Awel y Môr Offshore Wind Farm

Category 6: Environmental Statement

Volume 5, Annex 5.11: Noise Modelling for Important Ornithological Features

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AWEL Y MÔR OFFSHORE WIND FARM

Noise Modelling for Important Ornithological Features (Onshore)

Prepared for: Awel y Môr Offshore Wind Ltd

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BASIS OF REPORT

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1.0 Introduction

1.1 Background

Awel y Môr Offshore Wind Farm (AyM) is a Nationally Significant Infrastructure Project (NSIP). An Environmental Impact Assessment (EIA) has been undertaken and an Environmental Statement (ES) is provided as part of the Development Consent Order (DCO) application under the Planning Act 2008.

SLR Consulting (SLR) was commissioned by GoBe Consultants, on behalf of Awel y Môr Offshore Wind Ltd (the Applicant), in May 2020, to undertake the onshore ecological work necessary to inform the EIA. The onshore ecological surveys included wintering bird surveys, carried out during the winter of 2020-2021, the results of which are provided in the ES Volume 5, Annex 5.3: Wintering Bird Survey Report (application ref: 6.5.5.3).

Consideration of the wintering birds survey findings, as part of the initial assessment undertaken to inform the preparation of the ES (Volume 3, Chapter 5: Onshore Biodiversity and Nature Conservation (Application ref 6.3.5)), highlighted the presence of wintering bird populations considered to be of county level importance at two locations, at the proposed landfall and at the proposed crossing of the River Clwyd. Airborne noise modelling was therefore recommended in order to inform the assessment of potential disturbance impacts on these important bird populations, during the construction of the proposed development.

1.2 Purpose of this Report

This report provides details of the noise modelling carried out (Section 2) and presents the modelling results (Section 3). The assessment of potential disturbance impacts on wintering birds, resulting from the modelled noise levels, is beyond the scope of this report and is covered separately within the Onshore Biodiversity and Nature Conservation chapter of the ES (Volume 3, Chapter 5 (application ref: 6.3.5)).

1.3 Evidence of Technical Competence and Experience

Noise modelling was carried out by Benedict Sarton, a Technical Director in SLR Consulting's noise and vibration team with over 16- years relevant experience. Benedict has project managed noise and vibration impact surveys, assessments and full EIAs for industrial, mineral, waste, renewable energy and residential developments throughout the UK, Europe and Africa. Benedict holds the Institute of Acoustics (I.o.A) Diploma in Acoustics and Noise Control.

Technical support on ornithological matters has been provided by Duncan Watson. Duncan is a Technical Director at SLR Consulting with over 23 years' professional ecological and ornithological experience. He is a Chartered Environmentalist (CEnv) and a full member of CIEEM (MCIEEM).

2.0 Methodology

Modelling of potential airborne construction noise has been undertaken at the two locations supporting important wintering bird populations, i.e. at the proposed landfall and at the proposed crossing of the River Clwyd, using a series of worst-case assumptions. Disturbance to birds due to operational noise at these locations is likely to be negligible and therefore the modelling has been restricted to modelling of construction noise.

2.1 Cofferdam Piling and Site Preparation at the Landfall

Two separate noise models have been produced for the cofferdam piling and site preparation works at the landfall, one including impact/ driven piling and one including other piling methods, e.g. vibration piling. It is important to consider impact/ driven piling separately because loud, irregular noise (such as that caused by impact/ driven piling) typically results in greater disturbance to birds than more regular noise, such as that resulting from other piling methods.

The models have assumed that the piling operations and site preparation works are working simultaneously. Site preparation works were included within the assessment as a worst-case, as this phase of works produces the highest noise level of any works which would be undertaken within the trenchless crossing/ Transition Joint Bay (TJB) Compound Area.

2.1.1 Model 1 – Impact/ Driven Piling Works and Site Preparation Operations

The model of impact/driven piling and site preparation operations was based on the following inputs and assumptions:

- Cofferdam piling being undertaken at a location around the level of Mean High Water Springs (MHWS), therefore close to the areas in which the largest number of birds were recorded during the winter 2020-21 surveys (in practice, cofferdam piling could be undertaken at or up to 1600m below (seaward from) MHWS but modelling at MHWS is likely to represent a worst-case scenario);
- A maximum noise level (L_{Amax}) of 132 dB which represents the level when the hammer strikes the pile, this noise level was provided by the Applicant;
- the maximum noise level occurring 100% of the time to represent a worst-case scenario;
- A source height (hammer strike) of 4 m above sea level;
- Site preparation works being undertaken in the trenchless crossing/TJB compound, i.e. the area closest to the cofferdam piling (and therefore likely to generate the greatest combined noise);
- An average noise level of 115 dB $L_{Aeq,T}$ for the site preparation works;
- An average source height of 2 m above ground level for the site preparation works;
- HGVs utilising the Off Route Access Roads (ORARs) closest to the landfall;
- A source level of 109 dB ($L_{Aeq,T}$) for each HGV and travelling at an average speed of 20 km/h along each route;
- The number of HGV movements along each route based on the peak-hour movements calculated within the traffic and transport assessment presented in the ES (Volume 3, Chapter 9: Traffic and Transport) (Application ref: 6.3.9);
- A ground absorption factor of 0.5 (mixed ground) for onshore noise propagation;
- A ground absorption factor of zero (hard ground/no absorption) for offshore noise propagation;
- Downwind propagation from the source to the receptors; and

- A receiver height of 0.3 m above the ground/sea level.

2.1.2 Model 2 – Other Piling Methods and Site Preparation Operations

The assumptions for the other piling methods and site preparation operations were identical to those listed above with the exception of;

- An average operational noise level of the piling rig of 116 dB $L_{Aeq,T}$, which was provided by the Applicant.

2.2 Trenchless crossing Operations at the River Clwyd Crossing

Two separate noise models have been produced for the trenchless crossing operations at the River Clwyd Crossing, one assuming no mitigation and one including the use of 2.4m tall noise barrier fencing, similar to that proposed at other locations within the Order Limits to reduce noise impacts on residential receptors. The purpose of modelling both scenarios at this location is to determine the level of noise reduction that might be achieved if acoustic barrier fencing was used.

2.2.1 Model 1 – Unmitigated Model

The unmitigated model was based on the following inputs and assumptions:

- Trenchless crossing operations being undertaken within the trenchless crossing compound areas as indicated on the drawings provided by the Applicant (in practice these locations could move to the northwest, within the Order Limits, although they are likely to remain a similar distance from the River Clwyd and are therefore considered representative);
- An average noise level from trenchless crossing operations of 115.9 dB $L_{Aeq,T}$;
- An average source height of 2 m above ground level for the trenchless crossing drilling works;
- Operations being undertaken within both areas simultaneously to represent a worst-case scenario;
- A ground absorption factor of 0.5 (mixed ground);
- Downwind propagation from the source to the receptors; and
- A receiver height of 0.3 m above the ground level.

2.2.2 Model 2 – Mitigated Model

The inputs and assumptions for the mitigated model were identical to those listed for Model 1, with the exception of:

- 2.4 m high barriers/screens located around the perimeter of the two trenchless crossing compound areas either side of the River Clwyd.

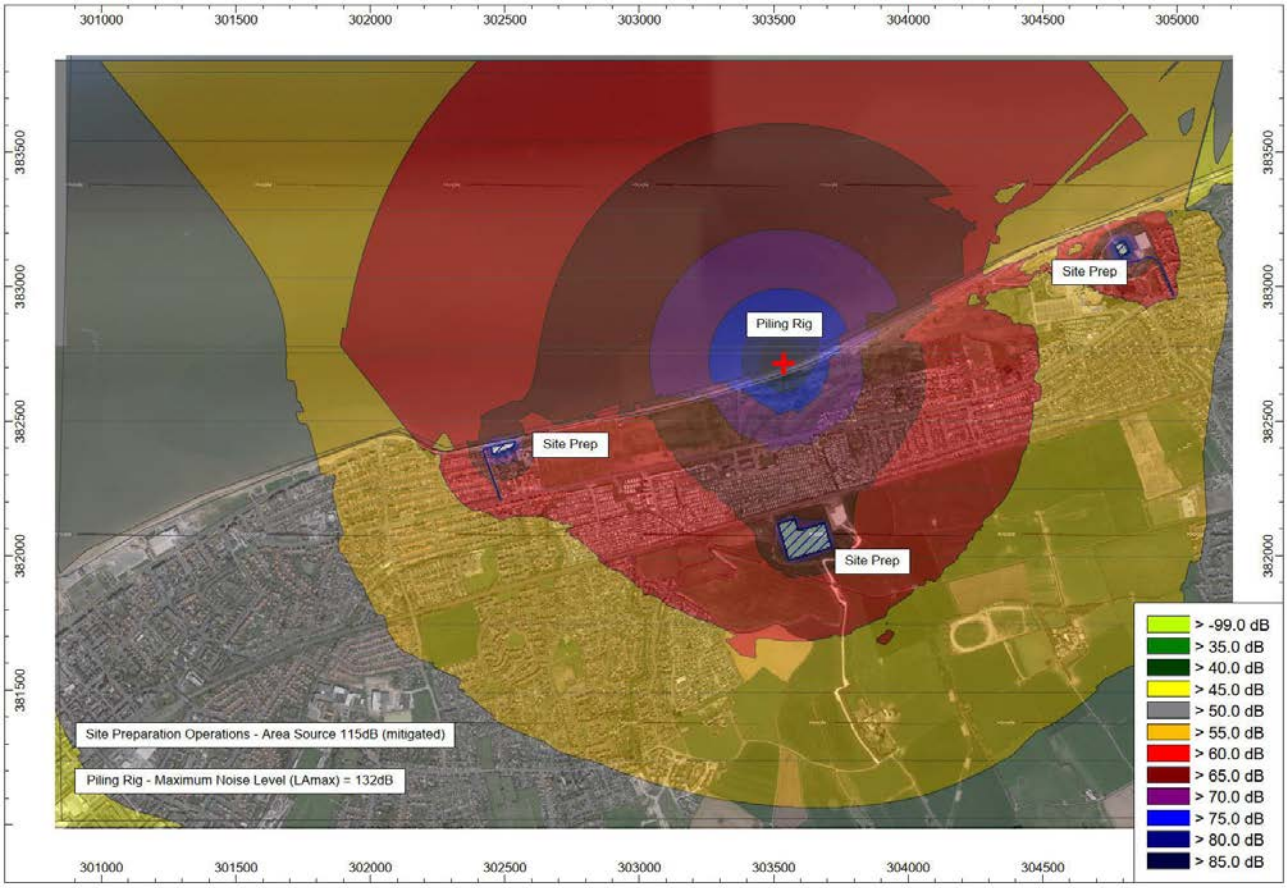
3.0 Results

3.1 Cofferdam Piling and Site Preparation at the Landfall

3.1.1 Model 1 – Impact/ Driven Piling Works and Site Preparation Operations

The noise contour plot for Model 1 (impact/ driven piling works and site preparation operations) is shown in Figure 3-1.

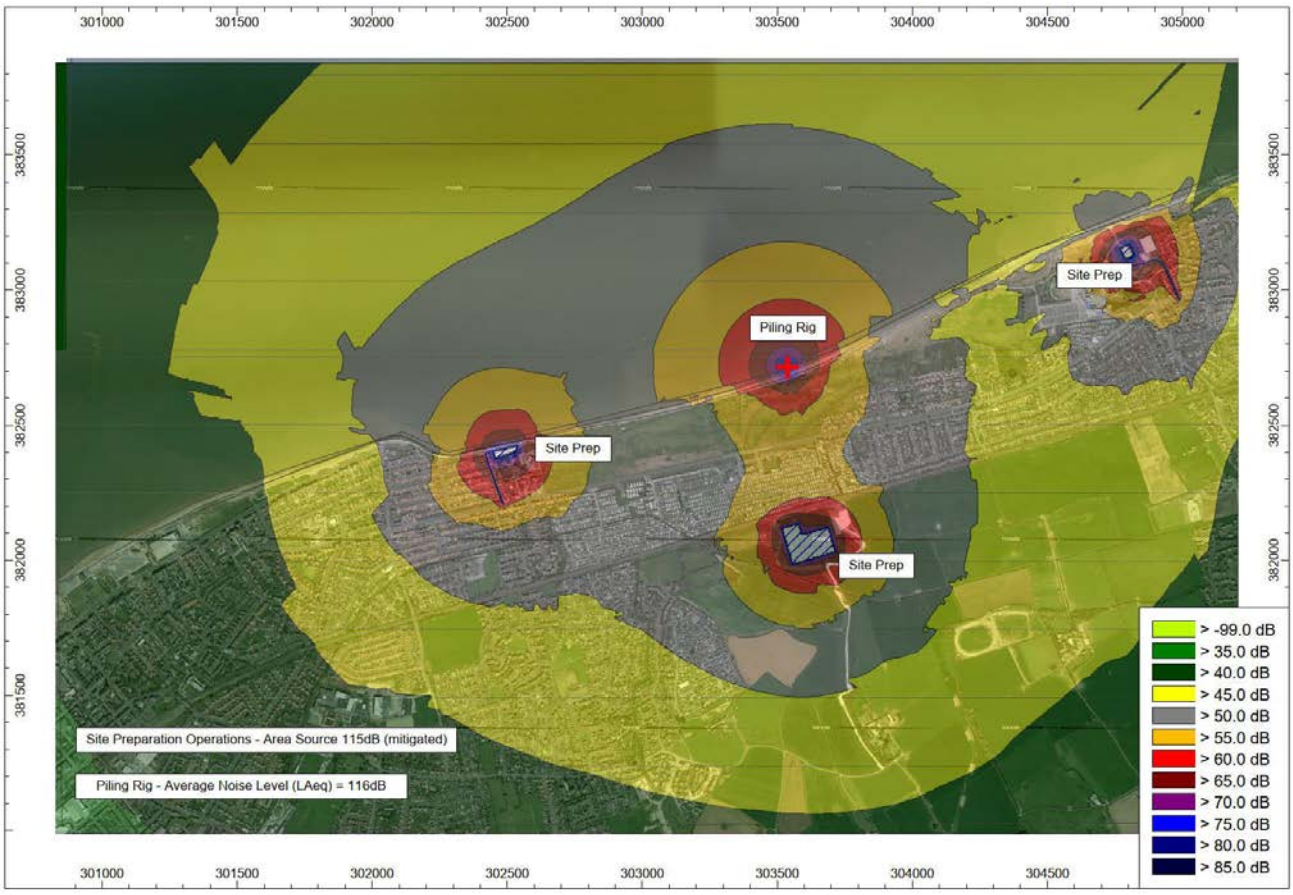
Figure 3-1
Model 1 – Impact Piling and Site Preparation at the Landfall



3.1.2 Model 2 – Other piling methods and Site Preparation Operations

The noise contour plot for Model 2 (site preparation operations and other piling methods) is shown in Figure 3-2.

Figure 3-2
Model 2 – Site Preparation and Other Piling Methods at the Landfall

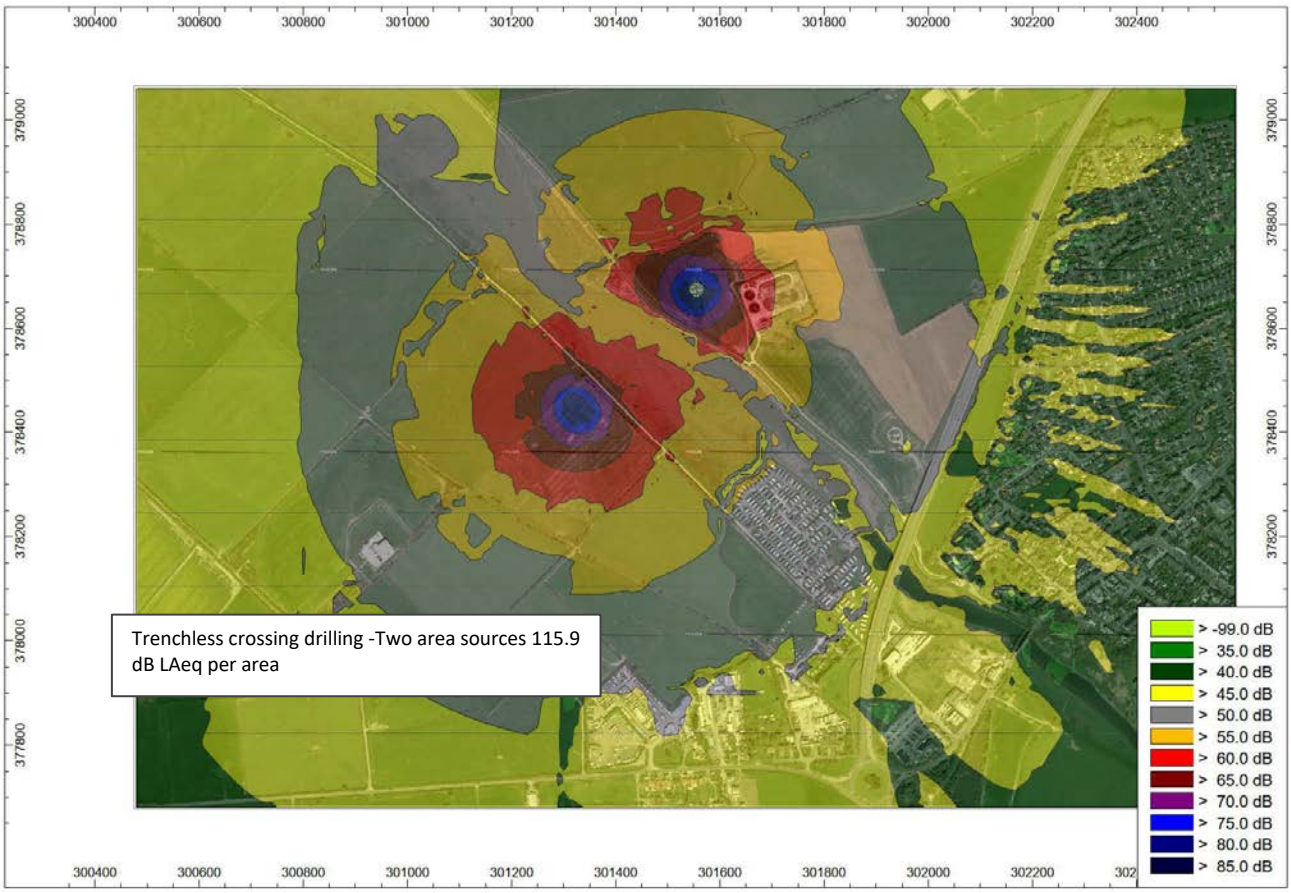


3.2 Trenchless crossing Operations at the River Clwyd Crossing

3.2.1 Model 1 – Unmitigated Model

The noise contour plot for Model 1 (with no mitigation) is shown in Figure 3-3.

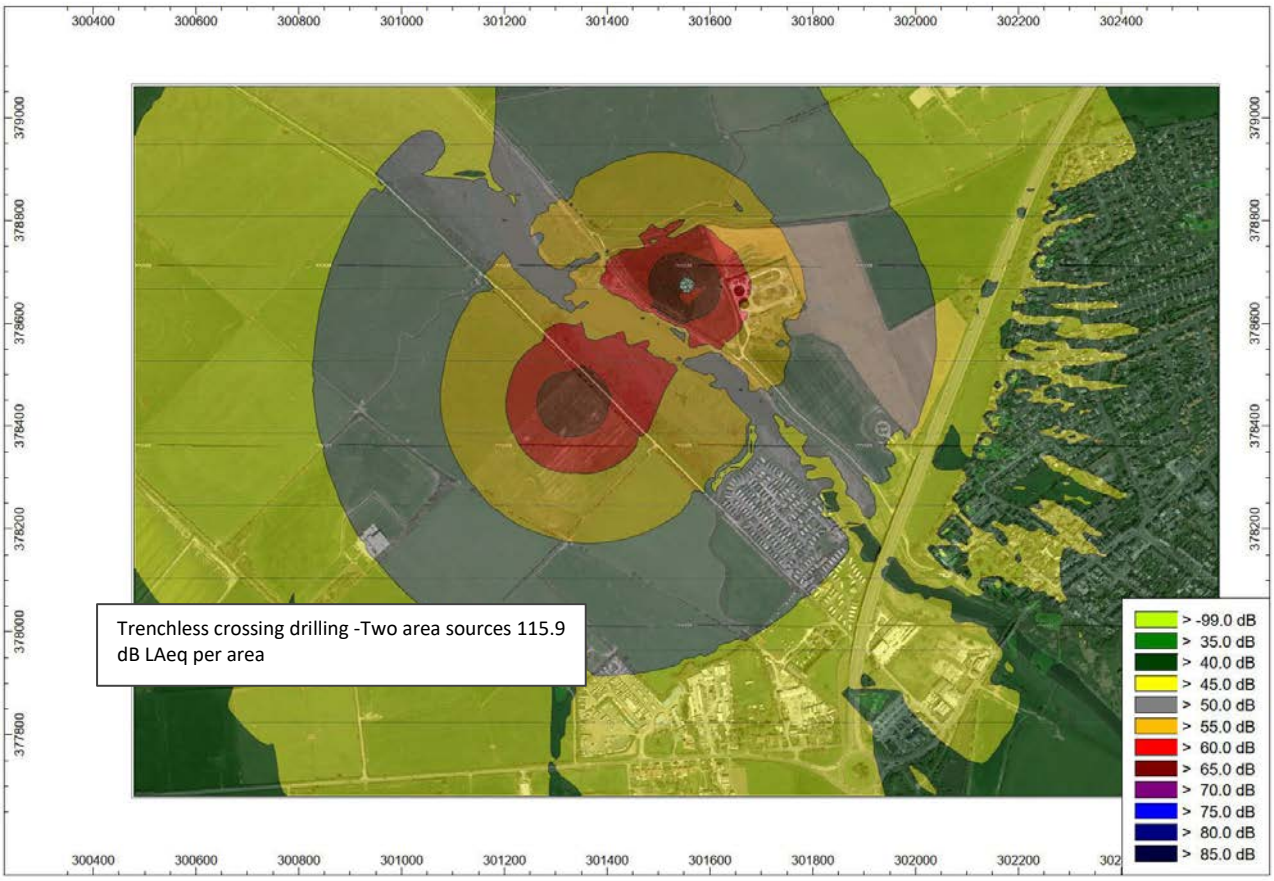
Figure 3-3
Model 1 – Trenchless crossing Drilling at the River Clwyd Crossing (Unmitigated)



3.2.2 Model 2 – Mitigated Model

The noise contour plot for Model 2, including the use of mitigation (a 2.4 m high acoustic barrier fence around each trenchless crossing compound)) is shown in Figure 3-4.

Figure 3-4
Model 2 – Trenchless crossing Drilling at the River Clwyd Crossing with Mitigation Included



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