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Robin Rigg OWF

Toni-Marie Mcginn
Marine Scotland
Marine Planning and Policy
Licensing Operations Team
375 Victoria Road
Aberdeen
AB11 9DB

Local Office
[redacted]
Tel: [redacted]
www.naturalpower.com
sayhello@naturalpower.com

Registered Office
The Natural Power Consultants Limited
[redacted]
Reg No: SC177881

Update to Marine Licence Application

Dear Toni-Marie

Following consultation between MD-LOT and RWE Renewables UK (25th March 2024) regarding the proposed scour protection activities at the Robin Rigg Offshore Wind Farm (OWF), we provide supplementary information to update the Marine Licence Application (MLA) (Ref: 00010730, submitted on .1.03.2024). This update arises as the Project now requires consideration of Rock Filled Nets (RFN) as potential scour protection. Further details are provided below including updated specifications from the scour protection final design.

Updated Scour Protection Design

The scour protection design specification work undertaken for the project indicates that turbines B4 and C4 will require a maximum of 2,050 m^3 (4,300 tonnes (assuming a bulk density of 2.1 t/m^3)) of loose rock each to prevent further scour around the foundations. Assuming a nett volume for each RFN of 2.65 m^3 it is estimated that the equivalent number of RFNs required to complete the works is 774 per turbine (2,050 / 2.65 m^3).

In the MLA a very conservative estimate (considered to be the worst case) of 5,000 m^3 (13,350 tonnes) of loose rock per turbine was used in the environmental appraisal to assess any potential significant effects on the receptors screened into the assessment. This conservative assessment would be the equivalent of 1,887 RFNs per turbine (5,000 / 2.65 m^3). Therefore, the latest design specifications, including the potential change to using RFNs, fall within the range of what has already been assessed in the MLA.

Vessel Movements

In the MLA two installation methods were assessed for loose rock scour protection, based on the information available at the time of writing, which differ based on the number and type of vessels to be used. The first installation method, which involves using a side stone dumping installation vessel (SSDV) and two bulk carriers, was calculated to require a worst-case maximum of 38 vessel-movements to complete the works. The second installation method, which involves using a single large installation vessel with an excavator and crane on board to load and unload rock, avoiding the need for bulk carriers, was calculated to require a worst-case maximum of 14 vessel-movements to complete the works.

If RFNs are to be used for the scour protection works, then it is likely that they will utilise the second installation method to undertake the work, with a SSDV being unsuitable for accurate placement of RFNs. Using the new design specifications for the work, and assuming an installation vessel hold capacity of 4,200 tonnes, the maximum worst case

number of vessel movements (including arrivals and departures) required for RFNs is 6 vessel movements (the hold capacity volume should accommodate enough rock filled nets for both turbines in three trips to and from the site).

In the MLA, given the larger number of vessel movements, the first installation method was taken forward as the worst-case in the environmental appraisal. Therefore, the number of vessel movement required for transporting RFNs falls well within the range of what has already been assessed and no additional impacts are expected.

Installation Methods for RFN

Detailed specification of the rock that will be used in the RFNs is provided in Table.1 at the end of this letter.

Installation of RFNs will be by a single large installation vessel with an excavator and crane, which is already considered in the MLA. However, instead of loose rock being deposited by an excavator, a crane will be used to load and unload the RFNs onto the installation vessel. The RFN's will be placed directly on the seabed into the existing scour hole; there will be no need for any excavation of the scour hole or preparation of the scour hole beforehand.

It is possible that a hybrid approach is chosen to use both loose rock and rock filled nets as scour protection. If this is the case then it is likely that RFNs will be placed first, close to the monopiles at the bottom of the scour pit, and loose rock placed surrounding them. As the installation vessel will have both an excavator and crane on board it will be possible for a single vessel to load, carry and unload both loose rock and rock filled nets.

Conclusions

Given this additional information, it is not envisaged that the addition of RFN's as potential scour protection will alter the conclusions made in the original Marine Licence Application, and the change in scour protection can be considered a non-material change, and impacts are all within those already assessed. Therefore, the conclusions from the assessment remain valid, as these are considered to remain worst case and as such, no changes are required to the environmental appraisal to assess the potential alternative methodology of RFN use.

Yours sincerely,

[redacted]

Stuart McCallum
Technical Director
[redacted]

Table.1: Rock specification for scour protection

Rock specification	Details
General	The properties of the rock will to be defined as per BS EN 13383-1:2002. Test methods for rock will comply with BS EN 13383-2:2019. As one rock grading will be adopted to form the complete scour protection, all rock needs to be suitable for use as a cover layer. The adopted rock size for design does not include an allowance for degradation of rock during transport, storage, installation and due to wave and current loads during the scour protection design life; therefore, a minimum classification of “good” has been adopted for rock properties, as per guidance given by CIRIA/CUR/CETMEF (2007) in its Table 3.12. It is noted that rock will be placed on the seabed and will be continuously submerged after installation. Hence requirements for resistance against freeze-thaw and salt crystallisation are less severe than for coastal structures subject to below-zero temperatures.
Grading	The grading of the rock will be a Light grading 10 to 60kg, Category $LMA_{10/60}$ in accordance with BS EN 13383-1:2002, Table 2. The minimum M_{50} will be 27 kg and the maximum M_{50} will be 47 kg. To limit erosion of seabed material through the scour protection, a wide grading has been adopted. The value of M_{85}/M_{15} must be within the range of 2.7 to 16. For standard gradings as per BS EN 13383-1:2002 the ratio of M_{NUL} over M_{NLL} will be within the range of 5 to 10 (refer BS EN 13383-1:2002, Clause 4.2).
Rock density	The rock will have a density of 3.10 tonne/m3.
Shape	The maximum percentage of rocks that will have a length to thickness ratio greater than 3 is 10 % by mass (refer BS EN 13383-1:2002, Clause 4.3).
Resistance to breakage	The minimum value for compressive strength is 80 MPa (refer BS EN 13383-1:2002, Clause 5.3). There will be no requirement for block integrity tests.
Resistance to wear	The required maximum loss in a micro Deval test is 30% (refer BS EN 13383-1:2002, Clause 5.4), as suggested in BS EN 13383-1:2002 for a moderately abrasive environment. It is noted that this is classified as “marginal” by CIRIA/CUR/CETMEF (2007) in its Table 3.12.
Water absorption	The maximum water absorption is 1% by mass (refer BS EN 13383-1:2002, Clause 7.3).
Resistance to freezing and thawing	No requirement.
Resistance to salt crystallization	No requirement.

Source: Specifications provided by HR Wallingford on behalf of RWE.