12 COMMERCIAL FISHERIES

12.1 INTRODUCTION

1. This section of the ES Addendum presents an evaluation of the likely significant effects of the Amended Project on commercial fisheries associated with the amendments presented in Section 4: Amended Project Description. In addition, this section presents a discussion of the effects which may occur as a result of the most likely scenario. The assessment has been undertaken by Brown and May Marine Ltd.

2. Specifically, this section of the ES Addendum assesses the effects associated with:

- The Amended OfTW Corridor; and
- Changes to the OfTW cable installation timescales.

3. This section presents an addendum to Section 27: OfTW Commercial Fisheries of the Original ES. Where applicable, reference is made in this assessment to the Original ES.

4. It should be noted that the changes to the jack-up vessel footprints included in the Amended Project do not affect the worst case scenario in relation to the assessment of effects on commercial fisheries and been scoped out of this assessment. There are therefore no amendments to Section 16: Wind Farm Commercial Fisheries (see Section 12.3 for rationale).

5. This section includes the following elements:

- Consultation;
- Scope of Assessment;
- Baseline;
- Assessment Methodology;
- Assessment of Potential Effects;
- Mitigation Measures and Residual Effects;
- Assessment of Cumulative Effects;
- Statement of Significance; and
- References.

12.2 CONSULTATION

6. Following the submission of the Original ES in April 2012 Beatrice Offshore Wind Farm Ltd (BOWL) has received consultation responses, via Marine Scotland Licensing Operations Team (MS-LOT) from various statutory and non-statutory consultees. A summary of these responses in relation to commercial fisheries is presented in Table 12.1. Reference is also provided as to where these issues are addressed within this ES Addendum, if applicable.

Table 12.1: Summary of Original ES Consultation Responses and Project Response

Consultee	Summary of Consultation Response	Project Response	Consultation Response Addressed
Marine Scotland Science (MSS)	Is it realistic that the same level of activity will continue during the operational phase?	Subject to areas where cable installation has been undertaken being returned to a condition to allow fishing activities to be safely resumed, the worst case parameters identified for commercial fishing should not preclude fishing activities being undertaken once the development is operational.	No further environmental information required in the ES Addendum.
	The maximum construction period of 5 years described as the worst case may need to be re-evaluated following assessment of the build time (possibly of 10 years).	Build time of 5 years is correct, as assessed in the Original ES.	No further environmental information required in the ES Addendum.
	It is unclear whether the developer has fully taken into consideration that there is a large wind development that will be impacting on the scallop grounds in a similar way.	See the cumulative assessment in the Original ES, which identifies a moderate significant effect for the scallop fishery for the Project in conjunction with the proposed Moray Firth Round 3 Zone being developed by Moray Offshore Renewables Ltd (MORL).	Section 16.7 of the Original ES. No further environmental information required in the ES Addendum.
	It is unclear as to the extent of the Moray Firth under-15 m scallop vessel activity…. Table 16.10 should perhaps show the significance of impacts on local and UK fleet. In general the UK fleet would show the sensitivities described but it would be likely that several of the perceived effects would be of greater sensitivity to more locally restricted vessels.	Section 16 and Annex 16A of the Original ES describe local and visiting vessel activity relative to the Project. As stated, scallops are the principal fishery and the large majority of activity is by large category vessels which are capable of fishing grounds around Scotland and the UK. At the time of writing Annex 16A, only one smaller category vessel from a local port was identified. Activity has not however been described on an individual fishing business level in the assessment, due to limitations described, including data protection issues and annual variations in fishing practices. Ongoing engagement of the fishing industry will ensure that the appropriate parties are involved in future project	See Section 12.6 in Annex 16A. No further environmental information required in the ES Addendum.

Consultee	Summary of Consultation Response	Project Response	Consultation Response Addressed
		development.	
Scottish Fishermen's Federation (SFF)	Although those effects which have been ascribed in the assessment may make sense on a national scale, individual fishing businesses may feel that there will be major impacts on their activity.	Activity has not been described on an individual fishing business level in the assessment, due to limitations described, including data protection issues and annual variations in fishing practices. Ongoing engagement of the fishing industry will ensure that the appropriate parties are involved in future project development.	Meeting held with SFF 6th December 2012. No further environmental information required in the ES Addendum.
	Lack of defined mitigation.	To be developed through the forum of the Fisheries Working Group. A final scheme of defined mitigation cannot be determined until a detailed design of the Project is realised.	BOWL / MORL working group. No further environmental information required in the ES Addendum.
	Require understanding of the ongoing effects, from construction through to decommissioning upon important local fisheries, including scallops, seine netting for haddock, squid and the nephrops fishery.	Development of appropriate monitoring programme.	See Section 11: Fish and Shellfish Ecology of the Original ES. No further environmental information required in the ES Addendum.
	Clarifications required on final Wind Farm and OfTW design, construction and decommissioning programmes.	Communication will be ongoing with commercial fishery stakeholders via working group regarding project design and construction/ decommissioning management programmes.	See Project Response and Section 4: Amended Project Description.
	Requirement to establish a Fisheries Working Group for ongoing dialogue. Expectation that all	BOWL and MORL are currently in discussions with the fishing industry to set up a Fisheries Working Group for the purposes of formalising regular engagement between the developers and the	See Project Response. No further environmental information

Consultee	Summary of Consultation Response	Project Response	Consultation Response Addressed
	cables are buried, where possible.	fishing industry throughout all phases of development.	required in the ES Addendum.
	Requirement to alleviate concerns over Electromagnetic Fields (EMFs).	Please see Section 5: Fish and Shellfish Ecology for further information on EMF.	See Section 5.6.1.2.
	Requirement to alleviate concerns over interference to vessels' radar.	See Section 18: Wind Farm Shipping and Navigation of the Original ES.	See Section 18.5.6 in Original ES. No further environmental information required in the ES Addendum.
	All construction sites need to be verified as safe for fishing as soon as possible after completion.	Considered within Original ES.	See Section 27.5.1 in Original ES. No further environmental information required in the ES Addendum.
	Agreeing responsibility for any debris or damage caused by such, should be in place from the outset of development.	See Section 18: Wind Farm Shipping and Navigation of the Original ES. This point is noted and the Working Group will provide a forum to discuss this and other issues in more detail.	See Section 18.4.1 & Table 18.3 in Original ES. No further environmental information required in the ES Addendum.
	Requirement to work in accordance with Best Practice Guidelines, as developed and endorsed by Fishing Liaison with Offshore Wind and Wet Renewables Group (FLOWW),	As per assessment, and through ongoing engagement between BOWL and the fishing industry. Planned working group will contribute towards achieving this. Agreement with sub-contractors to work in accordance with Best Practice Guidelines, as developed and endorsed by FLOWW, of which BOWL is a member.	BOWL / MORL working group. No further environmental information required in the ES Addendum.
	To provide reasonable employment opportunities to mitigate any displacement effects.	This will be developed through the Fisheries Working Group and ongoing consultation.	BOWL / MORL working group. No further environmental

Consultee	Summary of Consultation Response	Project Response	Consultation Response Addressed
			information required in the ES Addendum.
	All redundant infrastructure should be removed in respect of eventual decommissioning.	To be addressed in Decommissioning Plan.	No further environmental information required in the ES Addendum.
	The cumulative effects with other similar developments will need to be considered as a strategic whole.	As per cumulative assessment in the Wind Farm assessment	See Section 16.7 in Original ES. No further environmental information required in the ES Addendum.

12.3 SCOPE OF ASSESSMENT

7. As shown in Section 12.2, there are no consultation responses which have required further material information or renewed assessment to be presented in this section. All consultation responses relating to commercial fisheries have been dealt with outwith this ES Addendum.

8. There are no amendments to methodologies or receptors which need to be presented in this section.

9. The further cumulative information relating to the Moray Firth Round 3 Zone does not require any amendment to the assessment of commercial fisheries.

10. The scope of this section has therefore been determined by considering the changes to the Project presented in Section 4: Amended Project Description. Specifically, as stated in Section 12.1, the effects associated with:

- The Amended OfTW Corridor; and
- Changes to the OfTW cable installation timescales.

11. The amended jack-up vessel footprints bear no relevance to the assessment of effects on commercial fisheries as the larger area of the footprints still falls within the 500 m safety exclusion zone to be implemented during construction. Hence, the amended jack-up vessel footprints do not fall within the scope of this ES Addendum.

12. Section 12.6 considers the effects on commercial fisheries associated with the Amended Project. The conclusions of this assessment are supplemental to those of the Original ES and this section must be read alongside the Section 27: OfTW Commercial Fisheries of the Original ES. Section 12.6.2 considers the 'most likely' scenario.

12.4 BASELINE

12.4.1 STUDY AREA

13. The Study Area for the assessment of effects on commercial fisheries was presented in Section 27.2.3.1 of the Original ES. The Study Area, which comprises of four ICES rectangles (45E7, 45E6, 44E6 and 44E7) with the Amended OfTW Corridor traversing through three of those (45E7, 45E6 and 44E6), remains unchanged from that presented in the Original ES as it already encompassed the additional area created by the amendment to the Original OfTW Corridor. Figure 12.1 shows the Amended OfTW Corridor in the context of the Study Area.

14. An ICES rectangle is the smallest spatial unit available for the collation of fisheries statistics. It must be noted that the area of each rectangle in the Study Area is much larger than the area covered by the Amended OfTW Corridor.

12.4.2 BASELINE CONDITIONS

15. The baseline conditions relating to the Study Area were presented in Section 27.3 of the Original ES. Given the relatively minor amendment to the Original OfTW Corridor, relative to the description of fishing grounds, the baseline conditions for the Study Area are as per the baseline conditions described in the Original ES.

16. To summarise, the principal fisheries in the additional area created by the amendment to the Original OfTW Corridor are scallop dredging, and to a lesser extent bottom trawling for squid.

17. Figure 12.2 shows the spatial extent of the Amended OfTW Corridor relative to scallop fishing grounds (over-15 m vessels only). The large majority of vessels dredging for scallops in this area are considered to be over-15 m in length, and therefore will be monitored by the Vessel Monitoring System (VMS). 2008 data has been used as it shows the highest density of activity over the three year period. It can be seen that the Amended OfTW Corridor encompasses an additional area that records scallop dredging, which is not different to the level of activity identified in the original baseline.

18. Figure 12.3 shows the spatial extent of the additional area created by the amendment to the Original OfTW Corridor relative to vessels employing mesh nets <100 m, which are used to target nephrops or squid (over-15 m vessels only). Given the location of the additional area outwith nephrops grounds (which are further south), it can be considered that activity in the immediate area of the Amended OfTW Corridor is for squid. 2009 data has been used as it shows the highest densities for this activity over the three year period, and it can be seen that the large majority of activity is outwith the additional area.

19. Figure 12.4 shows squid fishing grounds as identified by a sample of locally based vessels that includes smaller category boats, which also shows that the additional area does not fall within identified squid grounds. The potential of squid grounds to vary annually is however recognised.

12.5 ASSESSMENT METHODOLOGY

20. The assessment methodology remains unchanged from that presented in Section 27.2.4 of the Original ES.

12.5.1 WORST CASE SCENARIO

21. A description of the Amended OfTW Corridor and associated changes to the Project parameters from the Original ES is presented in Section 4: Amended Project Description.

22. With the exception of OfTW cable installation timescales, the worst case parameters for commercial fisheries for the Amended OfTW Corridor are as described in Section 27.2.5 of the Original ES. The worst case duration of OfTW cable installation is estimated to be 140 days each year for a three year period, which results in 420 days in total over three years. In addition, there will be 90 days per year required for cable protection work, which totals 270 days over the same period. Combined, this results in a worst case of 690 days in total over a three year period.

12.5.2 MOST LIKELY SCENARIO

12.5.2.1 Wind Farm

23. Section 16.2.6 of the Original ES defined the worst case parameters for assessment of the effects of the Wind Farm on commercial fisheries. These were the parameters which presented the largest footprint and obstacle to fishing activities.

24. Table 12.2 provides a summary of the key differences between the worst case and the most likely scenario for the effects on commercial fisheries.

Table 12.2: Comparison of Worst Case to Most Likely Parameters

Project Parameter	Worst Case Scenario	Most Likely Scenario
Wind Farm Site area	131.5 km²	131.5 km²
Number of turbines	277	140
Minimum downwind spacing	642 m	985.6 m
Minimum crosswind spacing	642 m	985.6 m
Foundation and Substructure	Jacket and gravity base	Jacket and pin piles
Footprint of individual turbine	1,963 m²	11 m²
Combined footprint of all turbine foundations	543,751 m² (0.54 km²)	1,540 m²
Permanent zone of influence of each turbine	11,690 m²	3,073 m²
Combined zone of influence of all turbines	3.238 km²	430,220 m² (0.43 km²)
Maximum number of meteorological masts	3x5 m diameter monopoles	3 on pin piled foundations
Inter-array cables - estimated	350 km	260 km

Project Parameter	Worst Case Scenario	Most Likely Scenario
total length		
Cable post installation status	Buried and protected where feasible (up to 325 km)	Likely 230 m buried cable
Maximum number of OSPs	3 made up of: 2x AC OSPs (24,230 m^2) 1x DC Converter Station (45,100 m^2)	2x AC OSPs (24,230 m^2)
Combined loss of area from OSPs	69,330 m^2	24,230 m^2

25. A worst case assumption during construction is that there would be an exclusion zone for vessels entering the whole Wind Farm Site. Rolling safety zones of 500 m are assumed to be the most likely exclusion zones imposed around construction works, from which all vessels are normally excluded. In addition, there is the potential for vessels to be precluded from fishing in the area of installed cables which are outwith designated safety zones due to the associated risks with snagging fishing gear, particularly in the case of towed gear activities such as scallop dredging and bottom trawling for squid. Normal towed gear fishing practices will only be able to resume once the necessary cable protection measures have been completed.

26. As shown in Table 12.2, the most likely scenario presents a reduction in the footprint of the Wind Farm which may result in an obstacle to commercial fishing activities.

12.5.2.2 OfTW

27. The most likely scenario for the Amended OfTW Corridor does not alter the spatial extent of potential effects, although the installation occurs over a two year period rather than three years. The most likely scenario in relation to installation time is expected to be 187 days of installation in Year 1, and 100 days of installation in Year 2, resulting in 287 days in total over two years. Additionally, cable protection is anticipated to take 128 days in Year 1 and 64 days in Year 2, giving a total protection time of 192 days over two years.

28. Additionally, the maximum length of cable which will require protection (i.e. maximum length of surface laid cable), is 10.7 km, instead of 45% of the total cable length in the worst case scenario.

12.6 ASSESSMENT OF POTENTIAL EFFECTS

12.6.1 WORST CASE SCENARIO

12.6.1.1 OfTW

Construction

29. As outlined above in Section 12.5.1, the amendment to the worst case parameters results in a temporal increase in construction vessels displacement; however, the construction area does not change and hence the spatial extent within the Amended OfTW Corridor remains the same as the Original OfTW Corridor. A rolling 500 m

safety exclusion zone would be in effect during construction so that there would still be a temporary loss or restricted access to fishing grounds within the spatial extent of the Amended OfTW Corridor albeit over a longer period of time with allowances for seasonal variation.

30. This results in moderate significant effects upon fisheries occurring along the Amended OfTW Corridor (nephrops, squid, scallops and creels) during the installation phase arising from the temporary loss or restricted access to fishing grounds, and associated displacement. This remains unchanged from the assessment presented in Section 27.5.1.1 of the Original ES. These effects are considered likely significant effects in terms of the EIA Regulations.

Operation

31. Section 27.6 of the Original ES, presents the embedded mitigation for the Original Project which includes seabed protection measures and post installation seabed rectification procedures to ensure that fishing activities continue.

32. Subject to the completion of the aforementioned cable protection measures and post-construction surveys, no likely significant effects in terms of EIA regulations have been identified during the operational phase.

12.6.2 CONSIDERATION OF MOST LIKELY SCENARIO

12.6.2.1 Wind Farm

Construction

33. As illustrated in Section 12.5, the most likely scenario presents a reduction in the footprint of the Wind Farm on the sea bed and the number of structures in the sea, and therefore potentially reducing the effect on commercial fisheries.

34. During construction, the worst case would be to assume that the entirety of the Wind Farm Site is subject to an exclusion zone, preventing the entry and passage of commercial fishing vessels whilst the most likely scenario would be 500 m rolling safety exclusion zones. The area of the Wind Farm Site remains unchanged in the most likely scenario and hence the effects, including significance, during construction remain as described in Section 16.4.1 of the Original ES.

Operation

35. During the operational phase, the effects on commercial fisheries are associated with the footprint of the Wind Farm, but also the exclusions zones around the structures (turbines, OSPs and meteorological masts). It has been assumed there will be a 50 m exclusion zone around each structure as was assumed in the worst case. As the number of turbines is reduced in the most likely scenario to 140, from 277 in the worst case, this in turn reduces the area lost to exclusion zones. Furthermore in the most likely scenario the spacing between structure is 985.6 m compared to 642 m in the worst case assessment, allowing for more space between the turbines. This increased space may enable vessels through the Wind Farm more easily, although would be unlikely to alter the assessment of effects presented in Section 16.4.2 of the Original ES, as these are already assessed as being not likely significant effects.

36. In the worst case scenario there is 350 km of inter-array cables, this is reduced to 260 km in the most likely, again reducing the potential effects of the most likely scenario on commercial fishing activities than those of the worst case, although this would be unlikely to alter the assessment of effects presented in Section 16.4.2 of the Original ES, as these are already assessed as being not likely significant effects.

12.6.2.2 OfTW

Construction

37. The most likely scenario for the installation and operation of the OfTW, relative to commercial fishing activities, differs to the assessed worst case in the following two principal ways:

- Installation times; and
- Maximum length of cable protection.

38. As outlined in Section 12.5.2.2, it is likely that the installation period will be less than that stated as the worst case, being 287 days over two years instead of 420 days over three years. Time required for cable protection will be 128 days during Year 1, and 64 days during Year 2, totalling 192 days over two years, compared to 270 days over three years. This will lessen the extent that access to fishing grounds along the Amended OfTW Corridor are temporarily restricted, but does not alter the level of effect identified in the assessment of the worst case scenario described above and presented in Section 27.5.1.1 of the Original ES.

Operation

39. The most likely scenario for the maximum length of cable which will require protection (i.e. maximum length of surface laid cable), is 10.7 km instead of 45% of the total cable length. This is a reduction in the length that was assessed previously, but does not change the level of effect identified in the assessment of the worst case scenario described above and assessed in Section 27.5.1.2 of the Original ES.

12.7 MITIGATION MEASURES AND RESIDUAL EFFECTS

40. The mitigation measures proposed remain unchanged from that described in Section 27.6.1.1 of the Original ES.

41. The residual effects remain unchanged from those presented in Section 27.6.1.2 of the Original ES.

12.8 ASSESSMENT OF CUMULATIVE EFFECTS

42. Cumulative effects for commercial fisheries are presented in Section 16.7 of the Original ES. Cumulative effects remain unchanged from those presented in Section 16.7 of the Original ES.

12.9 STATEMENT OF SIGNIFICANCE

43. As the findings of the assessment in the Original ES remain unchanged, the statement of significance remains unchanged from that presented in Section 27.8 of the Original ES.

12.10 REFERENCES

44. References remain unchanged from those presented in Section 27.9 of the Original ES.

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