

Fishguard Linkspan Replacement

Marine Mammal Mitigation Plan

Fishguard Linkspan
Replacement
MMMP
23 Sep 2026

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Acronyms

Unit	Meaning
AUD INJ	Auditory Injury
ES	Environmental Statement
HF	High Frequency
JNCC	Joint Nature Conservation Committee
LF	Low Frequency
MDS	Maximum Design Scenarios
MMMP	Marine Mammal Mitigation Plan
MMOb	Marine Mammal Observer
MZ	Mitigation Zone
NRW	Natural Resources Wales
NMFS	National Marine Fisheries Service
PCW	Phocid Carnivores in Water
SEL	Sound Exposure Level
SPL	Sound Pressure Level
VHF	Very High Frequency

1 Marine Mammal Mitigation Plan

1.1 Introduction

This Marine Mitigation Plan (MMMP) has been prepared by Tetra Tech on behalf of Stena Line Limited (hereafter referred to as “the Licence Holder”) for the Fishguard Linkspan Replacement (hereafter referred to as “the Project”). The Project involves the replacement of a linkspan and jack up barge and the construction of a replacement pontoon to allow berthing of the ferry at Abergwaun (Fishguard) Harbour in the long term.

1.1.1 Purpose

The purpose of this MMMP is to minimise the risk of auditory injury to marine mammals from piling noise generated by the Project.

This MMMP has been prepared to fulfil the requirements for the discharge of **Condition 3.23** of the Marine Licence for the Project (**CML2612**) which requires the following:

- **3.23.1** The Licence Holder must submit a MMMP to the Licencing Authority for written approval at least 2 months prior to the commencement of the Licensed Activities. No Licenced Activities may be undertaken prior to written approval from the Licencing Authority.
- **3.23.2** The Licence Holder must ensure that any actions outlined in the document detailed in condition **3.23.1** are implemented as approved in writing by the Licensing Authority. Any proposed changes to the actions outlined in the documents must be submitted to, and approved in writing by the Licensing Authority prior to any changes being enacted.

Condition 3.27 of the Marine Licence for the Project (**CML2612**) also requires:

- **3.27.1** The Licence Holder must complete an entry into the UK Marine Noise Registry detailing the proposed dates and locations and nature of the piling activities at least **10 days** prior to its commencement.
- **3.27.2** The Licence Holder must amend the marine noise registry proposed activity form should the timing of the piling activities alter or no longer remain part of the project.
- **3.27.3** The Licence Holder must complete an entry into the Marine Noise Registry detailing the actual dates, location(s) and nature of the piling activities every **6 months** following the commencement of piling activities until the completion of piling activities with the final entry to be completed within **8 weeks** of completion of the noisy activity.

This MMMP provides a summary of the findings as assessed in the Marine Biodiversity chapter of the Environmental Statement (ES) (Volume 1, Chapter 8), which considers the potential impacts of the Project and identifies impact piling as the relevant noise generating activity.

Other activities associated with the Project such as vessel movement and construction activities (excluding impact piling) do not pose a risk of injury to marine mammal receptors and therefore are not included within this MMMP.

This MMMP provides the practical, contractor-ready procedures to minimise the risk of injury to marine mammals during impact piling activities and ensures compliance with Joint Nature Conservation Committee (JNCC) guidelines. The mitigation detailed in this MMMP draws from JNCC (2010) guidelines.

1.1.2 Project Background

This MMMP is informed by the following key chapters of the ES:

- Volume 1, Chapter 2: Project Description;

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- Volume 1, Chapter 8: Marine Biodiversity; and
- Volume 1, Chapter 14: Underwater Acoustics.

A wide range of marine mammals have been recorded in Welsh waters, with some of these species occurring in very low numbers and regarded as 'occasional visitors' to the area. Therefore, the commonly occurring marine mammal species (harbour porpoise *Phocoena phocoena*, bottlenose dolphin *Tursiops truncatus*, and grey seal *Halichoerus grypus*) were considered within the ES. Additionally, the common dolphin *Delphinus delphis* was also included in response to consultation received from Natural Resources Wales (NRW).

It should be noted that although the identified marine mammal species were considered within the ES assessment, the mitigation procedures within this MMMP apply to all marine mammal species.

2 Summary of Impact Requiring Mitigation

The greatest potential injury ranges were predicted for impact piling of the support piles. Impact piling (i.e. and impulsive noise source) will only take place in connection with the installation of eight support piles, each of which will require less than half an hour of impact piling each, for a total maximum duration of impact piling spread over two to ten days.

The impact ranges presented in Volume 1, Chapter 8: Marine Biodiversity of the ES (reproduced in Table 2.1) were based on the National Marine Fisheries Service (NMFS) threshold guidance for Auditory Injury (AUD INJ) (NMFS, 2024). Ranges were based on the maximum modelled value over the entire piling sequence.

Injury thresholds were based on a dual criteria approach using Sound Exposure Level (SEL) (weighted) using a 1 seconds' exposure and maximal instantaneous Sound Pressure Level (L_p) (unweighted - peak pressure).

The assessment of injury results were presented as the geographical "risk range" to an auditory threshold. A given risk range specifies the expected range, within which, a fleeing receiver would exceed the relevant threshold. Risk ranges are given for the 90th percentile value and the maximal value. The conditions were as stated:

- AUD INJ, 1 seconds' exposure: This is the range of acute risk of impact from the activity (a one second exposure) and is presented to indicate instantaneous risk and for comparison with other studies. This assumes a stationary animal (during the 1-second exposure) with all equipment operating at full power and does not include a soft start.
- AUD INJ, sound exposure, fleeing receiver, no soft start: The minimal range a fleeing animal needs to start fleeing from to avoid being exposed to noise exceeding its AUD INJ threshold. Animals are moving in a straight line away from the source at a constant speed of 1.5m/s (0 m/s for fish, including sharks).
- AUD INJ, sound exposure, fleeing receiver, 20-minute soft start: Minimal starting range for a fleeing animal with a 20 min soft start, where the piling is 12 dB lower than normal operation (lowest power).
- AUD INJ, peak pressure: This is the range of immediate risk of impact from the activity and indicate instantaneous risk. This criterion is based on a single exposure to peak pressure compared with the L_p threshold for impulsive noise. Only relevant for impulsive noise sources.

The maximum predicted injury threshold exceedance range for impact piling of support piles at the main pontoon, with **no soft start**, was 880 m for the Very High Frequency (VHF) functional hearing group (i.e. harbour porpoise) (Table 2-1). The injury exceedance ranges for the Phocid Carnivores in Water (PCW) functional hearing group (i.e. grey seals) was 720 m, and for the High Frequency (HF) function hearing group (i.e. common and bottlenose dolphins) was 40 m.

The introduction of a **20-minute soft start** with piling 12 dB lower than normal operation, reduces the maximum predicted injury threshold exceedance ranges to **630 m** for the VHF, 110 m for the PCW and <10 m for the HF functional hearing groups.

Table 2-1: Marine Mammal Threshold Exceedance Ranges for Impact Piling (Support Piles) at the Main Pontoon.

Condition		HF	VHF	PCW
AUD INJ, 1 seconds' exposure	90 th percentile range [m]	<10	120	10
	Maximal range [m]	<10	120	10
AUD INJ, sound exposure, fleeing receiver, no soft start	90 th percentile range [m]	30	870	690
	Maximal range [m]	40	880	720
AUD INJ, sound exposure, fleeing receiver, 20-minute soft start	90 th percentile range [m]	<10	600	80
	Maximal range [m]	<10	630	110
AUD INJ, peak pressure	90 th percentile range [m]	10	10	10
	Maximal range [m]	10	10	10

2.1 Roles and Responsibilities

2.1.1 Mitigation Team

The mitigation team for impact piling will comprise McLaughlin & Harvey Site Project Manager, the Works Supervisor and the Marine Mammal Observer (MMOb). These roles are described in the following sections.

2.1.1.1 McLaughlin & Harvey

McLaughlin & Harvey is responsible for monitoring compliance with planning consents and ensuring that all compliance documents, including this MMMP, are included in construction contract documents, including those pertaining to piling. McLaughlin & Harvey will also be responsible for providing a pre works introduction session/s, and for ensuring that all activities are conducted in accordance with this MMMP, with other related consent management plans, and with all relevant regulations and legislation. McLaughlin & Harvey is responsible for decision making regarding halts to operations in the event of a non-compliance with the MMMP and/or consent conditions and will report marine mammal monitoring and activities related to piling activities along with all non-compliances, to Natural Resources Wales (NRW)/JNCC.

2.1.1.2 Works Supervisor

The 'Works Supervisor' is the individual/s who holds overall responsibility for operations during piling and is based on the piling platform. The Works Supervisor is in control of initiating, delaying or pausing operations and is the main point of communication between the Marine Mammal Observer (MMOb) and the operations teams (i.e. those personnel responsible for carrying out piling activities).

2.1.1.3 Marine Mammal Observer

A dedicated¹ and trained MMOb will be used to visually survey the mitigation zone and conduct the pre-start searches. The MMOb will be JNCC certified and have the appropriate level of field experience (i.e. a minimum of one year's experience on offshore projects).

The MMOb will be responsible for recording all marine mammal sightings in the appropriate format, along with other environmental data. The MMOb will be responsible for compiling all data on marine mammal observations, mitigation activities and instances of noncompliance for reporting to NRW/JNCC and the Marine Noise Registry (see Section 2.3).

The MMOb must be familiar with the regulatory procedures pertaining to managing risk to marine mammals from underwater sound and to ensure compliance must be provided with full details of all

¹ A dedicated MMOb is defined as one whose only role is to conduct visual watches for marine mammals.

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licence/consent conditions relevant to the performance of their role in advance of activity commencing. The MMOB will provide a detailed introduction during the pre-works introduction session/s to advise the offshore team on the implementation of the procedures set out in this MMMP.

The MMOB should ensure their efforts are concentrated on the mitigation periods, (i.e. the pre-start search and soft start time periods). JNCC guidelines, and this MMMP, should not be interpreted to imply that MMOBs should continue a visual search during all available hours, unless specified as a survey consent or licence condition.

The MMOB will have the necessary authority (or support by Works Supervisor) to implement the plan and advise a stop works if necessary.

2.1.2 Communication

At the planning stage the communication channels between MMOB and the piling crew are to be established. In addition, a formal chain of communication from the MMOB to the person who can start/stop operations must be established. This is important, because contractors working to a tight timetable may not fully appreciate the roles and responsibilities of the MMOB. In order to establish the chain of communication and command the MMOB should attend any relevant pre-mobilisation meetings.

2.2 Mitigation Methods and Procedures

Standard mitigation protocols will be used to reduce the risk of auditory injury from impact piling to negligible levels.

2.2.1 Marine Mammal Observers

2.2.1.1 Mitigation Zone

The MMOB will visually monitor the agreed Mitigation Zone (MZ) before piling can commence. The MZ is the area within which mitigation measures are implemented to ensure the avoidance of injury to marine mammals.

As per the JNCC (2010) guidance, a constant effort pre-piling search will be undertaken by the experienced MMOB to monitor a radial MZ of at least 630 m from the source of the piling noise in order to minimise the likelihood of marine mammals being present within this range.

The Works Supervisor will notify the MMOB at least one hour prior to the planned start of the piling initiation to allow sufficient time for the search period and soft start.

2.2.1.2 Visual Monitoring

Piling activities shall only commence in daylight hours where effective visual monitoring, as performed and determined by the MMOB, has been achieved. Where effective visual monitoring, as determined by the MMOB, is not possible (including in circumstances in which poor visibility prevents the 630 m MZ from being visually monitored) the sound producing activities shall be postponed until effective visual monitoring is possible.

The dedicated and qualified MMOB will conduct pre-start monitoring of the MZ from the quayside of the landside dolphin, at least 30 minutes prior to the start of piling. Visual monitoring for marine mammals will be conducted from a suitable vantage point, that allows 360° visualisation, and full coverage of the MZ. Multiple MMOBs may be required to ensure that the monitoring is not compromised in terms of 360° visibility, and/or observer fatigue.

The MMOB must concentrate their efforts on the appropriate measures to be implemented in advance of and during commencement, breaks in and resumption of piling activity.

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The MMOB will be equipped with reticule binoculars and Marine Mammal Reporting forms² and will be capable of determining the extent of the MZ in relation to their viewing platform. A range stick may be used to aid the estimation of distance of the sighting from the viewing platform. The MMOB should also be equipped with a two way radio to ensure communication with the operations crew. This is to allow any visual detections of marine mammals in the MZ and any subsequent delay required to the commencement of piling to be communicated quickly and effectively between all parties. If marine mammals are detected within the MZ during the pre-piling search, then piling will not commence.

The MMOB will communicate with the Works Supervisor to confirm that the MZ is clear of marine mammals, and that the piling operations (including soft start, see Section 2.2.2) can commence. The lines of communication and sequencing of events are shown in Figure 2-1.

2.2.2 Soft Start Procedure

The soft start/ramp up procedure starts following MMOB mitigation and is the incremental increase in hammer energy over a set period, with hammer initiation at the lowest hammer energy and strike rate.

Soft start/ramp up is a designed-in measure and required by engineers to initially set the pile into the sediment (Thompson *et al.*, 2020). However, the use of lower hammer energies at the beginning of the installation allows greater time for marine mammals to move away before maximum hammer energies are reached. The noise generated by the soft start/ramp up process is therefore considered to act as a deterrent effect, effectively reducing the modelled maximum MZ (as assessed at maximum hammer energy).

If a marine mammal enters the MZ during the soft start then, where possible, the piling operation should either cease, or not increase hammer energy, until the marine mammal leaves the MZ, and there is no further detection for 20 minutes. The MMOB will track any marine mammals detected to ensure that they have left the MZ before piling or the soft start continues.

2.2.3 During Piling Operations

It is acknowledged that, for engineering reasons, it may not be possible to stop piling at full power until the pile is in final position. Therefore, if marine mammals are detected in the MZ during full power piling, there will be no requirement to cease piling or to reduce piling energy as the animal would be deemed to have entered the area “voluntarily”. Figure 2-1 illustrates the sequence of events and lines of communication required to implement the MMMP.

2.2.4 Breaks in Piling Operations

If for any reason there is a break in piling activity for greater than 10 minutes, then the pre-piling search and a full soft start procedure should be repeated before piling recommences. If a watch has been kept during the piling operation, the MMOB should be able to confirm the presence or absence of marine mammals, and it may be possible to commence the soft start immediately. However, if there has been no watch, the complete pre-piling search and soft start procedure should be undertaken

² [Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise | JNCC Resource Hub](#)

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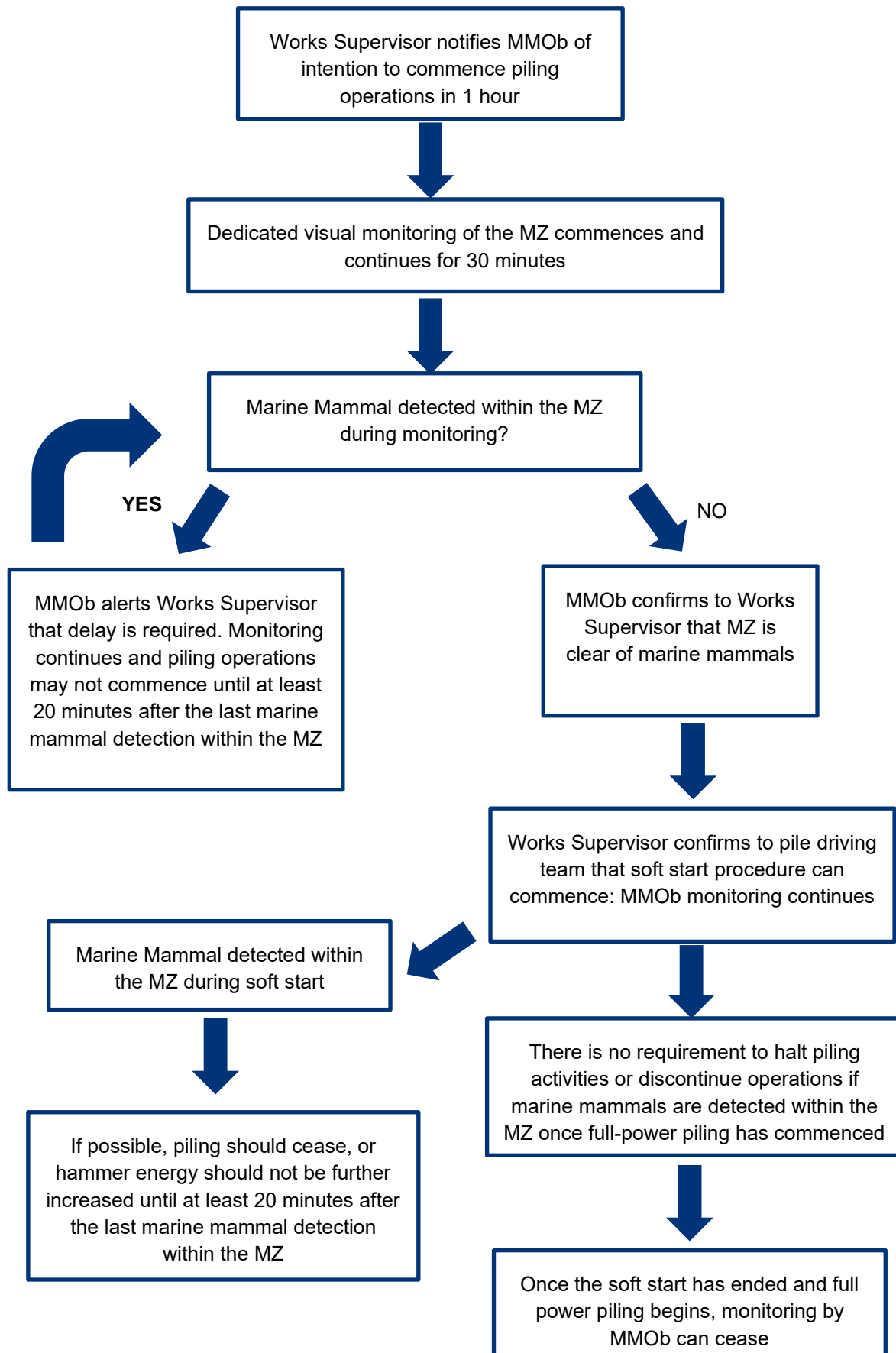


Figure 2-1 Task and Communication Plan for Piling Operations Start Up

2.3 Reporting

McLaughlin & Harvey Site Project Manager will be responsible for monitoring piling operations and the implementation of this MMMP, and will keep a detailed record of operations, mitigation procedures and any marine mammal sightings.

These records will be prepared and submitted in compliance with consent and/or licence conditions to NRW/JNCC and will include completing and submitting marine mammal recording forms³ provided by JNCC and a copy of the relevant consent or licence.

All reporting will include the following as per the JNCC (2010) guidelines;

- the mitigation procedures followed;
- date and location of the piling operations;
- a record of all occasions when piling occurred, including details of the duration of the pre-piling search and soft start procedures;
- any occasions when piling activity was delayed or stopped due to the presence of marine mammals;
- details of watches made, including details of any sightings and details of the piling activity during the watches;
- details of any problems encountered during the piling process including instances of non-compliance with the MMMP, and variations from agreed procedures; and
- any proposed recommendations based on the project and any marine mammal sightings/behaviour encountered during the mitigation operations which could benefit future projects.

2.3.1 Submission of Data to the Marine Noise Registry

As well as the above reporting, the Licence Holder must submit data to the Defra/JNCC Marine Noise Registry for piling activities as per **Condition 3.27** of the Marine Licence **CML2612** (see Section 1.1.1).

³ In original excel format, do not convert to PDF

References

- JNCC. (2010). *Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise*. Joint Nature Conservation Committee. Aberdeen, Scotland pp.13.
- NMFS. (2024). *Update to: Technical Guidance for Assessing the Effects of of Anthropogenic Sound on Marine Mammal Hearing (v3): Underwater and In-Air Criteria for Onset of Auditory Injury and Temporary Threshold Shifts*. NOAA. US Department of Commer. NMFS-OPR-71. pp.182.
- Thompson, P. M., Graham, I. M., Cheney, B., Barton, T. R., Farcas, A. and Merchant, N. D. (2020). *Balancing risks of injury and disturbance to marine mammals when pile driving at offshore windfarms*. *Ecological Solutions and Evidence*, 1 (2), pp.e12034. DOI:<https://doi.org/10.1002/2688-8319.12034>.