

Dogger Bank C/Sofia Onshore Works Application

Appendix 8 -

Noise Assessment

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1 Introduction

1.1 Purpose of the Report

This Assessment accompanies the Environmental Appraisal which is submitted to support the planning application made by Doggerbank Offshore Wind Farm Project 3 Projco Limited (the Projco) and Sofia Offshore Wind Farm Limited (SOWFL) (the Applicants), for consent pursuant to Section 62 of the Town and Country Planning Act 1990 as amended¹ (the Application).

A Development Consent Order (2015 DCO) was granted for Dogger Bank Wind Farm C (previously known as Dogger Bank Teesside A Offshore Wind Farm) and Sofia Offshore Wind Farm (previously known as Dogger Bank Teesside B Offshore Wind Farm) (the Applicants' Projects), including the onshore transmission works required to export electricity to the grid in August 2015.

The Application includes five areas of optimisation to the consented 9 kilometres (km) buried onshore grid connection, spanning from the landfall for Dogger Bank Wind Farm C (DB-C) and Sofia Offshore Wind Farm (Sofia) to the National Grid at Lackenby Substation (the Works). Figures 1.2 (a - c) of the Environmental Appraisal show the location of the Works and the consented 2015 DCO.

This Assessment determines the potential impacts of the Works in comparison to that assessed in the 2014 Environmental Statement (ES) with respect to the construction noise and vibration impacts on noise sensitive receptors. Noise and vibration arising from construction activities are assessed against the relevant noise limits that are recommended by national policy and guidance.

It seeks to identify where such levels may be significant and, where they are, mitigation is proposed to ensure that residual levels of noise and vibration are acceptable. The changes in potential effects due to the Works, over that presented in the 2014 ES is considered.

Potential noise effects from construction activities associated with the Works have been assessed against relevant noise limits. The principal limit is the 65 dB LAeq described in BS 5228 for construction activities with a duration of more than one month. The overall significance of the noise effects of the Works have been determined to be negligible at all noise sensitive properties.

1.2 Development Context

For the ease of reference, the Works, as shown in Figure 1.2 (a – c) of the Environmental Appraisal, is split into 5 areas as described below:

- Area 1 – A174 Crossing;
- Area 2 – South of Kirkleatham Memorial Park;
- Area 3 - Wilton East;
- Area 4 - Main Welfare Hub south of Wilton; and
- Area 5 - HVAC Cable Corridor.

¹ UK Government (1990) Town and Country Planning Act 1990 [Online] Available at: <http://www.legislation.gov.uk/ukpga/1990/8/contents> (Accessed on 11/05/2020)

1.3 Document Structure

This Report is structured as follows:

- Introduction;
- Methodology;
- Baseline for Assessment;
- Assessment of Potential Effects;
- Mitigation and Enhancement;
- Cumulative Effects; and
- Summary and Statement of Change/No Change.

This Report should be read in conjunction with Chapter 29 of the 2014 ES which provides details of the Noise assessment of for the 2015 DCO.

2 Methodology

2.1 Introduction

This Section provides an overview of the effects scoped out of this assessment and a summary of the relevant national and local policies in relation to noise. It also provides an overview of the noise sensitivities / receptors and the likely implications and potential effects upon them as a result of the Works. Where adverse impacts are anticipated, appropriate mitigation actions are proposed to reduce or remove them completely. Best practice measures are also outlined. The realistic worst case construction activities of cable system installation and the OCS construction have been assessed under the realistic worst case assumption that the Applicants' Projects are constructed concurrently.

2.2 Effects Scoped Out

A number of noise and vibration elements have been scoped out of this assessment, as they are either not relevant to the Application, or will not give rise to levels that require further assessment.

2.2.1 *Operational Phase*

Noise and vibration during the operational phase of the Works has been scoped out as there are no proposed changes to the location or function of the Onshore Converter Stations (OCS) which is the primary location of operational noise identified in the 2014 ES. In addition, the 2015 DCO sets out operational noise limits for the OCS which will be adhered to.

As per the 2014 ES, there will be no perceptible noise or vibration associated with the underground cables during the operational phase and all other ancillary works will be removed once the Applicants' Projects are fully operational. Therefore, operational noise and vibration associated with the Works has been scoped out of the assessment.

2.2.2 Construction Phase

The 2014 ES stated that “*there is generally a large separation distance between construction works and residential properties at most project locations, with only a small number of properties within 100 metres of the works. Where properties are located within this distance, the specific receptor distances are deemed large enough to protect receptors from construction related ground borne vibration. It is considered that vibration will not adversely affect receptors and has not been assessed in detail*”.

This remains the case for the Works, and therefore vibration from construction and decommissioning activities has been scoped out of the assessment.

Noise from construction vehicles on the local road network has also been scoped out of the assessment as there would be no significant increase in construction vehicles resulting from the Works and the 2014 ES determined a negligible impact at roadside receptors.

2.2.3 Decommissioning Phase

Decommissioning noise has been scoped out as such works would be carried out in line with the decommissioning plan secured by the 2015 DCO Requirements, and noise levels from such activities are likely to be quieter than those during the construction phase. Therefore, if the relevant noise limits that apply to construction noise can be met, the same limits would be met during the decommissioning phase.

2.3 Policy and Guidance

2.3.1 National Policy and Guidance

There have been no significant changes to the relevant national policies and guidance associated with the onshore construction works presented in the 2014 ES.

The national policy referred to in the 2014 ES included the Overarching National Policy Statement (NPS) for Energy (EN-1) (DECC 2011a)², the NPS for Renewable Energy Infrastructure (EN-3) (DECC 2011b)³, and the NPS for Electricity Networks Infrastructure (EN-5) (DECC 2011c)⁴, as well as the Noise Policy Statement for England (NPSE) (Defra 2010)⁵. The aforementioned policies are all still current.

The only change in related guidance documents relevant to this assessment is the release of the 2014 update to BS 5228-1:2009 *Code of practice for noise and vibration control on construction and open sites – Part 1: Noise* (BS 5228)⁶. The updated document, BS 5228-1:2009+A1:2014, included minor amendments and clarifications

² Overarching National Policy Statement for Energy (EN-1), Department of Energy and Climate Change, 2011

³ National Policy Statement for Renewable Energy Infrastructure (EN-3), Department of Energy and Climate Change 2011

⁴ National Policy Statement for Electricity Networks Infrastructure (EN-5), Department of Energy and Climate Change, 2011

⁵ Noise Policy Statement for England, Department for Environment, Food and Rural Affairs, 2010

⁶ BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise, British Standards Institution, 2014

to the 2009 version does not change the prediction or assessment methodology or the recommended noise limits presented in the 2014 ES.

To assess the significance of construction noise, BS 5228 contains example noise limits that should apply to construction activities with a duration of more than one month. The lowest applicable daytime noise limit is 65 dB L_{Aeq}, and applies irrespective of pre-existing ambient noise levels (if ambient noise levels are higher than this or the duration is less than one month, a higher limit is permitted). These 65 dB L_{Aeq} limits were applied in the 2014 ES and remains valid.

BS 4142:1997 *Method for Rating industrial noise affecting mixed residential and industrial areas*⁷ was used as the basis for the assessment of operational noise and has been revised since the 2014 ES. The current version of the standard is BS 4142:2014+A1:2019, *Methods for rating and assessing industrial and commercial sound*⁸. As this only relates to operational noise, it is not considered further within this assessment.

Noise from construction activities is controlled by local authorities through the Control of Pollution Act (CoPA)⁹ and the Environmental Protection Act (EPA)¹⁰. The CoPA requires the particulars of the construction activities to be detailed, including the method by which they are to be carried out and the steps proposed to be taken to minimise noise. Sections 80 and 82 of the EPA set out proceedings for statutory noise nuisance.

2.3.2 Local Policy

The 2007 Redcar & Cleveland Local Development Framework (referred to in Table 2.2 of Chapter 29 of the 2014 ES) has been replaced by the Redcar & Cleveland Local Plan (adopted May 2018)¹¹. Policy SD 4, the General Development Principles, states that “*in assessing the suitability of a site or location, development will be permitted where it: will not have a significant adverse impact on the amenities of occupiers of existing or proposed nearby land and buildings*” and “*All development must be designed to a high standard. Development proposals will be expected to...minimise pollution including light and noise and vibration levels to meet or exceed acceptable limits*”.

The 2018 Local Plan is similar to the 2007 Development Framework, and does not set out specific guidance in relation to this type of development. Therefore, the assessment has been undertaken in accordance with the relevant national guidance which maintains similar principles as assessed within the 2014 ES.

2.3.3 Guidance Relevant for the Assessment

The following national policy and guidance documents are relevant to this assessment (see Section 2.3.1 (above)):

⁷ BS 4142:1997, Method for Rating Industrial Noise affecting Mixed Residential and Industrial Areas, British Standards Institution, 1997

⁸ BS 4142:2014+A1:2019, Methods for Rating and Assessing Industrial and Commercial Sound, British Standards Institution, 2019

⁹ Control of Pollution Act, UK Government, 1974

¹⁰ Environmental Protection Act, UK Government, 1990

¹¹ Redcar & Cleveland Local Plan (adopted May 2018)

- Noise Policy Statement for England (NPSE) (Department for Environment, Food and Rural Affairs (DEFRA) 2010);
- BS 5228-1:2009+A1:2014 “Code of practice for noise and vibration control on construction and open sites – Part 1: Noise” (BSI 2009);
- The CoPA, 1974; and
- The EPA, 1990.

2.4 Scope of Assessment

The Noise Assessment (construction only) has been carried out using the same methodology as presented in the 2014 ES, whereby the plant list focusses on the noisiest operations that have the greatest potential to result in impacts at nearby receptors. This entailed a receptor minimum buffer distance being calculated to identify where noise from construction activities could be higher than the adopted 65 dB L_{Aeq} noise limit. This assessment reviews the minimum separation distance between the nearest receptors and the Works.

2.4.1 Study Area

The Study Area for the assessment of construction noise has been defined by reviewing the distance at which the noise from construction activities related to the Works may exceed a low impact (i.e. a buffer distance relating to a predicted construction noise of 65 dB L_{Aeq}). This is the same approach as presented in the 2014 ES.

Where construction activities related to the Works on the cable corridor are outside a buffer of more than 500 m from the nearest noise sensitive receptor, noise effects have not been assessed in detail as construction noise levels would be significantly below the 65 dB L_{Aeq} noise limit.

2.5 Significance Criteria

There are no formal significance assessment criteria applicable for all sources of noise, although limits relevant to construction are detailed in BS 5228. The 2014 ES presented an overall assessment significance matrix that took into account the receptor sensitivity, and the magnitude of the impact, which are still valid for this Application. The sensitivity of the receptors is detailed at Table 2.1 below.

Table 2.1: Description of Receptor Sensitivity

Sensitivity	Definition
High	Hospitals (e.g. operating theatres or high dependency units), care homes at night.
Medium	Residential accommodation, private gardens, hospital wards, care homes, schools, universities, research facilities, national parks, during the day; and temporary holiday accommodation at all times.
Low	Offices, shops, outdoor amenity areas, long distance footpaths, doctors' surgeries, sports facilities and places of worship.
Negligible	Warehouses, light industry, car parks, agricultural land.

The lowest construction noise limit that applies to daytime construction activities with a duration of at least one month described in BS5228 is 65 dB L_{Aeq} . Where the duration is less than one-month, short-term noise levels

above 65 dB L_{Aeq} may be acceptable, and if the duration is more than one month, mitigation should be implemented to reduce the impact. The magnitude of the impact at receptor locations for various noise levels associated with construction and decommissioning are detailed in Table 2.2.

Table 2.2: Construction and Decommissioning Noise Impact Magnitude Criteria

Construction noise level at receptor (dB $L_{Aeq,t}$)	Impact Magnitude*
<=64	Negligible
65-69	Low
70-74	Medium
>=75	High

* where the duration of the construction activity is less than one month, then the impact magnitude is determined to be negligible irrespective of noise level

The sensitivity of the receptor and the magnitude of the impact were combined to calculate the overall significance of the potential impact which is described in Table 2.3 below.

Table 2.3: Overall Impact from Receptor Sensitivity and Magnitude of Impact

		Sensitivity			
		High	Medium	Low	Negligible
Magnitude	High	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Minor
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Minor	Negligible	Negligible	Negligible

3 Baseline for Assessment

3.1 Summary of 2014 ES Baseline

The 2014 ES presented the results of baseline noise measurements representative of residential properties in the vicinity of the OCS and along the cable route Study Area.

Baseline noise levels along the cable route Study Area were generally below 65 dB L_{Aeq} .

3.2 Review of Baseline

The baseline details presented in the 2014 ES remain valid. No new field surveys have been undertaken for the Works as the adopted noise limits relevant to receptor locations are not set relative to baseline noise levels; they have been set at the lowest limits that apply irrespective of baseline noise levels.

4 Assessment of Potential Effects

4.1 Summary of 2014 Potential Effects

The 2014 ES presented a list of assumed plant to be used for each construction activity, and calculated the distance at which the predicted noise level from four of the construction activities would be 65 dB L_{Aeq} . The results were presented at Table 3.4 of Chapter 29 of the 2014 ES, which is reproduced below at *Table 4.1*. Reference can usefully be made to Figure 6.1 in the 2014 ES.

Table 4.1: Construction and Decommissioning Noise Impact Magnitude Criteria

Construction Phase	Noise buffer distance (m)
Landfall	75
Cable system installation	80
Horizontal Directional Drilling	36
Converter stations (OCS) construction	120

The realistic worst case construction activities of cable system installation and the OCS construction were used to identify whether nearby residential receptors were within the buffer distance (i.e. would potentially experience construction noise levels of 65 dB L_{Aeq} or above). There were a number of receptors which were determined to potentially experience either low (65-69 dB L_{Aeq}) or medium (70-74 dB L_{Aeq}) magnitude of effects under the realistic worst case assumption that the Applicants' Projects were constructed concurrently.

Where the magnitude of the effect was low, minor impacts were predicted without mitigation, and where the magnitude of the effect was greater than low, mitigation was developed to reduce the residual impact to low or minor (as discussed in Section 5.1 of this Report).

An assessment of the predicted increase in road traffic noise associated with construction traffic on the local road network was undertaken. Even if the Applicants' Projects were constructed concurrently, as a realistic worst case, a negligible impact was predicted at roadside receptors over the duration of the related activities.

4.2 Effects as a Result of the Works

Part of Works		Nearest Receptor	Grid Ref	Separation	Magnitude of Effect	Overall Effect
Item Name	Area		NZ	metres		
CC B	1	Silverdale Gardens	61926 22250	390	Negligible	Negligible
No 10C (2)	1	Longbeck House	62548 21729	290	Negligible	Negligible
No 10C (2)	1	Tunstall Gardens	61688 22099	360	Negligible	Negligible
CC C	1	Tunstall Gardens	61688 22099	260	Negligible	Negligible
No 10E (2)	1	Grewgrass Farm	61073 21814	230	Negligible	Negligible
CC D (2) & CC D (3)	2	Fishponds Road	59947 21315	100	Low	Negligible
CCE	3	N/A	N/A	>500	Negligible	Negligible

CC F	3	N/A	N/A	>500	Negligible	Negligible
CC G	4	N/A	N/A	>500	Negligible	Negligible
CC H	4	Grange Estate	57413 20085	130	Negligible	Negligible
CC I	4	Kings Close	57130 19940	330	Negligible	Negligible
No 10J (2)	5	Kings Close	57130 19940	260	Negligible	Negligible
No 10J (3)	5	Wilton Green	56925 19698	260	Negligible	Negligible
No 10J (4)	5	Wilton Green	56925 19698	310	Negligible	Negligible
Retaining Wall	4	Kings Close	57130 19940	310	Negligible	Negligible
Retaining wall reprofiling area	4	Kings Close	57130 19940	260	Negligible	Negligible

A summary of the Works, and the potential effect on noise at noise sensitive receptors, is provided in Table 4.2.

Where noise sensitive receptors are more than 80 m from the Works, the noise impact is determined to be negligible. Table 4.2 also provides a summary of the predicted effects at the nearest residential receptors, describing the nearest receptor to the Works, together with the predicted noise effect. If the proposed activity is further than 500 m from any noise sensitive receptors then the nearest receptor has not been listed.

Table 4.2: The Works and Change in Potential Noise Effects

The only receptor location where the potential magnitude of effect is greater than negligible is the property on Fishponds Road near to the infill at CC D(2) and CC D(3). A low magnitude has been predicted as the separation distance is less than the realistic worst case buffer distance of 120 m for construction of the OCS which is part of the 2015 DCO (assessed in the 2014 ES) and not included with this Application.

Noise levels associated with the preparation and operation of CC D (3) during the construction period are likely to be significantly lower than from construction of the OCS, as less plant will be required. Noise levels are therefore likely to be below 65 dB L_{Aeq} . The preparation of CC D (3) is estimated to be of six weeks duration and, even if short term noise levels do exceed this level, it would only be for a limited time. Noise during preparation would be higher than during its use during the construction period and the overall magnitude of noise from the CC D (3) has been determined to be negligible.

As a result of CC H, construction activities will occur significantly closer to residential properties which are located to the north-east of Lazenby as indicated on Figure 1.1 of the Environmental Appraisal. The minimum separation distance between the properties on Grange Estate, Lazenby, and the nearest part of CC H is 120 m. Most of CC H is much more distant and shielded by an earth bund. As construction activities are at distances of more than 120 m, the overall noise impact is determined to be negligible.

There are a number of areas included in the Works which are not assessed in Table 4.2 above (primarily the cable corridor). Those Works result in either the nearest noise sensitive receptors now being beyond the noise buffer distance, or an increased separation from the nearest receptors thus, reducing the impact over that presented in the 2014 ES.

The Works result in construction activities at distances greater than the minimum buffer distances described in Table 4.1, and therefore, the noise impact at receptor locations is predicted to be negligible.

5 Mitigation and Enhancement

5.1 Summary of 2014 ES Mitigation

As discussed in Section 4.1, mitigation was presented in the 2014 ES where the magnitude of the effect was predicted to be medium or higher.

A set of potential mitigation measures were set out in Table 6.3 of the 2014 ES, which states that *“to reduce potential construction noise impacts at receptors where the magnitude of impact is predicted to be greater than low, a solid site boundary hoarding fence, approximately 2.4m in height, could be erected prior to commencement of cable installation and remain in place until the works are complete in the relevant section of the cable route. Any fence would be located as close to the receptor as possible but still remaining within the easement”*. The assessment assumed that a solid hoarding (where required) would reduce the impact by 10 dB.

The residual impact predicted in the DCO ES, at residential properties, was minor or negligible at all receptors, under the realistic worst case assumption that the Applicants' Projects were constructed concurrently.

The construction assessment concluded that *“it is not deemed that other site or off-site mitigation is required for receptors expected to experience minor impacts, due to the small exceedance of the construction noise ‘limit’ and the relatively short duration of the impact. Contractors should aim to select the quietest equipment possible when working close to the identified receptor”*.

5.2 Additional Enhancement Measures

No specific additional enhancement measures are proposed as a result of the Works.

The only change to the proposals in the 2014 ES that result in construction activities being nearer to residential properties is the construction compound to the north-east of Lazenby (CC H) where predicted noise levels without mitigation are below 65 dB L_{Aeq} . However, as detailed in Section 4.2, the significance of the impact is predicted to be negligible.

The 2015 DCO requires the submission of a Code of Construction Practice, which reflects the mitigation set out in the 2014 ES, to be submitted to the relevant planning authority. In addition, before each stage of the 2015 DCO construction works, a Construction Environmental Management Plan (CEMP) must be submitted to, and approved by the relevant planning authority.

The CoCP will set out the noise assessment that will be undertaken for each stage of onshore works associated with the 2015 DCO. The CoCP will incorporate these Works and contain a procedure to be followed in the event of complaints about noise from construction activities.

The CEMP for each stage of the 2015 DCO will contain an assessment of noise levels arising from the proposed construction activity against the relevant noise limits, and detail the mitigation that will be implemented to ensure that the relevant limits are met. Specific mitigation where it is required would consist of a number of factors including:

- Construction of a solid site boundary hoarding fence (where required) and where necessary mitigation is not available via other means;
- Other local noise barriers where necessary; and
- Careful selection of plant and working times to minimise impacts.

6 Cumulative Effects

6.1 Summary of 2014 ES Cumulative Projects

The 2014 ES assessed the cumulative impacts of all phases of the Applicants' Projects operating concurrently, including all elements of construction and operation. A number of projects in relation to cumulative noise impacts were considered, and the only project that was determined to require further assessment was the concurrent construction and operation of the Applicants' Projects.

Assuming no mitigation, a medium magnitude of cumulative effect was predicted at two residential receptors as a result of the 2015 DCO, however, with the mitigation proposed, was reduced to a negligible impact.

6.2 Additional Cumulative Effects

No significant construction projects require additional assessment as a result of the Works such that the impact with any such projects included would remain negligible.

7 Summary and Statement of Change/No Change

Potential noise effects from construction activities associated with the Works have been assessed against relevant noise limits. The principal limit is the 65 dB L_{Aeq} described in BS 5228 for construction activities with a duration of more than one month. The overall significance of the noise effects of the Works have been determined to be negligible at all noise sensitive properties.

Before construction commences, a CoCP and CEMP will be submitted to the planning authority for approval. The CoCP will detail the noise assessment that will be carried out for each stage of the construction, together with a complaint's procedure, for the 2015 DCO and the Works. The CEMP will provide a detailed assessment of each stage of the construction, and specify any mitigation necessary to ensure that construction noise levels are acceptable.

Table 7.1 summaries the significance of the noise effects at noise sensitive receptors presented in the 2014 ES together with the significance of the effect determined for the Works. Table 7.1 includes the properties assessed in the 2014 ES, which are not adversely affected by the Works and the additional properties identified for this assessment.

Table 7.1: Summary of Predicted Noise Effects Changes

Receptor	2014 ES Effect Significance	Effects as a Result of the Works	Change/No Change
R1 Residential Properties on Vickers Close	Minor	Minor	No Change
R2 Residential Properties on De Havilland Drive	Negligible	Negligible	No Change
R3 Ryehills Farm	Minor	Minor	No Change
R4 Bridge Farm	Minor	Minor	No Change
R5 Residential Properties on Tunstall Gardens	Negligible	Negligible	No Change
R6 High Farm, Lackenby	Negligible	Negligible	No Change
Silverdale Gardens	Not specifically assessed	Negligible	No Change
Longbeck House	Not specifically assessed	Negligible	No Change
Tunstall Gardens	Not specifically assessed	Negligible	No Change
Grewgrass Farm	Not specifically assessed	Negligible	No Change
Fishponds Road	Not specifically assessed	Negligible	No Change
Grange Estate	Not specifically assessed (for construction noise)	Negligible	No Change
Kings Close	Not specifically assessed	Negligible	No Change
Wilton Green	Not specifically assessed	Negligible	No Change

This assessment demonstrates that the Works give rise to no new or materially different noise effects to those identified within the 2014 ES and will not give rise to any new likely significant effects.

