Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Annex A to Appendix 1 to Deadline 3 Submission: Project Description Transcription into the Application

Relevant Examination Deadline: 3

Submitted by Vattenfall Wind Power Ltd

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Revision B

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Tables

1 Introduction

1.1 Aim

1 This clarification note seeks to provide clarification on how the project description for Thanet Extension Offshore Wind Farm (Thanet Extension) has been transcribed and assessed in the Environmental Statement (ES). It has been drafted in response to the project description points noted in the Relevant Representations (MMO and Natural England; PINS Ref RR-049 and RR-053).

2 This document has been revised by the Applicant to account for the transcription of the project description within the revised RIAA (PINS Ref REP2-018 and REP2-019, Revision B).

3 In responding to the relevant representations this note provides an audit of where there is some potential disparity between the design envelope for Thanet Extension and the ES assessments and the draft Development Consent Order (DCO) submitted with the Application.

4 This note should be read in conjunction with the Project Description Audit Clarification Note (Annex C to Appendix 34 of the Applicants' Response to Relevant Representations of the Deadline 3 submission), which provides the Rochdale Envelope of the project in a tabular format.

1.2 Areas of disparity

5 The areas where there may be a potential risk of disparity between the Application documents are:

- Construction Phase:
  - Minimum WTGs spacing;
  - Total volumes of material for disposal;
  - Total spoil volumes from drilling of foundations;
  - Seabed disturbance volumes for export cable installation;
  - Seabed disturbance area and volume for inter-array cable installation;
  - Impact areas from anchors; and
  - Working area within the saltmarsh.
- Operations and Maintenance:
  - Total footprint of foundations;

- Total scour protection requirements;
- Total cable protection requirements;
- Seabed disturbance during O&M activities; and
- O&M vessel numbers.

6 Each of these areas is clarified within sections 2 and 3 below. Table 7 provides a breakdown of parameters transcribed within the maximum design scenario tables each of the assessments; however, this should be reviewed in conjunction with the clarifications presented in Sections 2 and 3.

2 Clarifications of parameters – Construction Phase

2.1 Minimum WTGs spacing

Project Description

7 As identified in paragraphs 1.4.14 and 1.4.15 of Volume 2, Chapter 1: Project Description (Offshore) (PINS Ref APP-042/ Application Ref 6.2.1) the spacing of neighbouring WTGs will be a minimum of 716 x 480 m. Paragraph 1.4.74 (PINS Ref APP-042/ Application Ref 6.2.1) identifies that the met mast will also adopt a minimum spacing of 716 x 480 m.

Environmental Statement

8 All technical chapters have presented the correct values except the shipping and navigation chapter (PINS Ref APP-051/ Application Ref 6.2.10).

9 As presented in Table 7, there is a disparity in the Volume 2, Chapter 10: Shipping and Navigation (*ibid*) which has transcribed the minimum spacing from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) as 760 x 418 m. This disparity is a typographical error. The minimum spacing has been derived to align WTGs in Thanet Extension with the rows of the existing WTGs of the Thanet Offshore Wind Farm (TOWF). The assessment was undertaken on this basis, i.e. 716m x 480m and in compliance with the parameters presented in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1); and therefore, this typographical error does not alter the findings of the assessment.

Draft DCO

10 Schedule 11, Part 4, Condition 1 (1)(d) of the draft DCO sets out the correct minimum spacing of infrastructure (716 x 480 m) from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1).

2.2 Total volumes of material for disposal

Project Description

11 As presented in Table 1.16 of the Project Description (PINS Ref APP-042/ Application Ref 6.2.1), a maximum pre-sweeping volume of 1,440,000 m^3 for the offshore cable corridors is required for the project. As presented in Table 1.6 (*ibid*) the maximum seabed preparation volume for WTG foundations is 268,800 m^3 (based on 28 x 9,600 m^3 (3,200 m^2 x 3 m depth) per suction caisson foundation). The technical assessments, as presented below, have also applied the same individual assumptions (i.e. 9,600 m^3) to assessments of the Offshore Substation (OSS) and met mast foundations.

12 Therefore, the Applicant is seeking a consent for a maximum disposal volume of 1,728,000 m^3 (1,440,000 m^3 (sandwave) + 268,800 m^3 (WTG foundations) + 9,600 m^3(OSS) + 9,600 m^3 (met mast).

Environmental Statement

13 All technical chapters have derived the pre-sweeping volume for the export cable corridors from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) and have all transcribed the information such that all assessments state 1,440,000 m^3. There are therefore no potential discrepancies for this value.

14 All technical chapters have correctly transcribed the correct value for the volume of sediment disturbed for foundation installation except the water quality and sediment quality chapter (PINS Ref APP-044/ Application Ref 6.2.3).

15 The Water Quality and Sediment Quality chapter derived information from the Project Description to inform the Rochdale table of the chapter (Table 3.10). The assessment states a maximum volume of sediment disturbance from foundation preparation of 268,800 m^3 for the WTG foundations and 9,600 m^3 for the OSS. There is therefore an apparent disparity between the overall volume for all infrastructure foundations (288,000 m^3) required, and the information presented in Table 3.10 (278,400 m^3). This is due to an error in transcription which did not account for the potential seabed preparation for the met mast foundation (9,600 m^3). It is important to note that this disparity is applicable to Table 3.10 only. Paragraph 3.10.2 of the water and sediment quality chapter (*ibid*) highlights that the assessment draws on the findings within the Marine Geology, Oceanography and Physical Processes assessment (PINS Ref APP-044/ Application Ref 6.2.3) (which presented the worst case accurately) and therefore the assessment is based on appropriate assumptions and the maximum parameters presented in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1). As the assessment is based on information within another chapter (which is accurate), the disparity in the maximum design scenario (Rochdale) table within the water and sediment quality chapter is not material and the conclusions are accurate.

16 Within the maximum design scenario table within the revised RIAA (PINS Ref REP2-018 and REP2-019) has an omission in the SSC assumptions for offshore ornithology, where the volume for the met mast is not explicitly presented. However, as noted in the table, the assessment draws on the findings within the Benthic Intertidal and Subtidal Ecology assessment (PINS Ref APP-046/ Application Ref 6.2.5) (which presented the worst case accurately) and therefore the assessment is based on appropriate assumptions and the maximum parameters presented in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1). The maximum design scenario (288,000 m^3) is correctly transcribed and presented in the benthic ecology section of the maximum design scenario table.

17 The Applicant is seeking consent for a maximum volume of inert material for disposal of 1,728,000 m^3.

Draft DCO

18 Schedule 1, Part 1, Further Works (c) of the draft DCO has transcribed the maximum volume of inert material proposed to be disposed of (1,728,000 m^3). However, the draft DCO wording has been amended to “from the seabed required for the construction of Work Nos. 1 to 3B”.

19 The revised draft DCO submitted with Deadline 1 was been amended to include total volumes for disposal of 1,449,600 m^3 (1,440,000 m^3 (pre-sweeping of export cable corridor) and 9,600 m^3 for OSS foundation seabed preparation) within the export cable dML and 278,400 m^3 (WTGs and one met mast) within the generation dML. This is the equivalent to a maximum volume of disposal for the project of 1,728,000 m^3 but split appropriately between the two dMLs.

2.3 Total area of seabed preparation for foundations

Project Description

20 As presented in Table 1.6 (PINS Ref APP-042/ Application Ref 6.2.1) the maximum seabed preparation area per WTG foundations is 3,200 m^2 (suction caisson foundations). The same assumptions for the OSS and met mast foundations have also been applied. Therefore, the total maximum disturbance area of the seabed from preparation for foundations is 96,000 m^2 ((28 x 3,200 m^2(WTGs)) + 3,200 m^2(OSS) + 3,200 m^2 (met mast).

Environmental Statement

21 All technical chapters have presented the correct values except the Offshore Archaeology and Cultural Heritage chapter (PINS Ref APP-054/ Application Ref 6.2.13). The Offshore Archaeology and Cultural Heritage chapter has derived information from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) and has presented the maximum area disturbed for WTG foundations as 89,600 $m^{2.}$ The chapter also considered the disturbance of preparing the OSS foundation (3,200 m^2), and therefore considered a maximum area of 92,800 m^2 (89,600 m^2 + 3,200 m^2). The chapter does not present the requirement for the seabed preparation of the met mast foundation (if it is required), which is equivalent to an additional 3.5% of the assessed value. Whilst there is therefore a disparity the difference is such that it would not alter the magnitude of impacts assessed within the chapter and therefore there would be no change in the overall significance.

22 The Applicant is seeking a maximum seabed preparation are of 96,000 m^2 for the installation of foundations.

Draft DCO

23 The maximum seabed preparation disturbance area for foundations is not presented within the draft DCO.

2.4 Total spoil volumes from drilling of foundations

Project Description

24 Table 1.4 of the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) presents the worst case scenario parameters for drill arising volumes for WTGs as 19,627 m^3 (defined by 1,155 m^3 per 10 MW foundation and up to 50% of foundations requiring drilling). Table 1.12 (PINS Ref APP-042/ Application Ref 6.2.1) presents the worst case drill arising volume for the OSS as 1,000 m^3. Whilst the consideration of drilling has not been explicitly presented in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) for the met mast, reference is made to the same foundation assumptions being applied, therefore the met mast has been assessed within the technical chapters on the basis of assuming the same worst case requirements as the WTG foundations, i.e. 1,155 m^3.

25 Therefore, the maximum drill arising volume is 21,782 m^2 (19,627 m^2 (WTGs)+ 1000 m^2 (OSS) + 1,155 m^2 (met mast)), as presented in Project Description Audit Clarification Note (Annex A, of the Applicants' Response to Relevant Representations of the Deadline 1 submission).

Environmental Statement

26 The Marine Geology, Oceanography and Physical Processes; Marine Water Quality and Sediment Quality; Fish and Shellfish; Marine Mammals (Volume 2, Chapter 7); Infrastructure and Other Users chapters and the Sand Wave Clearance, Dredging and Drill Arising: Disposal Site Characterisation assessment (PINS Ref APP-043, APP-044, APP-047, APP-048, APP-052 and APP-148/ Applications Refs 6.2.2, 6.2.3, 6.2.6, 6.2.7, 6.2.11 and 8.14) have derived information from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1), the transcribed volumes are presented in Table 1. Notable exceptions to this list of chapters is the benthic chapter, which assesses a worst case for suspended sediment which is based on seabed preparation.

Table 1: Transcription of the drill arising volumes in the Application

Document	Total volume for WTGs (m^3)	Total volume for OSS (m^3)	Total volume for met mast (m^3)	Total volume assessed (m^3)
APP-043/ 6.2.2	19,627	900	1,325	21,852
APP-044/ 6.2.3	22,531	1,000	0	23,531
APP0-047/ 6.2.6	19.627	900	0	20,527 β
APP-048/ 6.2.7	19,627	900	1,325	21,852
APP-052/ 6.2.11	19,627	0	1,155	20,782β
APP-148/ 8.14	19,627	1,000	1,155	21,782

β nb in the chapter the total volume is presented alone, but the constituents are presented in this table for clarity.

27 The disparities in Marine Geology, Oceanography and Physical Processes, and Marine Mammals chapters (PINS Ref APP-043 and APP-052/ Application Refs 6.2.2 and 6.2.11) have arisen from a transcription error of a drill arising volume of 900 m^3 as opposed to 1,000 m^3 for the OSS and has considered the larger 12 MW foundation for the met mast (1,325 m^3). The results in a higher maximum volume when compared to the Project Description chapter. As such the assessments have assessed a greater volume than the required consent and concluded the effect to be not significant. The apparent disparity between the assessment and the requested value for consent means that the assessments in this case are overly precautionary; and a reduced value will not alter the findings of the assessment.

28 The disparity in the Marine Water Quality and Sediment Quality chapter (PINS Ref APP-044/ Application Ref 6.2.3) has arisen from a transcription error of 22,531 m^3 as opposed to 19,627 m^3 for WTG, and OSS foundations. The assessment has assessed a greater volume than the required consent and concluded the effect to be not significant. The apparent disparity between the assessment and the requested value for consent means that the assessment in this case is overly precautionary; and a reduced value does not alter the findings of the assessment.

29 The disparity in the Fish and Shellfish chapter (PINS Ref APP-047/ Application Ref 6.2.6) has arisen from a transcription error of not including the requirement for drilling for the met mast. As described in paragraph 6.10.15 (PINS Ref APP-052/ Application Ref 6.2.6) the assessment draws on the findings within the Marine Geology, Oceanography and Physical Processes assessment (PINS Ref APP-044/ Application Ref 6.2.2) (which represented a precautionary worst case, see paragraph 27) and therefore is based on precautionary assumptions. Therefore, this disparity and will not alter the findings of the assessment.

30 The disparity in the Infrastructure and Other Users (PINS Ref APP-052/ Application Ref 6.2.11) has arisen from a transcription error of not including the requirement for drilling for the OSS. As described in paragraph 11.10.29 (PINS Ref APP-052/ Application Ref 6.2.11) the assessment draws on the findings within the Marine Geology, Oceanography and Physical Processes assessment (PINS Ref APP-044/ Application Ref 6.2.2) (which represented a precautionary worst case, see paragraph 27) and therefore is based on precautionary assumptions. Therefore, this disparity and will not alter the findings of the assessment.

31 The Applicant is therefore seeking to consent a maximum drill arisings volume for foundation installation of 21,782 m^3.

Draft DCO

32 Within the draft DCO (PINS Ref APP-022/ Application Ref 3.1) the maximum volume of drill arisings from foundation installation is incorporated within the wider volumes for disposal within the draft DCO. For consideration of the total volumes for disposal see section 2.2.

2.5 Seabed disturbance volumes for export cable installation

Project Description

33 Tables 1.15 and 1.16 of the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) present the parameters to derive the total maximum disturbance volume for export cable installation (not including sandwave clearance). The total volume required for the consent is 900,000 m^3 (120 km length (4 cables x 30 km) x 10 m width x 3 m depth x v-shaped trench x 50% of the sediment is liquidised). This is based on the assumption that half of the material is ejected from the trench, via jetting, with the other half retained as sediment cover within the trench.

Environmental Statement

34 Table 2 presents the technical assessments which incorrectly transcribed the disturbance sediment volumes from the export cable installation.

35 As identified in Revision A of this note there were some transcription inconsistencies in the RIAA, these were revised in the Revision B of the RIAA (PINS Refs REP2-018 and REP2-019) and the report correctly identified a maximum disturbance volume of 900,000 m^3. Notwithstanding that the original assessment drew on the findings within the Marine Geology, Oceanography and Physical Processes assessment (PINS Ref APP-043/ Application Ref 6.2.2) (which represented the worst case accurately).

Table 2: Transcription of disturbed sediment volumes from the export cable installation in the Application

Document	Total volume transcribed (m^3)
APP-044/ 6.2.3	900,000
APP-047/ 6.2.6	180,000
APP-052/ 6.2.11	1,740,000
APP-031/ 5.2	900,000

36 The Water Quality and Sediment Quality chapter has derived information from the Project Description and presents the Rochdale Envelope/ maximum design scenario in Table 3.10 incorrectly due to a typographic error in which is states the volume is 1.2 km^2, however this should state area as opposed to volume. The chapter has assessed the correct value for the volume of disturbed sediment (900,000 m^3) based on the parameters presented in Table 3.10 (v-shaped trench, 50% of material ejected, 10 m width, 3 m depth and 120 km length). It is also important to note that as described in paragraph 3.10.2 of the chapter (PINS Ref APP-044/ Application Ref 6.2.3) the assessment draws on the findings within the Marine Geology, Oceanography and Physical Processes assessment (PINS Ref APP-043/ Application Ref 6.2.2) (which represented the worst case accurately). Therefore, the overall assessment is based on appropriate assumptions, and the maximum parameters presented in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1). The overall assessment is therefore based on appropriate assumptions and the error in transcription does not alter the findings of the assessment.

37 The Fish and Shellfish chapter (PINS Ref APP-047/ Application Ref 6.2.6) has derived information from the Project Description and presents the Rochdale Envelope/ maximum design scenario in Table 6.7, as 180,000 m^3, incorrectly due to a transcription error (the table reads cable trench width of 1m instead of 10m, and overall volume of 180,000m^3 instead of 1,800,000m^3 which should in turn by reduced by 50% to account for 50% sediment being released into suspension). As described in paragraph 6.10.13 (PINS Ref APP-047/ Application Ref 6.2.6) the assessment draws on the findings within the Marine Geology, Oceanography and Physical Processes assessment (PINS Ref APP-043/ Application Ref 6.2.2) (which represented the worst case accurately). Therefore, the overall assessment is based on appropriate assumptions, and the maximum parameters presented in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1). The overall assessment is therefore based on appropriate assumptions and the error in transcription does not alter the findings of the assessment.

38 The Infrastructure and Other Users chapter (PINS Ref APP-052/ Application Ref 6.2.11) has derived information from the Project Description and presents the Rochdale Envelope/ maximum design scenario in Table 11.10, as 1,740,000 m^3, incorrectly due to a transcription error and not reducing by 50% to account for 50% sediment being released into suspension. As described in paragraphs 6.11.25 to 6.10.34 (PINS Ref APP-052/ Application Ref 6.2.11) the assessment draws on the findings within the Marine Geology, Oceanography and Physical Processes assessment (PINS Ref APP-043/ Application Ref 6.2.2) (which represented the worst case accurately). Therefore, the overall assessment is based on appropriate assumptions, and the maximum parameters presented in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1). The overall assessment is therefore based on appropriate assumptions and the error in transcription does not alter the findings of the assessment.

39 The Applicant is therefore seeking consent for a maximum volume of disturbed sediment from the installation of the export cables of 900,000 m^3.

Draft DCO

40 The maximum volume of disturbed sediment from export cable installation is not presented within the draft DCO.

2.6 Seabed disturbance area for inter-array cable installation

Project Description

41 Ploughing the inter-array cable corridor represents the worst case area of disturbance of 0.64 km^2 (64 km x 10 m width (based on the parameters presented in Table 1.9 of the Project Description (PINS Ref APP-042/ Application Ref 6.2.1)). Whereas, the disturbance area for jetting would be of 0.3 km^2, as presented in Table 1.9 of the Project Description (PINS Ref APP-042/ Application Ref 6.2.1). Jetting represents the worst case for the generation of sediment plumes during cable installation.

Environmental Statement

42 All chapters have correctly transcribed the value, except for the offshore archaeology and cultural heritage chapter (PINS Ref APP-054/ Application Ref 6.2.13).

43 The Offshore Archelogy and Cultural Heritage (*ibid*) presents a maximum area of 0.6 km^2 which is a typographical error from rounding the value during transcription into Table 13.11 the chapter (0.64 km^2). The apparent disparity will not therefore alter the findings of the assessments.

44 The Applicant is seeking consent for a maximum area of disturbed sediment from inter-array cable installation of 0.64 km^2.

Draft DCO

45 The maximum area of disturbed sediment from inter-array cable installation is not presented within the draft DCO.

2.7 Seabed disturbance volume for inter-array cable installation

Project Description

46 Table 1.9 in the Project Description (offshore) (PINS Ref APP-042/ Application Ref 6.2.1) presents the parameters to derive the total maximum disturbance volume for inter-array cable installation. The total volume is 48,000 m^3 (64 km length x 1 m width x 3 m depth x v-shaped trench x 50% of the sediment is liquidised). This is based on the assumption that half of the material is ejected from the trench with the other half retained as sediment cover within the trench.

Environmental Statement

47 All technical chapters have presented the correct values except the Fish and Shellfish and Infrastructure and Other (PINS Ref APP-047, APP-052 and APP-031/ Applications Refs 6.2.6 and 6.2.11). The values presented in their Rochdale envelope/ maximum design scenarios are presented in Table 3.

48 As identified in Revision A of this note there were some transcription inconsistencies in the RIAA, these were revised in the Revision B of the RIAA (PINS Refs REP2-018 and REP2-019) and the report correctly identified a maximum disturbance volume of 48,000 m^3. Notwithstanding that the original assessment drew on the findings within the Marine Geology, Oceanography and Physical Processes assessment (PINS Ref APP-043/ Application Ref 6.2.2) (which represented the worst case accurately).

Table 3: Transcription of the disturbed sediment volumes from inter-array cable installation in the Application

Document (PINS Ref/ Application Ref)	Total volume of disturbed material from inter-array cable installation transcribed (m^3)
APP-047/ 6.2.6	96,000
APP-052/ 6.2.11	96,000

49 The disparity between the chapters results from the assumptions applied, to the percentage of sediment liquidised during the jetting process (i.e. 50% fluidisation rather than 100%), not having been accurately transposed.

50 The Fish and Shellfish and Infrastructure and Other chapters have presented a greater worse case (96,000 m^3) than the consent requires due to an error in transcription of the 50% sediment into solution calculation, the assessments are however informed by the Marine Geology, Oceanography and Physical Processes assessment (PINS Ref APP-043/ Application Ref 6.2.2) chapter which provides the correct assumptions and so the apparent disparities will not therefore alter the findings of the assessments.

51 The Applicant is seeking consent for a maximum volume of disturbed sediment from inter-array cable installation of 48,000 m^3.

Draft DCO

52 The maximum volume of disturbed sediment from inter-array cable installation is not presented within the draft DCO.

2.8 Impact areas from anchors

Project Description

53 The use of anchors is required during construction for the installation of infrastructure. Table 1.26 of the Project Description chapter (PINS Ref APP-042/ Application Ref 6.2.1) presents the consent area requirements for anchors for each of the infrastructure installation activities. The maximum requirements for anchoring disturbance area, as presented in the Project Description, are as follows:

- Foundation installation – 5,400 m^2 (34 x 150 m^2 (WTGs) + 150 m^2 (OSS) + 150 m^2 (met mast));
- OSS top side installation – 150 m^2;
- Export cable installation – 34,560 m^2; and
- Inter-array cables installation – 30,600 m^2.

54 Therefore, the total area of disturbance for anchor handling, from the constituents presented in Table 1.26 the Project Description (PINS Ref APP-042/ Application Ref 6.2.1), is 70,710 m^2 (5,400 m^2 + 150 m^2 + 34,560 m^2 + 30,600 m^2).

Environmental Statement

55 Benthic Intertidal and Subtidal Ecology; Fish and Shellfish; Infrastructure and Other Users; Offshore Archelogy and Cultural Heritage and the Report to Inform an Appropriate Assessment (PINS Ref APP-046, APP-047, APP-052, APP-054 and REP2-018 (REP2-019/ Applications Refs 6.2.5, 6.2.6, 6.2.11, 6.2.13 and 5.2) have derived information from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) for anchor handling impact areas. Table 4 presents the transcription of this information into the assessments.

Table 4: Transcription of disturbance footprint from anchor handling

Document PINS Ref/ Application Ref	Foundation Installation (m^2)	OSS Topside installation (m^2	Export Cable installation (m^2)	Inter-array cable installation (m^2)	Total (m^2)
APP-046/ 6.2.5	5,400	0	34,560	30,600	70,560
APP-047/ 6.2.6	5,400	150	34,560	29,700	69,810
APP-052/ 6.2.11	0	0	34,560	30,600	65,160
APP-054/ 6.2.13	5,400	150	34,560	29,700	69,810
APP-031/ 5.2	5,400	0	34,560	30,600	70,560

56 The Benthic Intertidal and Subtidal Ecology chapter and the RIAA have transcribed all parameters from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) accurately but did not include the anchor handling requirements for the installation of the topside on to the OSS (150 m^2). This is equivalent to less than 0.5% of the requested value for consent. The assessment concluded the effects to be not significant. Given the small increase in the requested area, the magnitude of impact and therefore overall significance would not change.

57 The Fish and Shellfish, and Offshore Archelogy and Cultural Heritage chapters (PINS Ref APP-047 and APP-054/ Application Refs 6.2.6 and 6.2.13) and the RIAA have transcribed that parameters from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) but have presented a maximum anchor handling area of 29,700 m^2 for inter-array cables. The chapters have therefore assessed 97.1% of the inter-array cable anchor handling area and 98.7% of the total requested consent area. The assessments have concluded the effects to be not significant. Given the small difference in area affected, the magnitude of impact and therefore overall significance would not change. Therefore, the disparity will not therefore alter the findings of the assessment.

58 The Infrastructure and Other Users chapter (PINS Ref APP-052/ Application Ref 6.2.11) has derived and presented the anchor handling requirements for the cable installation activities. The assessment considers the anchor handling as part of the cable installation activities, and how existing pipeline and cables may be subject to an increased bed depth as a result of construction activities. The chapter does not assess the footprint of these activities directly. As noted in paragraphs 11.10.21 and 11.10.28 *et seq.* the assessment draws on the findings of the Marine Geology, Oceanography and Physical Processes chapter (PINS Ref APP-043/ Application Ref 6.2.2.) (which represented the worst case accurately) and therefore is based on appropriate assumptions for changes in the sea bed level, and the maximum parameters presented in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1).

59 The Applicant is seeking consent for a maximum area of disturbed sediment from anchor handling of 70,710 m^3.

Draft DCO

60 The maximum area of disturbance for anchor is not presented within the draft DCO.

2.9 Impact areas from jack-up vessels

Project Description

61 As presented in Table 1.25 of the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) the maximum combined leg area for a single jack-up vessel (JUV) during construction will be 471.24 m^2. Therefore, the maximum sea bed disturbance area from JUVs during construction will be 32,044 m^2 (471.24 m^2 x 68 JUV visits).

Environmental Statement

62 The following technical chapters have derived information from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) and each presented the maximum sea bed disturbance as 33,929 m^2 (471.24 m^2 x 2 x 36):

- Benthic Subtidal and Intertidal Ecology (PINS Ref APP-046/ Application Ref 6.2.5);
- Fish and Shellfish (PINS Ref APP-047/ Application Ref 6.2.6);
- Infrastructure and Other Users (PINS Ref APP-052/ Application Ref 6.2.11); and
- Offshore Archaeology and Cultural Heritage (PINS Ref APP-054/ Application Ref 6.2.13).

63 The apparent disparity between the assessments and the values utilised for the DCO application means that the assessments are overly precautionary and a consent for a reduced value does not therefore alter the findings of the assessments.

64 The Applicant is seeking consent for a maximum area of disturbed sediment from JUVs during construction of 32,044 m^2.

Draft DCO

65 The maximum area of disturbance for JUVs during construction is not presented within the draft DCO (PINS Ref APP-022/ Application Ref 3.1).

2.10 Impact volume from jack-up vessels

Project Description

66 As presented in Table 1.25 of the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) the maximum penetration depth for the JUVs during construction is 15 m. As describes in section 2.9, the maximum disturbance area for the JUVs during construction will be up to 32,044 m^2, therefore the maximum volume of disturbance will be 480,665 m^3 (15 m x 32,044 m^2).

Environmental Statement

67 The Offshore Archaeology and Cultural Heritage (PINS Ref APP-054/ Application Ref 6.2.13) has derived information from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) and presents the maximum volume as 508,935 m^3 (33,929 m^2 x 15 m). This discrepancy, as presented in section 2.9, arose from applying an area of 39,929m^2 (471.24 m^2 x (2 x 36 JUV visits)) as opposed to 32,044 m^2 (471.24 m^2 x 68 JUV visits). Similarly, to section 2.9, the apparent disparity between the assessment and the requested value for consent means that the assessment in this case is overly precautionary and a consent for a reduced value does not therefore alter the findings of the assessment.

68 The Applicant is seeking consent for a maximum area of disturbed sediment from JUVs during construction of 32,044 m^2.

Draft DCO

69 The maximum volume of disturbance for JUVs during construction is not presented within the draft DCO.

2.11 Working area within the saltmarsh

Project Description

70 Table 1.20 of the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) presents the maximum construction space required in the saltmarsh as 3,872 m^2. This value refers to the space required for the cofferdam in the intertidal area, including the seawall extension. This value is applicable to the Option 3 landfall option only. Option 1 (HDD) does not require working space in the saltmarsh.

71 Whilst not specifically in the saltmarsh it is worthy of note that Table 1.18 of the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) presents the maximum trenching area in the intertidal as 80,000 m^2 (2 km x maximum disturbance width of 40 m).

Environmental Statement

72 All technical chapters have presented the correct values except the Water Quality and Sediment Quality and Benthic Subtidal and Intertidal Ecology chapters and the RIAA (PINS Ref APP-043 and APP-046 / Applications Refs 6.2.3 and 6.2.5 respectively) The Benthic Subtidal and Intertidal Ecology chapter has derived information from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) and have presented a maximum working area of 7,376 m^2, this value includes the cofferdam area plus the area of trenching within the saltmarsh. The area of trenching is included within the 80,000 m^2 within the intertidal. These transcription errors are of a greater area than the consent requires, and so the apparent disparities do not alter the findings of the assessments.

73 The Marine Water Quality and Sediment Quality (PINS Ref APP-044/ Application Ref 6.2.3) derived information from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) and presented a maximum working area of 4,702 m^2 which is based on a rectangular shape (165 m x (18.5 m +10 m (buffer)). These transcription errors are of a greater area than the consent requires, and so the apparent disparities do not alter the findings of the assessments.

74 The Applicant is seeking consent for a maximum working area within the saltmarsh of 3,872 m^2.

Draft DCO

75 The maximum working area within the saltmarsh is not presented within the draft DCO.

3 Clarification of parameters – Operations and Maintenance

3.1 Total footprint of foundations

Project Description

76 As described in Table 1.6 (PINS Ref APP-042/ Application Ref 6.2.1) the maximum foundation diameter is 20 m (for the 12MW), which is equivalent to a footprint area per WTG foundation of 1,256.6 m^2. It is important to note that this value is applicable to the 12MW scenario, which is the worst case for this parameter, but has 28 WTGs rather than the maximum of 34 WTGs. Table 1.13 (PINS Ref APP-042/ Application Ref 6.2.1) presents the maximum foundation diameter for the OSS is 20 m (in a tripod configuration), which is equivalent to a footprint area of 942.5 m^2. The assumptions applied for the met mast foundation, in terms of footprint, are the same as for the WTGs, and will have a maximum footprint of 1,256.6 m^2. Therefore, the maximum footprint from foundations will be 37,385 m^2 (29 x 1,256.6 m^2 (28 WTGS + met mast) + 942.5 m^2 (OSS)).

Environmental Statement

77 The Benthic Subtidal and Intertidal Ecology, Fish and shellfish chapters and the RIAA (PINS Ref APP-046, APP-047 and REP2-018 & REP2-019/ Applications Refs 6.2.5, 6.2.6 and 5.2) have derived information from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) and have presented a maximum footprint area as 37,680 m^2 (1,256 m^2 x 30). This disparity is due to applying the WTG foundation assumptions to the OSS (1,256 m^2) instead of applying those set out above (942.5 m^2). These transcription errors are of a greater area than the consent requires and therefore the apparent disparities do not alter the findings of the assessments.

78 The Applicant is seeking consent for a maximum foundation footprint will be 37,385 m^2.

Draft DCO

79 The maximum footprint area of the foundations is not presented within the draft DCO (PINS Ref APP-022/ Application Ref 3.1).

3.2 Total Scour Protection Area Requirements

Project Description

80 Table 1.7 of the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) presents the worst case scenario parameters for scour protection for WTGs as 219,912 m^2 (defined as 7,854 m^2 per WTG foundation). Table 1.13 (PINS Ref APP-042/ Application Ref 6.2.1) presents the worst case scour protection area for the OSS (including the footprint of the structure) as 7,854 m^2. Whilst the scour protection area for the met mast has not been explicitly presented in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) it has been assessed within the technical chapters on the basis of assuming the same worst case requirements as the WTG foundations, i.e. 7,854 m^2. Therefore, the maximum scour protection area is 235,620 m^2 (219,912 m^2 (WTGs)+7,854 m^2 (OSS) + 7,854 m^2 (met mast)).

Environmental Statement

81 All technical chapters have correctly presented this figure, with the exception of the Fish and shellfish chapter (PINS Ref APP-047Applications Ref 6.2.6). Table 5 presents the transcription of the information into the chapter.

Table 5: Transcription of maximum scour protection area

Document (PINS Ref/ Application Ref)	Derived total scour protection area (m^2)
APP-047/ 6.2.6	267,036

82 The disparity in the Fish and Shellfish chapter (Application Ref 6.2.6) has arisen from a transcription error of 8,901.2 m^2 as opposed to 7,854 m^2 per foundation (28 x 8,901.2 m^2 (WTGs) + 8,901.2 m^2 (OSS) + 8,901.2 m^2 (met mast) = 267,036 m^2). The assessment has assessed a greater area than the required consent and concluded the effect to be not significant. The apparent disparity between the assessment and the requested value for consent means that the assessment in this case is overly precautionary and a consent for a reduced value does not alter the findings of the assessment.

83 The Applicant is seeking consent for a maximum scour protection for the foundations of 235,620 m^2.

Draft DCO

84 The draft DCO (PINS Ref APP-022/ Application Ref 3.1) does not present the maximum scour protection area for foundations.

3.3 Total Scour Protection Volume Requirements

Project Description

85 Table 1.7 of the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) presents the worst case scenario parameters for scour protection volume for WTGs as 1,112,674.4 m^3. Whilst the scour protection volume for the offshore substation (OSS) (including the footprint of the structure) or the met mast, has not been explicitly presented in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) they have been assessed within the technical chapters on the basis of assuming the same WTG foundation worst case requirements for all infrastructure. The worst case volume for the OSS and the met mast is 39,269.9 m^3 as per a WTG foundation presented in Table 1.7 of the Project Description (PINS APP-042/ Application Ref 6.2.1).

86 Therefore, the maximum scour protection area, as presented in Project Description Audit Clarification Note (Annex C to Appendix 34 of the Applicants' Deadline 3 submission), is 1,191,187.2 m^3 (1,112,647.4 m^3 (WTGs)+39,269.9 m^3 (OSS) + 39,269.9 m^3 (met mast)).

Environmental Statement

87 The technical chapters do not assess the maximum scour protection volume.

Draft DCO

88 Requirement 5 of the draft DCO (PINS Ref APP-022/ Application Ref 3.1) provides a total volume of scour protection of 1,112,647 m^3. This disparity has arisen from a transcription of the scour protection volume for the WTGs only, and this figure does not include the requirements for the OSS and met mast. This disparity has been addressed in the revised draft DCO submitted with Deadline 1, which will include a maximum value of 1,191,187.2m^3. Within the revised draft DCO, the updated generation DML will include a maximum value of 1,151,917.3 m^3 (WTGs (1,112,674.4 m^3) and a met mast (39,269.9 m^3)) and the updated export cable DML will include a maximum value of 39,269.9 m^3 (for the OSS); to account for the potential scour protection volume required within the consent.

3.4 Total Cable Protection Area Requirements

Project Description

89 As presented in Table 1.16 in the Project Description (offshore) (PINS Ref APP-042/ Application Ref 6.2.1), a maximum of 25% of the export cables may require cable protection, which is equivalent to an area of 210,000 m^2. In addition, there may be a requirement for an additional 80,000 m^2 of cable protection for cable crossings (80 x 1000 m^2), as presented in Table 1.17 in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1). Therefore, the export cables will require a maximum of 290,000 m^2 of cable protection.

90 As presented in Table 1.9 (PINS Ref APP-042/ Application Ref 6.2.1), a maximum of 25% of the inter-array cables may require cable protection, which is equivalent to an area of 80,000 m^2. There may be a requirement for up to additional 12,000 m^2 of cable protection for cable crossings (12 x 1000 m^2), as presented in Table 1.10 in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1). In addition, Table 1.9 (PINS Ref APP-042/ Application Ref 6.2.1) presents the requirement for remedial protection of 17,500 m^2 for j-tubes. Therefore, the inter-array cables will require a maximum of 109,500 m^2 of cable protection.

91 Therefore, the maximum area of cable protection presented within in the Project Description Audit Clarification Note (Annex C to Appendix 34 of the Applicants' Deadline 3 submission) is 399,000 m^2 ((290,000 m^2 (export cables) + 109,5000 m^2 (inter-array cables)).

Environmental Statement

92 The following ES chapters have derived information from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) and have transcribes the area of cable protection within their assessments, as presented in Table 6.

Table 6: Transcription of cable protection area in the Application

Document (PINS Ref/ Application Ref)	Inter-array cable protection (m^2)	Inter-array cable crossing protection (m^2)	Export cable protection (m^2)	Export cable crossing protection (m^2)	Remedial protection for j-tubes (m^2)	Total (m^2)
APP-043/ 6.2.2	80,000	12,000	210,000	80,000	0	382,000
APP-046/ 6.2.5	80,000	12,000	210,000	80,000	17,500	399,500
APP-047/ 6.2.6	80,000	12,000	210,000	80,000	0	382,000
APP-054/ 6.2.13	80,000	12,000	210,000	80,000	0	382,000
APP-031/ 5.2	80,000	12,000	210,000	80,000	17,500	399,500

93 Each of the technical chapters derived the requirements for the cable protection (including crossings) from the Project Description (PINS Ref APP-042/ Application 6.2.1) and state a maximum cable protection area of 290,000 m^2 for export cables and 92,000 m^2 for inter-array cables (80,000 m^2 for the cables and 12,000 m^2 for cable crossings). As presented in Table 6, there are disparities in applying the remedial protection requirement for the j-tubes.

94 The Benthic Subtidal and Intertidal Ecology chapter and the RIAA (PINS Ref APP-046 and APP-031/ Application Refs 6.2.5 and 5.2) have transcribed and considered the cable protection requirements for j-tubes (17,500 m^2) in addition to the inter-array cable protection and crossings. Therefore, these assessments present a total of cable protection area of 399,500 m^2.

95 It should be noted that the worst case, in terms of calculating area of habitat loss or change, is derived from new material being put on the seafloor. Protection for J-tubes would in reality be coincidental with the scour protection material for foundations. Therefore, under this worst case scenario the use of protection for j-tubes would be placed on top of the foundations scour protection, and so would essentially be double counting of the area. Therefore, the magnitude of impacts assessed within the technical chapters have been appropriately assessed (PINS Ref APP-043, APP-047 and APP-054/ Application Refs 6.2.2, 6.2.6 and 6.2.13) and therefore there would be no change in the overall significance.

96 The Applicant is seeking to consent a maximum protection area of 382,000 m^2 for cabling.

3.5 Total Cable Protection Volume Requirements

Project Description

97 As presented in Project Description Audit Clarification Note (Annex C to Appendix 34 of the Applicants' Deadline 3 submission) a maximum area of cable protection is presented, a post lay berm height of which is 0.5m. The volume of cable protection of 105,000 m^3 (210,000 m^2 x 0.5 m) is required for the export cables. In addition, there may be a requirement for an additional 40,000 m^3 of cable protection for cable crossings (80 x 500 m^3), as presented in Table 1.17 (PINS Ref APP-042/ Application Ref 6.2.1). Therefore, the export cables will require a maximum volume of 145,000 m^3 of cable protection.

98 Based on the parameters presented in Table 1.9 (PINS Ref APP-042/ Application Ref 6.2.1) this is the equivalent volume of 20,000 m^3 (16 km x 1,250 m^3 km^{-1}) for inter-array cables. There may be a requirement for up to additional 6,000 m^3 of cable protection for inter-array cable crossings as presented in Table 1.10 (Application Ref 6.2.1). In addition, Table 1.9 (PINS Ref APP-042/ Application Ref 6.2.1) presents the requirement for remedial protection of 8,750 m^3 for j-tubes (17,500 m^2 x 0.5 m depth). Therefore, the inter-array cables will require a maximum volume of 34,750 m^3 of cable protection.

99 Therefore, the maximum volume of cable protection presented within in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) is 179,750 m^3 (145,000 m^3 (export cables) + 34,750 m^3 (inter-array cables)).

Environmental Statement

100 The technical chapters do not assess the maximum cable protection volume.

101 The Applicant is seeking to consent a maximum scour protection volume of 179,750 m^3 for cabling.

Draft DCO

102 Schedule 11, Part 4, Condition 3 of the draft DCO (PINS Ref APP-022/ Application Ref 3.1) provides a total volume and length of cable protection of 92,000 m^3 for the inter-array cables. This will be amended in the revised draft DCO to a maximum value of 34,750 m^3. Schedule 12, Part 4, Condition 3 of the draft DCO (*ibid*) has transcribed information from the Project Description and presents a total volume for export cables of 145,000 m^3.

3.6 Seabed disturbance area during O&M activities

Project Description

103 As presented in Project Description Audit Clarification Note (Annex A of the Applicants' Response to Relevant Representations of the Deadline 1 submission) the maximum disturbance area is 4,111,801 m^2 for O&M activities, consisting of:

- Export Cable O&M works – 72,000 m^2 (Table 1.33 of the Project Description);
- Inter-array cable O&M replacement – 140,000 m^2 (Table 1.31 of the Project Description);
- Inter-array cable O&M reburial – 3,840,000 m^2 (Table 1.32 of the Project Description);
- JUV foot prints for OSS O&M operations - 2,121 m^2 (Table 1.35 of the Project Description); and
- JUV for prints for WTG O&M operations – 57,680 m^2 (169.65 m^2 x 340) (Table 1.34 of the Project Description).

Environmental Statement

104 All technical chapters correctly transcribe the parameters for O&M activities.

105 The Applicant is seeking to consent a maximum disturbance area for the O&M activities of 4,111,801 m^2.

Draft DCO

106 The maximum disturbance area for O&M activities is not presented within the draft DCO (PINS Ref APP-022/ Application Ref 3.1). However, the O&M activities are presented in the Summary of Environmental Impact Assessment for Offshore Maintenance Activities (PINS Ref APP-145/ Application Ref 8.10) accurately.

3.7 Seabed disturbance volume during O&M activities

Project Description

107 As presented in Project Description Audit Clarification Note (Annex C to Appendix 34 of the Applicants' Deadline 3 submission the maximum disturbance volume is 3,039,000 m^3 for O&M activities, consisting of:

- Export cable O&M works – 54,000 m^3 (72,000 m^2 x 3 m (depth) x v-shaped trench x 50% of sediment liquidised) (Table 1.33 of the Project Description); and

- Inter-array cable O&M works – 2,985,000 m^3 (3,980,000 m^2 x 3 m (depth) x v-shaped trench x 50% of sediment liquidised) (Table 1.31 and Table 1.32 of the Project Description).

Environmental Statement

108 The Fish and Shellfish chapter (PINS Ref APP-047/ Application Ref 6.2.6) derived the maximum sediment disturbance area for the O&M activities from the constituents provided within the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) and the assessment states a maximum value of 596,700 m^3.

109 As highlighted in paragraphs 6.11.53 to 6.11.56 the assessment of the O&M phases draws on the information presented in the construction phases of work, including the assessment, of increased suspended sediment concentrations arising from cable installation activities, undertaken in the Marine Geology, Oceanography and Physical Processes (PINS Ref APP-043/ Application Ref 6.2.2) chapter. As stated in paragraph 6.11.54 of the Fish and Shellfish chapter (PINS Ref APP-047/ Application Ref 6.2.6) "the potential impact in the O&M phase will be more limited, less frequent, intermittent and localised, they will fall within the envelope assessed for the construction phase" which has been appropriately assessed. Therefore, despite the transcription errors into the maximum design envelope table within the Fish and Shellfish chapter the magnitude and so the significance of the effect have been adequately assessed and the findings of the assessment are based on appropriate assumptions and the maximum parameters presented in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1).

110 The Applicant notes that the Marine Geology, Oceanography and Physical Processes chapter (PINS Ref APP-043/ Application Ref 6.2.2) does not explicitly present the maximum disturbance volume for O&M activities. However, as stated in paragraph 2.11.101 of the Marine Geology, Oceanography and Physical Processes chapter (PINS Ref APP-043/ Application Ref 6.2.2) the assessment (in paragraphs 2.10.32 *et seq.*) of SSC and associated bed level change during the construction phase utilises similar techniques, if the activities are required.

111 The Applicant notes that the Benthic Subtidal and Intertidal Ecology chapter (PINS Ref APP-046/ Application Ref 6.2.5) does not explicitly present the maximum disturbance volume for O&M activities. However, the assessment of cable repair works, including reburial, is provided in paragraphs 5.11.26 *et seq* and is based on appropriate assumptions and the maximum parameters presented in the Project Description (PINS Ref APP-042/ Application Ref 6.2.1). Therefore, this disparity will not alter the findings of the assessment.

112 Therefore, the Applicant is seeking to consent a maximum disturbance volume for the O&M activities of 3,039,000m^3.

Draft DCO

113 The maximum disturbance sediment volume for O&M activities is not presented within the draft DCO.

3.8 O&M vessel numbers

Project Description

114 As presented in Table 1.30 of the Project Description (PINS Ref APP-042/ Application Ref 6.2.1) the total number of O&M round trips to port undertaken by O&M vessels will be 307 per year. These trips will be undertaken by six vessels in total (two small CTV O&M vessels, one large O&M vessel, one lift vessel, one cable maintenance vessel and three auxiliary vessels).

Environmental Statement

115 The Offshore Ornithology, Marine Mammals, Infrastructure and Other Users and Shipping and Navigation chapters (PINS Ref APP-045, APP-048, APP-052 and APP-051/ Application Refs 6.2.4, 6.2.7, 6.2.11 and 6.2.10) each derived the O&M vessel parameters from the Project Description (PINS Ref APP-042/ Application Ref 6.2.1). The Marine Mammals and Infrastructure and Other Users chapters have assessed 307 vessel movements per year, but both have presented the number of vessels as five, this is a typographical error and does not affect the findings of the assessments as the total vessel movements have been accurately transcribed and considered.

116 The Shipping and Navigation chapter (PINS Ref APP-051/ Application Ref 6.2.10) has assessed two transits per day, this is precautionary, as 307 transits per year is equivalent to approximately 0.84 transits per day. The assessments have assessed a greater number of transits than the required consent and concluded the effect to be not significant. The apparent disparity between the assessment and the requested value for consent means that the assessment in this case is overly precautionary and a consent for a reduced value does not therefore alter the findings of the assessment.

Draft DCO

117 The maximum number of vessels and trips are not presented within the draft DCO.

3.9 Safety zones

Environmental Statement

118 The safety zones are not provided within the Project Description (PINS Ref APP-042/ 6.2.1) but are considered to be best working practice. The following safety zones may be applied for:

- 500 m surrounding all construction activities and vessels; and
- O&M activities:
  - 50 m surrounding WTGs;
  - 50 m surrounding the Met Mast;
  - 50 m surrounding the OSS substation; and
  - 500 m surrounding any major maintenance activities.

119 Commercial Fisheries; Shipping and Navigation; and Infrastructure and Other Users (PINS Ref APP-047, APP-050, APP-051 and APP-052/ Application Refs 6.2.9, 6.2.10 and 6.2.11) have each presented the safety zones as defined in paragraph 118.

120 The Fish and Shellfish chapter (PINS Ref APP-047/ Application Ref 6.2.6) presents the maximum safe working area surrounding the infrastructure of 1,052,035 m^2 during the O&M phase, there is a slight disparity as the chapter has not accounted for the met mast foundation and a typographic error where the chapter considered a 500 m safety zone surrounding the OSS. The maximum extent of permanent safety zones are 282,743 m^2 (34 WTG (50 m buffer), one met mast (50 m buffer) and one OSS (50 m buffer)). Paragraph 6.11.71 of the Fish and Shellfish chapter (PINS Ref APP-047/ Application Ref 6.2.6) identifies that the overall effect will be Negligible beneficial, therefore reducing this area to account for the disparity, will not alter the findings of this assessment and net beneficial effect is still anticipated.

Draft DCO

121 The safety zones are not presented within the draft DCO as they would be applied for under separate legislation.

4 Conclusion

122 The Applicant has reviewed and audited the transcription of the Project Description into the assessments (ES and RIAA). The Applicant can confirm that the transcription errors, as identified in this note do not alter the findings of the assessments as outlined in Sections 2 and 3. Therefore, no further assessment of effects is required.

123 Table 7 provides a summary of the transcription into the ES ad RIAA however the table should be reviewed in conjunction with the clarifications presented in Sections 2 and 3.

Table 7: Transcription audit of maximum design scenario tables

Phase	Infra Type	Description	Requested consent value	PINS Ref /Application Ref															
				APP-043/ 6.2.2	APP-044/ 6.2.3	APP-045/6.2 .4	APP-046/6.2 .5	APP-047/6.2 .6	APP-048/6.2 .7	APP-049/ 6.2.8	APP-050/ 6.2.9	APP-051/6.2 .10	APP-052/6.2 .11	APP-053/6.2 .12	APP-054/6.2 .13	APP-055/6.2 .14	APP-148/ 8.14	APP-083/6.4 .5.3	REP2-018-019/ 5.2
Construction	Export Cables	Width per cable jetting (m)	10	10	10	N/A	10	1	n/a	N/A	N/A	N/A	10	n/a	10	N/A	N/A	N/A	1
		Width per cable ploughing (m)	12	12	N/A	N/A	12	12	12	N/A	N/A	N/A	N/A	n/a	12	N/A	N/A	N/A	N/A
		Length per cable (m)	30,000	30,000	30,000	N/A	30,000	30,000	30,000	N/A	N/A	23,000	30,000	n/a	30,000	N/A	N/A	20,000	30,000
		Depth (m)	3	3	3	N/A	3	3	3	N/A	N/A	N/A	3	n/a	3	N/A	N/A	N/A	3
		Disturbance Area (jetting) (km^2)	1.2	N/A	1.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	n/a	1.2	N/A	N/A	N/A	N/A
		Pre-sweeping Area of the OECC (km^2)	0.48	0.48	0.48	N/A	0.48	0.48	N/A	N/A	5kmper cable≠	N/A	0.48	N/A	0.48	N/A	N/A	N/A	0.48
		Disturbance area for pre-lay grapnel run along EC route (km^2)	2.4	N/A	N/A	N/A	N/A	2.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Disturbance area for EC in intertidal (m^2)	80,000	N/A	N/A	N/A	80,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Disturbance area for EC in subtidal (m^2)	1,440,000	1,440,000	1,440,000	N/A	1,440,000	1,440,000	1,440,000	N/A	N/A	N/A	1,440,000	N/A	N/A	N/A	1,440,000	N/A	1,440,000
		Total volume of sediment removed via pre-sweeping(m^3)	1,440,000	1,440,000	1,440,000	n/a	1,440,000	1,440,000	n/a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,440,000	N/A	N/A
		Seabed Volume disturbed during export cable installation (m^3)	900,000	900,000	1,200,000	N/A	900,000	180,000	N/A	N/A	N/A	N/A	1,740,000	N/A	N/A	N/A	N/A	N/A	900,000
		Disturbance area for EC in intertidal (m^2)	80,000	N/A	N/A	N/A	80,000.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	80,000
		HDD pit dimensions (m)	20x20	20x20	20x20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20x20	N/A	N/A	N/A	N/A
		Cofferdam dimensions (m)	165x25	165x25	165x25	N/A	165x25	N/A	165x25	N/A	N/A	N/A	N/A	N/A	165x25	N/A	N/A	N/A	165x25
		Seawall dimensions (m)	155x18.5	155x18.5	N/A	N/A	155x18.5	N/A	155x18.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	155x18.5
		Permanent Saltmarsh Loss (m^2)	1,398.9	1,398.9	N/A	N/A	1,400	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Working area in saltmarsh (m^2)	3,872	N/A	4,702	N/A	7,376	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3,872	N/A	N/A	N/A	3,872
	Inter-array cables	Length (km)	64	64	64	N/A	6	64	64	N/A	64	N/A	64	N/A	64	N/A	N/A	N/A	64
		Width (m)	1	1	*	N/A	1	1	1	N/A	N/A	N/A	1	N/A	1	N/A	N/A	N/A	1
		Depth (m)	3	3	3	N/A	N/A	3	3	N/A	N/A	N/A	3	N/A	N/A	N/A	N/A	N/A	3
		Disturbance Area (km^2)	0.64	*	0.30	N/A	0.64	0.64	0.30	N/A	N/A	N/A	N/A	N/A	0.60	N/A	N/A	N/A	0.64
		Disturbance Volume (m^3)	48,000	48,000	N/A	N/A	48,000	96,000	*	N/A	N/A	N/A	96,000	N/A	N/A	N/A	N/A	N/A	48,000
		Disturbed sediment areafrom IAC installation (km^2)	0.64	N/A	N/A	N/A	0.64	1	0.3	N/A	N/A	N/A	N/A	N/A	0.6	N/A	N/A	N/A	N/A

Phase	Infra Type	Description	Requested consent value	PINS Ref /Application Ref														
				APP-043/ 6.2.2	APP-044/ 6.2.3	APP-045/6.2 .4	APP-046/6.2 .5	APP-047/6.2 .6	APP-048/6.2 .7	APP-049/ 6.2.8	APP-050/ 6.2.9	APP-051/6.2 .10	APP-052/6.2 .11	APP-053/6.2 .12	APP-054/6.2 .13	APP-055/6.2 .14	APP-148/ 8.14	APP-083/6.4 .5.3	REP2-018-019/ 5.2
	Foundations	Total seabed preparation volume per WTG (m^3)	9,600	9,600	9,600	N/A	9,60	9,600	9,600	N/A	N/A	N/A	*	N/A	N/A	N/A	N/A	N/A	9,600
		Total seabed preparation volume per OSS (m^3)	9,600	9,600	9,600	N/A	9,600	9,600	N/A	N/A	N/A	N/A	*	N/A	N/A	N/A	N/A	N/A	9,600
		Total seabed preparation volume for the met mast (m^3)	9,600	9,600	N/A	N/A	9,600	9,600	N/A	N/A	N/A	N/A	*	N/A	N/A	N/A	N/A	N/A	9,600
		Total seabed preparation volume (m^3)	288,000	288,000	268,800	N/A	288,000	288,000	N/A	N/A	N/A	N/A	288,000	N/A	N/A	N/A	N/A	N/A	288,000 ((and 278,400)
		Seabed preparation area per WTGs (m^2)	3,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3,200	N/A	N/A	N/A	N/A
		Total seabed prep for foundations (m^2)	96,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	89,600 & OSS	N/A	N/A	N/A	N/A
		Maximum spoil (drilling) volume per foundation (m^3) (max)	1,325	1,325	1,325	N/A	*	*	1,325	N/A	N/A	N/A	N/A	N/A	*	*	1,325	N/A	N/A
		Spoil (drilling) volume WTGs (m^3)	19,627	19,627	22,531	N/A	*	20,527	19,627	N/A	N/A	N/A	N/A	N/A	*	*	19,627	N/A	N/A
		Spoil (drilling) volume per OSS (m^3)	1,000	900	1,000	N/A	*	*	900	N/A	N/A	N/A	N/A	N/A	*	*	1,000	N/A	N/A
		Spoil (drilling) volume per foundation (met mast) (m^3)	1,155	1,325	1,325	N/A	*	*	*	N/A	N/A	N/A	N/A	N/A	*	*	1,155	N/A	N/A
		Spoil (drilling) Volume Total(m^3)	21,782	21,852	23,531	N/A	N/A	n/a	21,852	N/A	N/A	N/A	20,782	N/A	*	*	21,782	N/A	N/A
		Maximum Hammer energy (kJ)	5,000	N/A	N/A	5,000	5,000	5,000	5,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5,000
		Maximum total piling duration (hours)	300	N/A	N/A	*	N/A	300	300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	300
		Minimum Spacing of WTGs (m)	716x480	716x480	716x480	716x480	N/A	N/A	N/A	N/A	716x 480	760x 418	N/A	WCS∞	N/A	N/A	N/A	N/A	716x 480
	Anchor Handling	Seabed disturbance area from foundations (m^2)	5,400	N/A	N/A	N/A	5,400	5,400	N/A	N/A	N/A	N/A	N/A	N/A	5,400	N/A	N/A	N/A	5,400
		Seabed disturbance area from OSS topside installation (m^2)	150	N/A	N/A	N/A	*	150	N/A	N/A	N/A	N/A	N/A	N/A	150	N/A	N/A	N/A	*
		Seabed disturbance area from export cable installation (m^2)	34,560	N/A	N/A	N/A	34,560	34,560	N/A	N/A	N/A	N/A	34,560	N/A	34,560	N/A	N/A	N/A	34,560
		Seabed disturbance area from inter-array cable installation (m^2)	30,600	N/A	N/A	N/A	30,600	29,700	N/A	N/A	N/A	N/A	30,600	N/A	29,700	N/A	N/A	N/A	30,600

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				APP-043/ 6.2.2	APP-044/ 6.2.3	APP-045/6.2 .4	APP-046/6.2 .5	APP-047/6.2 .6	APP-048/6.2 .7	APP-049/ 6.2.8	APP-050/ 6.2.9	APP-051/6.2 .10	APP-052/6.2 .11	APP-053/6.2 .12	APP-054/6.2 .13	APP-055/6.2 .14	APP-148/ 8.14	APP-083/6.4 .5.3	REP2-018-019/ 5.2
		Total Seabed disturbance area (m^2)	70,710	N/A	N/A	N/A	70,560	69,810	N/A	N/A	N/A	N/A	65,160	N/A	69,810	N/A	N/A	N/A	70,560
	JUVs	Seabed disturbance area per foundations (m^2)	942.5	N/A	N/A	N/A	942.5	*	N/A	N/A	N/A	N/A	*	N/A	N/A	N/A	N/A	N/A	942.5
		Seabed disturbance area from OSS topside installation (m^2)	942.5	N/A	N/A	N/A	942.5	*	N/A	N/A	N/A	N/A	*	N/A	N/A	N/A	N/A	N/A	942.5
		Seabed disturbance area from export cable installation (m^2)	942.5	N/A	N/A	N/A	942.5	*	N/A	N/A	N/A	N/A	*	N/A	N/A	N/A	N/A	N/A	942.5
		Total seabed disturbance area from foundations (m^2)	32,044	N/A	N/A	N/A	33,929	33,930	N/A	N/A	N/A	N/A	39,329	N/A	33,929	N/A	N/A	N/A	33,929
		Disturbance volume from JUV footprints during foundation installation assuming maximum penetration (m^2)	480,665	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	508,935	N/A	N/A	N/A	N/A
	Vessels	Construction vessel round trips per year	1,160	N/A	N/A	N/A	1,160	N/A	1,160	N/A	N/A	N/A	1,160	N/A	N/A	N/A	N/A	N/A	1,160
		Maximum number of construction Vessels on site	48	N/A	N/A	48	N/A	N/A	48	N/A	48	48	N/A	N/A	48	N/A	N/A	N/A	48
O&M	Export Cable	Total area of cable protection in OECC (excluding crossings) (m^2)	210,000	*	N/A	N/A	*	210,000	N/A	N/A	N/A	*	N/A	N/A	210,000	N/A	N/A	N/A	210,000
O&M		% of EC requiring protection	25	25	N/A	N/A	25	25	25	N/A	N/A	N/A	N/A	N/A	25	N/A	N/A	N/A	25
O&M		Total area for cable crossings in the OECC (m^2)	80,000	80,000	N/A	N/A	*	80,000	N/A	N/A	N/A	N/A	N/A	N/A	80,000	N/A	N/A	N/A	80,000
O&M		Total area of cable protection in OECC (including crossings) (m^2)	290,000	*	N/A	N/A	*	290,000	N/A	N/A	N/A	N/A	N/A	N/A	290,000	N/A	N/A	N/A	290,000
O&M	Inter-array cables	Area of cable protection for IAC (excluding crossing)(m^2)	80,000	*	N/A	N/A	80,000	80,000	N/A	N/A	N/A	N/A	N/A	N/A	80,000	N/A	N/A	N/A	80,000
O&M		Area of protection for J-tubing (m^2)	17,500	N/A	N/A	N/A	17,500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17,500
O&M		Area of cable protection for IAC (crossing)(m^2)	12,000	12,000	N/A	N/A	12,000	12,000	N/A	N/A	N/A	N/A	N/A	N/A	12,000	N/A	N/A	N/A	12,000
O&M		Total cable protection for IAC (including crossings) (m^2)	92,000	*	N/A	N/A	*	92,000	N/A	N/A	N/A	N/A	N/A	N/A	*	N/A	N/A	N/A	*

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				APP-043/ 6.2.2	APP-044/ 6.2.3	APP-045/6.2 .4	APP-046/6.2 .5	APP-047/6.2 .6	APP-048/6.2 .7	APP-049/ 6.2.8	APP-050/ 6.2.9	APP-051/6.2 .10	APP-052/6.2 .11	APP-053/6.2 .12	APP-054/6.2 .13	APP-055/6.2 .14	APP-148/ 8.14	APP-083/6.4 .5.3	REP2-018-019/ 5.2
O&M	Scour protection	Maximum area of scour protection for WTGs (m^2)	219,912.0	N/A	N/A	N/A	219,912	251,328	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	219,912
O&M		Maximum area of scour protection for a OSS (m^2)	7,854	N/A	N/A	N/A	7,854	8901.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7,854
O&M		Maximum area of scour protection for a met mast (m^2)	7,854	N/A	N/A	N/A	7,854	8901.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7,854
O&M		Total Maximum area of scour protection (m^2)	235,620	N/A	N/A	N/A	235,620	267,036	N/A	N/A	N/A	N/A	N/A	N/A	235,620	N/A	N/A	N/A	235,620
O&M	Foundations	Maximum footprint area per WTGs (m^2)	1,256.6	N/A	N/A	N/A	1,256	1,256	N/A	N/A	N/A	N/A	N/A	N/A	*	N/A	N/A	N/A	1,256
O&M		Maximum footprint area per OSS (m^2)	942.5	N/A	N/A	N/A	1,256	1,256	N/A	N/A	N/A	N/A	N/A	N/A	*	N/A	N/A	N/A	1,256
O&M		Maximum footprint area per met mast (m^2)	1,256.6	N/A	N/A	N/A	1,256	1,256	N/A	N/A	N/A	N/A	N/A	N/A	*	N/A	N/A	N/A	1,256
O&M		Maximum footprint area for foundations (m^2)	37,385	N/A	N/A	N/A	37,680	37,680	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	37,680
O&M	JUVs	Maximum JUV disturbance area for WTG O&M activities (m^2)	57,680	N/A	N/A	N/A	N/A	38,453	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
O&M		Maximum JUV disturbance area for OSS O&M activities (m^2)	2,121	N/A	N/A	N/A	N/A	1,470	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
O&M	General	Safe working area surrounding infrastructure (m^2)	1,060,288	N/A	N/A	N/A	N/A	1,052,035	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
O&M	O&M activities	Maximum area of disturbance for IAC replacement (m^2)	140,000	N/A	N/A	N/A	*	140,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
O&M		Maximum area of disturbance for IAC reburial (m^2)	3,840,000	N/A	N/A	N/A	*	3,840,000	*	N/A	*	N/A	N/A	N/A	*	N/A	N/A	N/A	N/A
O&M		Maximum area of disturbance for export cable O&M works (m^2)	72,000	N/a	N/A	N/A	*	72,000	*	N/A	*	N/A	N/A	N/A	*	N/A	N/A	N/A	N/A
O&M		Total maximum area of disturbance for O&M cable works (m^2)	4,111,801	N/a	N/A	N/A	*	4,111,801	*	N/A	*	N/A	N/A	N/A	*	N/A	N/A	N/A	N/A
O&M		Maximum volume of disturbance for IAC replacement (m^3)	105,000	N/A	N/A	N/A	*	576,000	*	N/A	*	N/A	N/A	N/A	*	N/A	N/A	N/A	N/A
O&M		Maximum volume of disturbance for export	54,000	N/A	N/A	N/A	*	2,700	*	N/A	*	N/A	N/A	N/A	*	N/A	N/A	N/A	N/A

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		cable O&M works replacement (m^3)																
O&M		Total maximum volume of disturbance for O&M cable works (m^3)	3,039,000	N/A	N/A	N/A	*	596,700	*	N/A	*	N/A	N/A	N/A	*	N/A	N/A	N/A	N/A
O&M	WTGs	Maximum rotor blade diameter (m)	220	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	220	N/A	220	N/A	N/A	N/A	N/A	N/A
O&M		Minimum height of lowest blade tip above HAT (m)	22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22	N/A	22	N/A	N/A	N/A	N/A	N/A
O&M	Vessels	Maximum number of O&M vessels on site	6	N/A	N/A	6	N/A	N/A	5	N/A	N/A	*	5	N/A	N/A	N/A	N/A	N/A	N/A
O&M		O&M vessel round trips per year	307	N/A	N/A	307	307	N/A	307	N/A	N/A	N/A	307	N/A	307	N/A	N/A	N/A	307
O&M		Safe working distance around all infrastructure during construction (m)	500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	500	500	500	N/A	N/A	N/A	N/A	N/A	N/A
O&M		Advisory safe working distance around all construction vessels (m)	500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	500	500	500	N/A	N/A	N/A	N/A	N/A	N/A
O&M		Safe working distance from WTGs (m)	50	N/A	N/A	N/A	N/A	50	N/A	N/A	50	50	50	N/A	N/A	N/A	N/A	N/A	N/A
O&M		Safe working distance from OSS (m)	50	N/A	N/A	N/A	N/A	500	N/A	N/A	50	50	50	N/A	N/A	N/A	N/A	N/A	N/A
O&M		Safe working distance around all major maintenance activities (m)	500	N/A	N/A	N/A	N/A	500	N/A	N/A	500	500	500	N/A	N/A	N/A	N/A	N/A	N/A

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