded ordnance (UXO) and will be detonated.
Inter-array cables	Cables which link the WTGs to each other and the OSP(s).
Low-order detonation	This is a method that usually uses a small charge to deflagrate or burn out the explosive material within an UXO, without detonating it.
Monitoring Area	The area around each pile location to be monitored in the pre-piling watch, and where possible during any breaks in piling or soft-start by either Marine Mammal Observers (MMObs) or Passive Acoustic Monitoring (PAM) Operator. This area is 700m from the pile location in all directions.
Offshore substation platform(s)	A fixed structure located within the windfarm site, containing electrical equipment to aggregate the power from the WTGs and convert it into a more suitable form for export to shore.
Platform link cable	An electrical cable which links one or more OSP(s).
Ramp-up	In the piling process, ramp-up forms the second part of the soft-start procedure and follows on from the initial low-energy blows. It comprises a 10-minute period of piling, starting at the low-energy blow level, and gradually increasing in hammer energy. The maximum hammer energy required (operational power for that specific pile) must not be reached within this 10-minute ramp-up period.
Soft-start	The procedure used to commence piling at a lower hammer energy. The soft-start procedure consists of low-energy blows for 10 minutes which are immediately followed by ramp-up for 10 minutes.
Windfarm site	The area within which the WTGs, inter-array cables, OSP(s) and platform link cables will be present.



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1 Introduction

1.1 Background

1. Morecambe Offshore Windfarm Generation Assets (hereafter referred to as the “Project”) is a proposed offshore windfarm located in the Eastern Irish Sea. The Project is being developed by Morecambe Offshore Windfarm Ltd (the Applicant).
2. A marine licence is required before carrying out any licensable marine activities under the Marine and Coastal Access Act 2009. The marine licence activities in relation to the Project will be deemed under the Development Consent Order (DCO). The deemed Marine Licence (dML) will cover works related to the offshore windfarm generation infrastructure (wind turbine generators (WTGs), offshore substation platforms (OSPs), inter-array cables and platform link cables).
3. The Environmental Statement (ES) has been submitted with the DCO Application and presents the findings of the Environmental Impact Assessment (EIA) process. The ES has been prepared in accordance with The Infrastructure Planning (EIA) Regulations 2017 (the 2017 EIA Regulations).
4. In response to the EIA, a direct request from Natural England was made in their in their Relevant Representation (RR-061) to provide an Outline Underwater Sound Management Strategy (UWSMS). The Applicant confirmed in The Applicant’s Response to Relevant Representations (PD1-011) that an Outline UWSMS would be provided at Deadline 2. The Outline UWSMS is applicable to the generation infrastructure and is secured within the dML in the revised Draft DCO (PD1-004 and PD1-005).

1.2 Purpose of the UWSMS

5. The UWSMS is a consent compliance document that provides a strategy to reduce the magnitude of impacts from elevated underwater sound from the Project and consequently contributes to reducing the contribution to potential cumulative impacts. The aim of the strategy is to reduce residual effects on sensitive marine mammal and fish receptors. The UWSMS is an overarching document that includes information on any further mitigation measures necessary to reduce the risk of both injury and disturbance to marine mammals and fish receptors due to elevated underwater sound from those activities assessed within the EIA including piling.
6. At this stage of the Project (Examination), the Outline UWSMS has been drafted to provide an overview of the information that will be detailed within the Final UWSMS, which will be developed post-consent based on further

refined Project design information. To this end, the Outline UWSMS will set out the process for investigating mitigation options (i.e. a strategic look at what could be considered) whilst the Final UWSMS will provide the detail of the approach as determined by the refined Project parameters.

7. The detailed Project design prior to construction will be shared with the licencing authority and mitigation will be agreed via the Final UWSMS if required. The Project is currently considering a range of foundation types (e.g. monopiles, pin piled jackets, suction buckets, gravity base foundations) and a range of foundation numbers (e.g. up to 37 foundations), however these could be reduced post consent (e.g. if a smaller number of bigger turbines were constructed). Maximum hammer energies are also set out as part of the Project Description (see Chapter 5 Project Description (APP-042), however reductions could be applied to hammer energies and durations of piling activity during detailed design and contracting processes.
8. There will also be further information incorporated, where available, on other nearby project construction timelines, such as piling schedules. For the purpose of the Cumulative Effects Assessment (CEA) for marine mammals in the ES (found within Volume 5, Chapter 11 Marine Mammals of the Environmental Statement (APP-048)), it was assumed a large number of projects and activities within the CEA screening areas could be constructed at the same time as the Morecambe Offshore Windfarm. The assessment of cumulative effects from other plans and projects was also based upon the respective design scenarios presented in the ESs for Tier 1 projects or Preliminary Environmental Information Reports (PEIR) for Tier 2 Projects. The assessment does not consider any further mitigation or reduced/refined Project Design Envelopes (PDEs) for other Tier 1 and/or Tier 2 projects that may be implemented post consent. However, if other projects are consented, it is reasonable to assume that they will each implement appropriate measures. It is also understood that, given the length time between consent and the start of construction, timescales of the projects considered for cumulative effects may change.
9. The Final UWSMS will be approved by the MMO in consultation with statutory nature conservation bodies (SNCBs) to agree, in detail, the necessary mitigation measures that will be implemented prior to commencement of and during offshore construction. Production of the Final UWSMS is secured within the dML in the draft DCO (PD1-004 and PD1-005).
10. The Final UWSMS will be in general accordance with the Outline UWSMS and agreed with the relevant authority prior to construction commencing. The Final UWSMS will gather all the relevant information and will allow the Applicant, regulators, and SNCBs to assess the risk (particularly to key receptors highlighted in the ES) and decide upon further mitigation, if required at the time, based on the most up to date information available.

1.3 Linkage with the Marine Mammal Mitigation Protocol

11. As part of the DCO Application for consent, the Applicant has committed to a range of embedded mitigation measures adopted as part of the Project to reduce or eliminate the risk of injurious effects of underwater sound due to piling on marine mammals. A Draft Marine Mammal Mitigation Protocol (MMMP) (APP-149) has been produced and as described above for the UWSMS, a Final MMMP will be developed post-consent, in consultation with the licensing authority and SNCBs, in consideration of any refinements to the Morecambe Generation Assets project design. The Applicant's commitment to the Final MMMP is secured within the dML in the draft DCO (PD1-004 and PD1-005).
12. The draft MMMP also includes other additional mitigation options that could be considered for the Project and includes measures for appropriate and early consultation to agree the final mitigation measures with stakeholders. However, in response to the Relevant Representation made by Natural England and the Marine Management Organisation (in relation to fish), this Outline UWSMS has been produced to provide a mechanism to agree and secure the final additional mitigation required for the Project post-consent. This is in relation to effects from underwater sound on marine mammals and fish (noting that fish are not directly considered in the MMMP). While the UWSMS cannot mitigate for other projects, it also creates an additional mechanism to review the cumulative underwater noise scenario closer to the point of construction when projects schedules are further defined.
13. Post consent, Project design refinements will be undertaken. The UWSMS will detail potential effects accounting for Project refinement and considering the application of appropriate embedded mitigation. Should the residual risk of injury and disturbance to marine mammals and fish not be suitably reduced, the UWSMS will describe the steps to be undertaken by the Applicant post-consent to consider additional mitigation which will be detailed and agreed through the Final UWSMS. The UWSMS also allows a mechanism for consultation with regulators outside of English waters where noise disturbance effects are possible (e.g Isle of Man and Welsh Waters). The Final MMMP will align with the Final UWSMS in relation to marine mammals, with the UWSMS providing further detail, discussion and agreement around potential additional mitigation measures.
14. Separate marine licence applications will be made for geophysical surveys (where applicable) and unexploded ordnance (UXO) clearance. As such, these are not covered within this document, noting the appropriate mitigation for these activities will be agreed as part of the marine licence determinations.

1.4 Structure of the UWSMS

15. The Final UWSMS will contain the sections outlined in **Table 1.1**, as set out in this Outline UWSMS, and will be updated as a live document as more information is assembled on the Project design post consent.

Table 1.1 UWSMS document structure

Section	Title	Overview
1	Introduction	Introduction to the UWSMS. Background to the consent requirements; brief outline of the objectives, scope and purpose of the UWSMS, detailing how it will address the conditions in the dML and links to other relevant consent compliance plans.
2	Overview of Environmental Sensitivities	Environmental sensitivities in relation to sensitive marine mammals and fish receptors.
3	Consultation	A summary of the consultation undertaken with SNCBs with regard to marine mammals and fish for application to the UWSMS.
4	Responsibilities for the UWSMS	Responsibilities and ownership of the UWSMS, including details of key roles, organisation and change management systems.
5	Measures adopted as part of the Project	A summary of the embedded mitigation adopted by the Project
6	Project construction activities	Summary of activities likely to result in elevated sound and require further consideration
7	Refinements in Project design and updated effects review	Reduction in effects for key species due to refinements in Project design post-consent compared to the DCO Application.
8	Review of project timescales and timescales of cumulative projects	A review of projects included in the CEA and their latest times scales/project stage
9	Further management measures	Summary of steps to be undertaken to reduce magnitude where residual risk cannot be mitigated via embedded measures adopted as part of the Project.
10	Licences and legal requirements	A summary of additional licences which may be required for the construction activities.
11	Reporting	A summary of reporting mechanisms
12	References	List of cited references.

2 Overview of Environmental Sensitivities

16. This section will set out the sensitivities in relation elevated underwater sound as highlighted in the DCO Application for consent.
17. This section will also present an overview of the effects with respect to injury and disturbance on sensitive receptors.

2.1 Marine mammals

18. In the ES, harbour porpoise, minke whale and grey seal were identified as being potentially sensitive to auditory injury arising from elevated underwater sound from piling for the Project alone without mitigation.
19. All marine mammal species were identified as being potentially sensitive to disturbance arising from the elevated underwater sound from piling during the CEA, but no significant effects were identified through the population modelling undertaken. Further details are provided in Volume 5, Chapter 11 Marine Mammals of the ES (APP-048) including a high-level summary of the baseline ecology of these species and the potential effect from elevated underwater sound.
20. Potential effects will be reviewed when the Project design has been finalised and mitigation measures confirmed post consent.

2.2 Fish

21. In the ES, no fish species were identified as potentially being significantly affected by elevated underwater sound during piling from the Project alone. In their relevant representations (RR-047), the Marine Management Organisation (MMO) have provided feedback stating that they do not agree with the conclusions of the ES, specifically in the case of spawning Atlantic cod (*Gadus morhua*). Atlantic cod have physiological hearing adaptations (namely swim bladders involved in hearing) which elicit high sensitivity to sound, particularly impulsive sound during piling. Atlantic cod spawning grounds within the Irish Sea overlap with the Project area (see Figure 10.8a and b of APP-094). Further details are provided in Volume 5, Chapter 10 Fish and Shellfish Ecology of the ES (APP-047).

3 Consultation

3.1 Post-application consultation

22. This section will detail the consultation undertaken post-application to develop the outline UWSMS, with the licensing authority and relevant statutory advisors. It will clearly set out how the Applicant has engaged with SNCBs on

the development of the outline UWSMS. The Final UWSMS will be agreed prior to pilling commencing.

3.2 Post-consent consultation

23. This section will detail consultation undertaken post-consent with the licensing authority and relevant statutory advisors on the Final UWSMS. It will clearly set out how the Applicant has engaged with the licencing authority and SNCBs on the development of the Final UWSMS.

4 Responsibilities for the UWSMS

4.1 Key roles

24. The key roles and responsibilities for implementing the various measures detailed in the Final UWSMS will be described in this section, alongside how communication between the responsible parties involved in construction activities that generate elevated underwater sound will be managed. The roles and titles may change as the Project progresses, but the Applicant will be responsible for the live management and consultation on the draft document prior to formal submission, after which the MMO will lead on consultation on the Final UWSMS to discharge the relevant dML condition.
25. Key contractors for foundation installation will be detailed in this section and the responsibility for ensuring the day-to-day implementation of the documented measures in the Final UWSMS will lie with the relevant installation contractors and the mitigation team (including the Acoustic Deterrent Devices (ADD) operator/Marine Mammal Observers (MMObs) and Passive Acoustic Monitoring (PAM) personnel).
26. Indicative key roles may include:
- A Project Manager (construction phase) (or equivalent) responsible for ensuring that sufficient resources and processes are in place to deliver/comply with the documented measures.
 - A Project Manager for Offshore Installations (or equivalent) who will ensure that provision is made for matters relating to the delivery of the documented measures and that construction personnel and contractors are fully briefed. The Project Manager for Offshore Installations (or equivalent) will provide reporting to the Project Manager and where necessary address any non-compliances in relation to the Final UWSMS.
 - Consents Team (or equivalent) who are responsible for monitoring ongoing compliance with the documented measures. Key responsibilities include being the primary contact for the licensing

authority, and other statutory bodies or stakeholders and will be responsible for managing and reporting on compliance with dML consent conditions to the licencing authority.

- Mitigation team (ADD operator, MMObs, PAM) which will be responsible for deployment of mitigation measures, and communication with the full distribution team including the Consents Team.

27. An organisational chart of the identified roles for the implementation of the Final UWSMS during construction will be provided in this section.

4.2 Change management

28. The Final UWSMS will set out the proposed methods for piling at the Project windfarm site and procedures to mitigate the effects of piling if required on the sensitive marine mammal and fish species identified in the relevant consent conditions. It will be a live document, that will be updated at relevant milestones in the light of any new significant information related to operations.

29. Therefore, should it be necessary to update the Final UWSMS, a change management process, will be outlined and used.

5 Measures adopted as part of the Project

30. This section will summarise the commitments made as part of the design of the Project and construction sequence. This will include the commitment to no concurrent piling and a limit of 4 pin piles or three monopiles installed in a 24hr period.

31. This section will also summarise embedded mitigation measures committed to, including those outlined in the MMMP:

- Establishment of a monitoring area (MA) with a minimum 500m radius;
 - The observation of the MA would be conducted by trained, dedicated and experienced MMObs during daylight hours and when conditions allow suitable visibility (visibility of entire MA; sea state 3 or less).
 - Deployment of PAM devices in the MA during poor visibility or at night.
- The activation of the ADD;
- Soft-start and ramp-up procedures; and
- Procedure for breaks in piling.

32. The Applicant would ensure that the mitigation measures are adequate to minimise the risk of marine mammals being present within the MA prior to piling activity commencing, to reduce the risk of any physical or auditory injury.

33. The methods for establishing the MA and reducing the potential impacts of piling operations would be agreed with the licencing authority, in consultation with relevant stakeholders, and would be secured as commitments within the Final MMMP.

6 Construction activities

34. This section will summarise the activities that are covered in the Final UWSMS, with the potential for underwater noise effects.
35. An overview of piling will be presented in this section in the Final UWSMS based on the refined Project design. Final wind turbine numbers and OSPs will be detailed alongside the piling methodology and construction programme.

7 Refinements in Project Design and updated effects review

36. This section will describe any Project design refinements based on further information available post consent. At application stage a project must consider the worst-case scenario using a project design envelope, however, experience of other constructed projects in UK waters demonstrates that additional data and detail design work can be used to refine the design such that anticipated pile diameters and/or hammer energies may be reduced. Post-consent this section will identify whether there is a sufficient reduction in the Project design envelope such that no further mitigation is required or conversely, whether additional measures are needed due to potential residual effects.
37. The following parameters will be subject to potential refinement, and as such this section will include a review of the following parameters and describe any reduction in effects as a result:
- Foundation type, pile type, number and size and construction sequence;
 - Maximum hammer energies, strike rate, soft start and ramp up procedures and piling duration;
 - Construction programme.

8 Review of Project timescales and timescales of cumulative projects

38. This section will provide a review of the projects included in the CEA and evaluate overlap of activities based on more up to date project information. While the effects of other projects cannot be mitigated by the Project, this section will be used to feed into consideration of the mitigation measures required for the Project, in its ability to reduce contribution to cumulative effects.

9 Further management measures

39. This section will consider further management measures to reduce the magnitude of any residual effects to a non-significant level. If none are required, then it will be acknowledged in this section of the Final UWSMS.
40. This Outline UWSMS provides a summary of measures currently available or likely to be available in the future, which could be applicable to reducing residual effects from underwater sound from pile driving. The need for these measures will be considered as part of the finalisation of the UWSMS.

9.1 Noise mitigation systems

41. Noise mitigation systems are continually being developed and improved across the industry that enable a reduction of pile driving noise (decibels) at source. These methods currently include various types of bubble curtain, hydro-sound dampers, screens or tubes, vibro- and hydro-hammers.
42. A reduction in the noise at source would reduce the total area of potential disturbance to marine mammal and fish species. However, it should also be noted that many of these measures may increase the total duration of disturbance from underwater noise during foundation installation and this should be a consideration in an assessment of their efficacy.
43. The mitigation measure(s) (or suite of measures including Noise Abatement Systems) that may be implemented during the construction of the Project will be determined in consultation with the regulator and relevant SNCBs. Any requirement for noise mitigation shall be determined following confirmation of final hammer energies and foundation types, collection of any necessary additional survey data (e.g. geotechnical data), the update of the project and location specific noise model(s) including information on maturation of emerging technologies. The most recent guidance and research on marine mammal and fish behaviour will be applied to the assessment of potential mitigation measures.

44. It should be noted that suitability of any noise mitigation system would be dependent on a number of factors including pile diameter and length, ground conditions, environmental conditions, and water depth. These factors will be considered in any assessment of the efficacy of the measure. The information to inform this selection would be contingent on the selection of the chosen foundation type and installation contractor, which will only be available once contracts are being finalised post consent.

9.2 Spatial phasing

45. As stated in **Section 5** the Project is committed to no concurrent piling, which would reduce the total area of significant disturbance at any one time. Given the size of the Windfarm Site it is not expected that further spatial phasing would be required, however a combination of spatio-temporal planning is considered below for fish.

9.3 Temporal phasing/restrictions

46. Seasonal scheduling could also be used as a measure to reduce the duration of any continuous disturbance within a given time period (month, season or year). However, it is noted that temporal restrictions are not considered to be required in addition to noise abatement. The MMO note in their Relevant Representation (RR-047) that *UWN modelling incorporating the use of noise abatement measures has been shown to reduce the range of effect for disturbance with sensitive habitats such as spawning grounds.*
47. The site-specific surveys for the Project showed a high presence of harbour porpoise throughout the year (further information in Volume 5, Appendix 11.2 Marine Mammal Information and Survey Data (APP-066). Howe (2018) suggested bottlenose dolphins in Manx waters are highly temporal and sighted only in winter months (between late August and March) where the waters provide a vital habitat during these months. Minke whale have been sighted regularly in Manx waters in the summer, they were highly seasonal and have been sighted mainly in the summer months, with 97.2% being reported between May and November (Howe, 2018).
48. For marine mammals, the variable seasons for peak species abundance means seasonal scheduling at the Project would not produce a reduction in potential effects. Management could however include the limiting of piling on the same day as Project high order clearance of unexploded ordnance (UXO) without mitigation (if required). This would reduce the area of the effect that may displace species from the area at any one time.
49. For fish, cod spawning occurs January – April (inclusive) with peak spawning during February and March. In a temporal sense, spatio-temporal planning of piling could be implemented if required to avoid piling (using the maximum

modelled hammer energy as assessed in the ES) in the Windfarm Site during the peak spawning period, or consideration of spatial piling whereby locations in the deepest sections of the windfarm site (with the largest impact) are avoided in the cod spawning season. This would also represent a reduced impact magnitude cumulatively, by reducing the potential for contributing to cumulative ensonification of Irish Sea cod spawning grounds during the reported spawning period.

50. For fish, consideration would be given to any residual need for a seasonal restriction in relation to winter cod spawning. However, this measure would not be considered in the event that sufficient noise abatement was employed or if the design parameters were refined to reduce the impact range to an acceptable level, which would be agreed with the MMO.

9.4 Other potential measures

51. Given the time lag between consent and the start of offshore construction, it is possible that new measures would become available. As such, the Final UWSMP would not be restricted only to potential measures outlined above. Rather, the UWSMP allows the consideration and assessment of other relevant technologies or methodologies that may have emerged by the time of offshore construction. This would ensure that any new technologies or methods that may be developed could be used during construction of the Project.

10 Licences and legal requirements

10.1 Marine wildlife licence application

52. The European Commission Habitats Directive (92/43/EEC) lists all cetaceans in Annex IV, i.e. species for which a system of strict protection needs to be established. There is a requirement to consider European Protected Species (EPS) through the Habitats Directive which is transposed into UK law by the Conservation (Natural Habitats) Regulations 1994 (as amended) (out to 12 nm). Beyond 12 nm for all UK administrations, the Conservation of Offshore Marine Habitats and Species Regulations 2017 consolidate and update the Offshore Marine Conservation (Natural Habitats &c) Regulations 2007.
53. A Marine Wildlife Licence application would be made for all activities that have the potential for injury or disturbance on EPS (cetaceans). The application would only be submitted after initial round(s) of consultation on the draft UWSMS and on the separate MMMP for piling and any required MMMP for UXO clearance based on the final Project requirements and design. The activities that may require an EPS licence are:
 - Piling

- UXO clearance (if required)
54. Prior to these activities taking place, an EPS risk assessment would be undertaken, following the staged approach as outlined in ‘The protection of Marine European Protected Species from injury and disturbance’ (JNCC *et al.*, 2010). If it is deemed that an EPS licence is required for any activity, an EPS Risk Assessment document would be produced, and a Marine Wildlife Licence applied for.
55. Mitigation would be put in place for piling (and UXO clearance as part of a separate Marine Licence), as per the JNCC guidelines. Where ADDs are required, these would also be considered within the risk assessments. The EPS licence can require all piling operations, UXO clearance and ADD operations to be carried out in accordance with the Final UWSMS and the Final MMMPs.

10.2 UXO clearance marine licence

56. A separate marine licence for UXO clearance would be sought, with the necessary information (including the final MMMP for UXO clearance), being provided through the marine licensing process. Proposed measures to mitigate potential impacts from UXO clearance have been provided within the draft MMMP (APP-149) for information purposes only, consistent with Natural England’s advice that the DCO Application should include a high-level assessment of potential UXO clearance.
57. As such, a separate MMMP for UXO clearance would be developed for the Project at the pre-construction stage. The final MMMPs would take account of the most suitable mitigation measures and up to date scientific understanding at the time of construction. These measures would be consulted upon with the MMO and SNCBs.
58. The final MMMP for UXO clearance would be submitted to the MMO for approval prior to the start of relevant works, in consultation with the relevant SNCBs.
59. The methods for reducing the potential impacts of any UXO clearance would be agreed with the MMO in consultation with relevant stakeholders including SNCBs and would be secured as commitments within the Final MMMP. The UXO clearance measures could include:
- UXO would be avoided and left in situ;
 - If the UXO appears structurally sound and there is an acceptably low health and safety risk of detonation in transit, the UXO could potentially be relocated to a location within the DCO boundary that is not in a sensitive area (e.g. away from a designated site or existing or planned infrastructure) for subsequent long term storage or clearance if required, subject to consultation with relevant sea users

- Low-order disposal techniques, this would be the preferred method for all in-situ UXO clearance where possible
- The potential use of bubble curtains or other approved noise abatement systems if high-order UXO detonation is required, taking into account the environmental conditions within which they could be effective.

10.2.1 Clustering of UXO devices

60. The ability to cluster UXO devices would limit the total potential area of disturbance and the potential cumulative noise exposure that would otherwise result from successive detonations of UXO devices in discrete areas. If it is possible (and safe to do so), UXO could be detonated together in one area, once they have been clustered. This will be considered as an option if a UXO clearance Marine Licence is needed.

11 Reporting

11.1 Overview

61. This section will set out how data gathered will be used and reported on for the Final UWSMS, in line with the requirements of the dML conditions.
62. Members will report via the appropriate chain of command on completion and/or compliance with the mitigation measures.

11.2 Field records

63. This section will detail commitments to reporting in field records in the Final UWSMS.
64. Reports are likely to include, but not limited to, the following:
- Location and piling activity;
 - Weather conditions during ADD or NAS deployment, including visibility;
 - Start and end times of soft start piling;
 - Details of soft-start procedures and hammer energy employed at each piling location, including the duration of full-power piling;
 - Confirmation that the ADD or NAS has been tested and is functioning as per specifications;
 - Time and duration of ADD or NAS deployment prior to piling events;
 - Observations of marine mammals during the testing and deployment of the monitoring and mitigation options.
65. The Project will collate and issue relevant data to relevant parties (e.g. Consents Team) and report to the licensing authority.

11.3 Compliance reporting

66. This section will detail compliance reporting for the Final UWSMS.
67. This could include an UWSMS compliance report and provision of marine mammal observations and other additional files (such as hydrophone records) if required.

12 References

Howe, V.L. (2018). Marine Mammals-Cetaceans. In; Manx Marine Environmental Assessment (1.1 Edition - partial update). Isle of Man Government. pp. 51. Available at: <https://www.gov.im/media/1363399/ch-34a-cetaceans.pdf>.

JNCC, Natural England and CCW (2010). Draft EPS Guidance - The protection of marine European Protected Species from injury and disturbance. Guidance for the marine area in England and Wales and the UK offshore marine area. Joint Nature Conservation Committee, Natural England and Countryside Council for Wales. October 2010.