MORAY EAST
OFFSHORE WINDFARM

Marine Licences Variation Request

Rock Grading for Pile Infill Activities

December 2019

Moray Offshore Windfarm (East) Limited

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Document Status	Final
Version	1
File Name	8460001-PPL0050-REP-003
Date	18/12/2019

Review / Approval

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List of Abbreviations

DP	Dynamic Positioning
ES	Environmental Statement
OfTI	Offshore Transmission Infrastructure
OSP	Offshore Substation Platform
OWF	Offshore Wind Farm
SSC	Suspended Sediment Concentration
TI	Transmission Infrastructure

Definitions

The following definitions have been used throughout this document with respect to the company, the consented wind farms and how these definitions have changed since submission of the Moray East Environmental Statement (ES) in 2012 and the Moray East Modified Transmission Infrastructure ES in 2014.

- **Moray Offshore Windfarm (East) Limited (formerly known as Moray Offshore Renewables Limited)** – the legal entity submitting this Pre-Construction Survey Campaign Summary Report;
- **Moray East Offshore Wind Farm** - the wind farm to be developed in the Moray East site (also referred as the Wind Farm);
- **The Moray East site** - the area in which the Moray East Offshore Wind Farm will be located. Section 36 Consents and associated Marine Licences to develop and operate up to three generating stations on the Moray East site were granted in March 2014. At that time the Moray East site was made up of three sites known as the Telford, Stevenson and MacColl offshore wind farm sites. The Section 36 Consents and Marine Licences were subsequently varied in March 2018;
- **Telford, Stevenson and MacColl wind farms** – these names refer to the three consented offshore wind farm sites located within the Moray East site;
- **Transmission Infrastructure (TI)** - includes both offshore and onshore electricity transmission infrastructure for the consented Telford, Stevenson and MacColl wind farms. Includes connection to the national electricity transmission system near New Deer in Aberdeenshire encompassing AC offshore substation platforms (OSPs), AC OSP interconnector cables, AC export cables offshore to landfall point at Inverboyndie continuing onshore to the AC collector station (onshore substation) and the additional regional Transmission Operator substation near New Deer. A Marine Licence for the offshore TI was granted in September 2014 and a further Marine Licence for two additional distributed OSPs was granted in September 2017. The onshore TI was awarded Planning Permission in Principle in September 2014 by Aberdeenshire Council and a Planning Permission in Principle under Section 42 in June 2015;
- **Offshore Transmission Infrastructure (OfTI)** – the offshore elements of the transmission infrastructure, comprising AC OSPs, OSP interconnector cables and AC export cables offshore to landfall (for the avoidance of doubts some elements of the OfTI will be installed in the Moray East site);
- **Moray East ES 2012** – The ES for the Telford, Stevenson and MacColl wind farms and Associated Transmission Infrastructure, submitted August 2012;
- **Moray East Modified TI ES 2014** – the ES for the TI works in respect to the Telford, Stevenson and MacColl wind farms, submitted June 2014;
- **The Development** – the Moray East Offshore Wind Farm and OfTI;
- **Design Envelope** - the range of design parameters used to inform the assessment of impacts;
- **OfTI Corridor** – the export cable route corridor, i.e. the OfTI area as assessed in the Moray East Modified TI ES 2014 excluding the Moray East site; and
- **Moray East Offshore Wind Farm Consents** – are comprised of the following:

  <u>Section 36 Consents:</u>

  - Section 36 consent for the Telford Offshore Wind Farm (as varied) – consent under Section 36 of the Electricity Act 1989 for the construction and operation of the Telford Offshore Wind Farm assigned to Moray East on 19 June 2018.

- Section 36 consent for the Stevenson Offshore Wind Farm (as varied) – consent under Section 36 of the Electricity Act 1989 for the construction and operation of the Stevenson Offshore Wind Farm assigned to Moray East on 19 June 2018.
- Section 36 consent for the MacColl Offshore Wind Farm (as varied) – consent under Section 36 of the Electricity Act 1989 for the construction and operation of the MacColl Offshore Wind Farm assigned to Moray East on 19 June 2018.

Marine Licences

- Marine Licence for the Telford Offshore Wind Farm (as varied) – Licence Number: 04629/19/0 – consent under the Marine (Scotland) Act 2010 & Marine and Coastal Access Act 2009, Part 4 marine licensing for marine renewables construction works and deposits of substances or objects in the Scottish Marine Area and the United Kingdom Marine Licensing Area transferred to Moray East on 19 July 2018.
- Marine Licence for the Stevenson Offshore Wind Farm (as varied) – Licence Number: 04627/19/0 – consent under the Marine (Scotland) Act 2010 & Marine and Coastal Access Act 2009, Part 4 marine licensing for marine renewables construction works and deposits of substances or objects in the Scottish Marine Area and the United Kingdom Marine Licensing Area transferred to Moray East on 19 July 2018.
- Marine Licence for the MacColl Offshore Wind Farm (as varied) – Licence Number: 04628/19/0 - consent under the Marine (Scotland) Act 2010 & Marine and Coastal Access Act 2009, Part 4 marine licensing for marine renewables construction works and deposits of substances or objects in the Scottish Marine Area and the United Kingdom Marine Licensing Area transferred to Moray East on 19 July 2018.
- Marine Licence for Moray Offshore Windfarm (East) Limited – Licence Number: 07086/19/0 – consent under the Marine (Scotland) Acty 2010 & Marine and Coastal Access Act 2009 (as amended), Part 4 Marine Licensing to deposit, backfill of seabed depressions within the Scottish marine area and the UK marine licensing area.

OfTI Licences – are comprised of the following:

- Marine Licence for the Offshore Transmission infrastructure – Licence Number 05340/19/0 – consent under the Marine (Scotland) Act 2010 & Marine and Coastal Access Act 2009, Part 4 marine licensing for marine renewables construction works and deposits of substances or objects in the Scottish Marine Area and the United Kingdom Marine Licensing Area (referred to as the “OfTI Marine Licence”).
- Marine Licence for two additional distributed OSPs – Licence Number 06347/19/0 – consent under the Marine (Scotland) Act 2010 & Marine and Coastal Access Act 2009, Part 4 marine licensing for marine renewables construction, operation and maintenance works and the deposit of substances or objects in the Scottish Marine Area and the United Kingdom Marine Licensing Area (referred to as the “OSP Marine Licence”).

Executive Summary

Moray East require to use a smaller rock grading for pile infilling compared to the rock grading used for scour protection, due to the different installation methodologies. This document is an application to vary the existing Telford, Stevenson and MacColl marine licences to increase the consented size range of stone/rock/gravel that can be used for wind farm construction, to include smaller rock between 20-50 mm. This would increase the overall grading range for the project to 20-200 mm. There is no requirement to vary the volume of consented stone/rock/gravel deposits.

The application includes an environmental assessment of changing the pile infill rock grading, and an assessment of whether this changes the assessments of impact significance made in the previous Environmental Statement (ES), undertaken to inform the existing Telford, Stevenson and MacColl marine licences. A summary of the assessment is presented in the table below.

Receptor	Potential Impact	Original worst case impact assessment	Worst-case assessment with reduced rock grading	Change in impact assessment (Y/N)
Physical Processes	Increased suspended sediment concentrations	Minor	Minor	N
	Accumulation of sediment and change of sediment type at the seabed	Minor	Minor	N
Benthic Ecology	Temporary indirect (sediment) disturbances	Minor	Minor	N
	Net reduction of area of seabed habitat	Minor	Minor	N
Fish and Shellfish	No pathway of effect identified	N/A	N/A	N/A
Marine Mammals	Anthropogenic noise (non-piling) - Disturbance / displacement	Minor	Minor	N
Commercial Fisheries	No pathway of effect identified	N/A	N/A	N/A

The conclusion of this assessment is that a reduction in the size grading of rock used for pile infilling from 50-200 mm to 20-200 mm does not change the magnitude of effects on environmental receptors from the activity. Pile infilling is not the worst-case project activity for any of the relevant impacts assessed and reducing the size of rock does not change the findings of the existing impact assessment.

1 Introduction

1.1 Background

Section 36 Consents were granted in March 2014 for the construction and operation of three offshore wind farms (Telford, Stevenson and MacColl) within the Moray East site. Marine Licences for the three offshore wind farms were granted in September 2014 (together the Section 36 Consents and Marine Licences for the Wind Farm are referred as the Moray East Offshore Wind Farm Consents). Moray East was granted a Marine Licence for two Offshore Substation Platforms (OSPs) in September 2014 (OfTI Marine Licence) and in 2017 a Marine Licence was granted for two additional distributed OSPs (OSP Marine Licence) (together these licences are referred to as the OfTI Licences).

Moray East is a joint venture partnership between EDP Renewables, Engie, Diamond Generation and China Three Gorges and has been established to develop, finance, construct, operate, maintain and decommission the Moray East Offshore Wind Farm.

1.2 Objectives of this Document

The document is an application to vary the existing Telford, Stevenson and MacColl marine licences to increase the consented size range of stone/rock/gravel that can be used for wind farm construction. The currently licenced volumes and size range of stone/rock/gravel deposits are summarised in Table 1-1.

Table 1-1 Licensed volumes and size range of stone/rock/gravel deposits

Marine Licence	Stone/Rock/Gravel volume (m^3) (size range 50-200mm)
Telford OWF	40,600
Stevenson OWF	40,600
MacColl OWF	40,600
Modified OfTI	30,600
OSP	5,000

There is no requirement to vary the volume of consented stone/rock/gravel deposits, but to allow for part of the consented volume to be of smaller grading between **20 mm** and **50 mm**, as described in Section 2. This would increase the overall grading range for the project to **20-200 mm**.

2 Engineering Background

2.1 Requirement for smaller rock grading

A smaller rock grading is required for pile infilling compared to the rock grading used for scour protection due to the different installation methodologies. Whereas the scour protection will be placed with a purpose-built rock dump vessel with large diameter fall pipe, pile infilling will be completed using a purpose-built smaller diameter (flexible) fall pipe (or be transferred by purpose-built container). Should the small fall pipe method be used for pile infilling, smaller rock grading would be required in order for the material to efficiently fall though the small diameter pipe. The requirement for smaller rock grading is summarised in Table 2-1.

Table 2-1 Pile infilling requirements

Marine Licence	Maximum volume required	Grading
Telford	400m3	20 - 50mm
Stevenson	775m3	20 - 50mm
MacColl	1350m3	20 - 50mm

2.2 Method Statement

The infilling can be carried out from either a DP2 Offshore Construction Vessel/Platform Supply Vessel or from JUV Apollo. The rocks will be transported to site on the deck of the installation vessel, in a custom rock hold. The deck shall be protected by wooden mats.

Once on location, the rocks can be installed into the piles in one of two ways (illustrated in Figure 2-1):

1. Purpose-built container is filled on deck and lowered into the pile. When the bottom of the pile is reached, container is opened and slowly retrieved. This operation is repeated as many times as required to reach target level for jacket installation.
2. Fall pipe system: a pipe is lowered inside the pile. A custom-made landing frame will be used to make sure the pipe is inside the pile at all times.

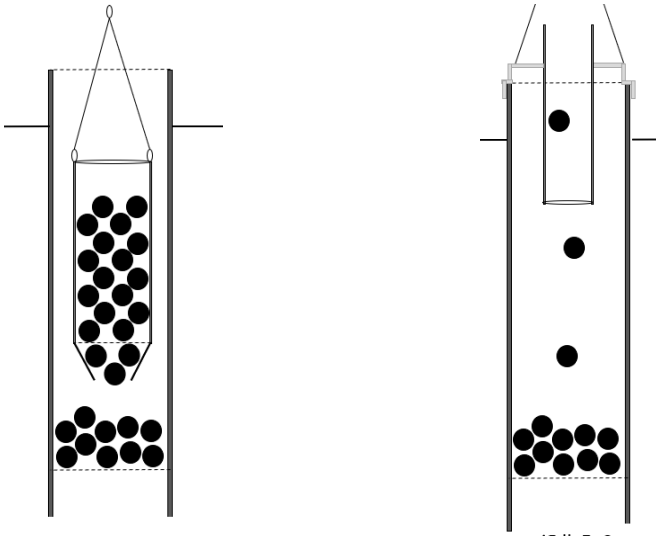

Figure 2-1 Installation Methodology (Left - Purpose Built Container | Right - Fall Pipe System)

The net duration expected per location will be 3 days (~1 day per pile).

3 Assessment of Effects

The impact assessment method follows the method used for the Moray East ES (2012). Full details are available in the ES. The Moray East ES assessed the impacts of the 'worst case' Design Envelope approach, as summarised in Table 4-1.

Whilst the ES does not specifically assess the impacts of pile infilling, the potential impacts of pile infilling with stone/rock/gravel in the size range 50-200 mm can be assumed to be of the same significance, or most likely lower, than the worst-case assessment.

This section assesses whether a reduction in the size of graded rock used for pile infilling, from 50-200 mm to 20-200 mm, would change the significance of impacts associated this activity, and whether the previous impact assessment remains valid.

Pile infilling has the potential to have the following impacts through:

- an increase in suspended sediment concentrations from fine particulates adhering to the rock; and
- an increase in underwater noise.

Potential impacts associated with the infilling vessel are not assessed because these have already been assessed. The reduced size of rock is the only change to the operation.

Receptors identified as potentially being impacted by pile infilling are:

- physical processes;
- benthic ecology; and
- marine mammals.

It has been determined that there is no pathway of effect from pile infilling operations to fish and shellfish ecology and commercial fisheries. These receptors are, therefore, scoped out of this assessment.

3.1 Physical Processes

3.1.1 Increases in Suspended Sediment Concentrations

The proposed reduction in rock grading will not result in a significant difference to the amount of suspended sediment generated. Technical studies carried out by DEME have shown that as the rock will be deposited within the piles, there would not be a significant volume of suspended sediment generated and the small volume that will be generated will be contained within the piles. Therefore, there is no change to the overall assessed impact significance from the generation of suspended sediments from pile infill.

There is a very small possibility that a small proportion of disturbed fine sediment material may escape the top of the pile, but it is unlikely that this would be discernable above the natural range of background suspended sediment concentrations. Any suspended sediment generated would begin to resettle immediately through natural hydrodynamic processes. The infill activities will occur at one location at a time, limiting the amount of suspended sediment generated.

3.1.2 Accumulation of sediment and change of sediment type at the seabed

As described in Section 3.1.1 above, mobilised sediment is likely to be contained within the piles. Furthermore, the proposed reduction in rock grading will not result in a significant difference to the amount of suspended sediment discharged and, therefore, the quantity of sediment settling on the seabed from pile infilling. There is no change to the overall assessed impact significance which is Minor and not significant.

3.2 Benthic Ecology

3.2.1 Temporary indirect (sediment) disturbances

Suspended sediment has the potential to be transported by tidal currents and settle over adjacent seabed areas, potentially having negative indirect effects on benthic ecology including smothering and scour of seabed communities. However, as described in Section 3.1, the quantities that could escape the piles during infilling are small, as it will be contained within the pile, and the proposed reduction in rock grading will not result in a significant difference to the amount of suspended sediment discharged. Therefore, there is no change to the overall assessed impact significance.

3.2.2 Net reduction of area of seabed habitat

A reduction in the size graded rock deposited on the seabed within the piles will not change the area of existing seabed habitat that will be lost. Therefore, there will be no change to the overall assessed impact significance.

3.3 Marine Mammals

3.3.1 Anthropogenic noise (non-piling) – Disturbance / displacement

Activities that generate underwater noise (other than piling) which have been assessed in the previous ES include suction dredging, cable laying, rock placement, trenching and vessel noise. Noise levels produced by activities other than piling are only sufficient to illicit an avoidance reaction in marine mammals and not to cause physical damage. This avoidance could result in temporary displacement from the area around the sound source. Strong avoidance reactions by marine mammals to non-piling construction activities are unlikely to occur at distances of greater than 140 m (from trenching activity), and greater than 99 m from rock placement activities. Effects would be of low magnitude, medium duration and of Minor significance (Moray East, 2012).

A reduction in rock grading for pile infill will not result in a significant difference to the underwater noise generated and, therefore, there is no change to the overall assessed impact significance.

4 Conclusions

This report assesses whether reducing the size of rock used to infill piles from 50-200 mm to 20-200 mm will change the conclusions of previous impact assessment undertaken to inform the existing Telford, Stevenson and MacColl marine licences.

Table 4-1 summarises the worst-case assessment of potential impacts made by existing impact assessments and compares this with the worst-case assessment of impacts given the reduction in size grading of rock used for pile infilling as described in Section 3.

Table 4-1 Summary of worst-case impacts and changes to impact assessment as a result of reducing the size of pile infill rock grading

Receptor	Potential Impact	Original worst case impact assessment	Worst-case assessment with reduced rock grading	Change in impact assessment (Y/N)
Physical Processes	Increased suspended sediment concentrations	Minor	Minor	N
	Accumulation of sediment and change of sediment type at the seabed	Minor	Minor	N
Benthic Ecology	Temporary indirect (sediment) disturbances	Minor	Minor	N
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The conclusion of this assessment is that a reduction in the size grading of rock used for pile infilling from 50-200 mm to 20-200 mm does not change the magnitude of effects on environmental receptors from the activity. Pile infilling is not the worst-case project activity for any of the relevant impacts assessed and reducing the size of rock does not change the findings of existing impact assessments.

5 References

Moray East (2012). Moray East ES. Edinburgh: Moray East.

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