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MMO Reference: DCO/2019/00005  
Planning Inspectorate Reference: EN010117  
Identification Number: 20045232

20 March 2024

Dear Richard Allen,

**Planning Act 2008, E.On Climate and Renewables UK Ltd, Proposed Rampion 2 Offshore Wind Farm Order**

**Deadline 2 Submission**

On 20 September 2023, the Marine Management Organisation (the MMO) received notice under section 56 of the Planning Act 2008 (the PA 2008) that the Planning Inspectorate (PINS) had accepted an application made by E.On Climate and Renewables UK Ltd (the Applicant) for determination of a development consent order (DCO) for the construction, maintenance and operation of the proposed Rampion 2 Offshore Wind Farm (the "DCO Application") (MMO ref: DCO/2019/00005; PINS ref: ENO0117). The DCO includes a draft Deemed Marine Licence (DML).

The Applicant seeks authorisation for the construction, operation and maintenance of the DCO Application, comprising of up to 90 wind turbine generators together with associated onshore and offshore infrastructure and all associated development. The associated development includes an offshore generating station with an electrical export capacity of in excess of 100 megawatts (MW) comprising up to 90 turbines, and array cables, in an area approximately 196 square kilometres (km<sup>2</sup>), located approximately 13 kilometres (km) south of the Sussex coast located to the west of the existing Rampion Offshore Windfarm.

The proposed development will comprise up to three offshore substations. Cables between the wind turbine generators (WTG) between the WTGs and the offshore substations, and between the offshore substations themselves and the landfall location at Climping, West Sussex. An underground cable connection between the landfall and a satellite substation known as Oakendene, and then onwards to connect into the existing National Grid substation at Bolney, together with an extension to the existing substation.



This document comprises of the MMO's submission for Deadline 2. This written representation is submitted without prejudice to any future representation the MMO may make about the DCO Application throughout the examination process. This representation is also submitted without prejudice to any decision the MMO may make on any associated application for consent, permission, approval or any other type of authorisation submitted to the MMO either for the works in the marine area or for any other authorisation relevant to the proposed development.

Yours faithfully.



Ethan Lakeman  
Marine Licensing Case Officer



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# 1. MMO response to MMO Relevant Representation, (RR) Applicants Comments

## Marine Plans

- 1.1. MMO 2.1.1: The MMO acknowledges the commitment of the Applicant to prepare a single document showing adherence to relevant marine plans and policies to be submitted at Deadline 2. The MMO will review this document at such time as it becomes available.

## Fishing community

- 1.2.1 MMO 2.2: The MMO understand that the complaint relates to Rampion 1, however the MMO does not agree that it is irrelevant to Rampion 2. Although both developments are distinct, the comments should still be of relevance to the Applicant, and where possible Rampion 2 should see them as an opportunity for lessons learned. The MMO is supportive of the ongoing discussions between Rampion 1 and Rampion 2.

## Unexploded Ordnance (UXO)

- 1.3.1 MMO 3.2.1: The MMO thanks the Applicant for providing clarity on why the investigation and detonation of UXOs are not part of any of the Works order or set out within the activities of Schedule 11 & 12. The MMO understands that the Applicant intends to seek additional licences separate from the DCO for the clearance of UXOs when/if required. The MMO acknowledges the Applicant's creation of the Draft Unexploded Ordnance Clearance Marine Mammal Mitigation Protocol (APP-237) and that the Applicant is confident that appropriate mitigation can be secured.

## Article 5 Benefit of the order

- 1.4.1 MMO 3.3: The MMO acknowledges that the Applicant notes MMO concerns, but states there is existing DCO and legislative precedent for the current wording. The MMO will provide a full response to this after reviewing the Applicant's next tracked DCO submission.

## Schedule 11 & 12 DMLs

- 1.5.1 MMO 3.4.1: The MMO acknowledges the Applicant's consideration of MMO concerns regarding determination dates in the Deemed Marine Licence (DML). The MMO's position remains that if timescales are included within the DML, determination should be six months as opposed to four months, to allow sufficient time for consultation, including the appropriate consultation of complex issues. The MMO acknowledges the Applicant's willingness to work with the MMO and Natural England to identify any approvals which require longer determination periods. The MMO hopes this issue can be resolved.



## **Additional conditions**

- 1.6.1 MMO 3.5.2: The MMO welcomes the inclusion of an additional condition to the draft DCO to ensure compliance with UK requirements on noise recording. The MMO disagrees with the exclusion of section (b) of the condition. Despite the Applicant's claim that 'pile driving is unlikely to be carried out continuously throughout the construction period'. Any such breaks in piling activity do not preclude the Applicant from their requirement to comply with UK requirements on noise recording. The MMO would like to see condition wording included in full as written.
- 1.6.2 MMO 3.5.3: The MMO acknowledges the commitment of the Applicant to reference the Outline Offshore Operations and Maintenance Plan (APP-238; OOMP) in the draft DCO. The MMO disagrees with the Applicant's consideration that the provision of an Operations and Maintenance plan makes conditions pertaining to the submission of regular maintenance reports "unnecessary". The provision of an Operations and Maintenance plan should not preclude the Applicant from the need to submit regular maintenance reports to the MMO for review. The MMO's position remains that this condition is necessary and should be to both Schedule 11 and 12.
- 1.6.3 MMO 3.5.4: The MMO acknowledges the Applicant's response, but still considers it necessary for this condition (stages of construction) to be included to both Schedule 11 and 12. Additionally, the MMO continues to request that seasonal restrictions for any activities are clearly conditioned as standalone conditions, and not within additional plans.

## **Schedule 15 – Documents to be certified.**

- 1.7.1 MMO 3.6.1: Documents to be certified. The MMO does not agree with the Applicant's claim that splitting the documents in Schedule 15 is not necessary. The MMO restates its previous point that the documents in this schedule should be split into three parts to ensure clarity across all areas.

## **MMO comments on draft DCO/DML**

### DCO - Supplementary powers: Public rights of Navigation.

- 1.8.1 The MMO thanks the Applicant for clarifying the inclusion of Article 20. The MMO may provide further comments on this in future responses after reviewing a new DCO draft.

### Detailed offshore design parameters

- 1.8.2 The MMO thanks the Applicant for clarifying that additional cable crossings would only arise if additional cable projects were brought forward. The MMO acknowledges that the Applicant does not believe additional cable crossings beyond the four sought within the DCO are reasonably foreseeable. The MMO



thanks the Applicant for confirming that any associated cable protection would be required in order to be within cable protection parameters.

### Schedule 11

1.8.3 The MMO thanks the Applicant for addressing grammatical issues identified in Schedule 11. Further comments on the suitability of referencing the draft UXO mitigation plan and draft pilling mitigation plan will be given once these documents have been reviewed in their entirety, following consultation.

### **Conditions**

1.9.1 The MMO acknowledges the amendment to Condition 2(6) in line with request from Natural England.

### Maintenance of the authorised project

1.9.2 The MMO thanks the Applicant for acknowledging that Condition 3(1) should include reference to the Outline Operations and Maintenance Plan and their commitment to addressing this at the next revision to the draft DCO at Deadline 3.

1.9.3 The MMO acknowledges the Applicant's comments regarding Condition 3(5) and will provide justification after the MMO has reviewed the next revision to the draft DCO.

### Notifications and Inspections

1.9.4 The MMO acknowledges the Applicant's comments, and the MMO will provide more on this after reviewing the next revision of the Draft DCO.

1.9.5 The MMO acknowledges that the wording of Condition 6(1) has been amended in accordance with conditions provided by Trinity House. The MMO has no further comments at this time.

1.9.6 The MMO acknowledges the Applicant's explanation of Condition 11(1)(o) and thanks the Applicant for the clarification.

1.9.7 The MMO notes that the Applicant has not amended the wording in Condition 9(1) as requested by the MMO. The MMO will provide further comments on this after reviewing the next draft DCO.

1.9.8 The MMO understands that Condition 9(8) has been amended to remove reference to '5 days' and has not been changed to reference '24 hours', with the Applicant stating that this is in line with Hornsea Four Offshore Wind Farm and East Anglia One North and Two. The MMO will provide further comments on this following its review of the next draft DCO.

1.9.9 The MMO thanks the Applicant for adopting the suggested amendments to Condition 15 and addressing this in the draft DCO. The MMO may provide more



comments on the retention of information regarding vessels within the condition in a later response.

1.9.10 The MMO is disappointed that amendments to Condition 17 on construction monitoring have not been adopted. The MMO disagrees with the proposed monitoring set out in the offshore in-principal monitoring plan that monitoring should only be conducted for the first four piles. The MMO also disagrees with the Applicant's claim that no further monitoring other than that which is set out in the in-principal monitoring plan is considered necessary. The MMO would like to see the suggested conditions adopted in full.

## **Coastal Processes**

1.10.1 MMO 4.2.1 and MMO 4.2.12: With regard to the Applicant's responses to MMO points 4.2.1 and 4.2.12, the MMO has not been able to consult with technical advisors, and therefore have no comments to make at this time. The MMO will provide comments on these sections in our next response.

1.10.2 MMO 4.2.5: In response to issues raised over the assessment of potential impacts from "ground-out" area the MMO welcomes the Applicant's production of Appendix 13 - Further Information for Action Point 45 and 46 (document reference 8.25.13). This document will be reviewed by the MMO and comments provided at Deadline 3.

1.10.3 MMO 4.2.13: The MMO is disappointed that requests for the inclusion of maps to display the impacts to tidal currents due to the structures has appear to have been ignored and that no modelling or new maps of potential impacts have been created.

1.10.4 MMO 4.2.14: The MMO is disappointed that the request to provide maps to display changes in sediment transport has not been actioned, and that no modelling or maps of potential impacts have been created.

## **Benthic Ecology**

1.11.1 With regard to the Applicant's responses to MMO points 4.3.3, 4.3.4 - 4.3.5, and 4.3.9, the MMO has not been able to consult with technical advisors, and therefore have no comments to make at this time. The MMO will provide comments on these sections in our next response.

## **Dredge, Disposal and Chemical Use**

1.11.2 MMO 4.4.4: The MMO welcomes the Applicant's Deadline 1 submission of the Benthic - Subtidal benthic characterisation survey report appendices (Document Reference 8.34). The MMO will review this document and provide comments at Deadline 3.



- 1.11.3 MMO 4.4.5: The MMO acknowledges the corrections made to OSPAR BAC. With regard to the Applicant's responses to MMO points 4.4.8- 4.4.9, 4.4.11, 4.4.16-4.4.23, 4.4.26- 4.4.27, the MMO has not been able to consult with technical advisors, and therefore have no comments to make at this time. The MMO will provide comments at Deadline 3.
- 1.11.4 MMO 4.4.13: The MMO welcomes the Applicant's commitment that they will engage with the MMO to establish whether a condition is required within the DML relating to the disposal of chalk arising from the export cable area to the array area.
- 1.11.5 MMO 4.4.15: The MMO welcomes the Applicant's commitment to providing details of the type of cable protection material proposed to be deployed within the Outline Scour Protection and Cable Protection Plan (APP-234). The final Plan will be submitted to and approved in writing by the MMO as secured in condition 11(1)(i) of the DMLs.
- 1.11.6 MMO 4.4.26: The MMO thanks the Applicant for providing confirmation that all organic matter, hydrocarbon and metals analysis was undertaken by SOCOTEC UK Limited.

## **Fisheries and Fish Ecology**

- 1.12.1 MMO 4.6.6: The MMO thanks the Applicant for acknowledging the inconsistencies in maximum piling duration and amending these in the Errata submitted to the Planning Inspectorate at the procedural deadline of 16th January 2024.
- 1.12.2 MMO 4.6.15: The MMO thanks the Applicant for acknowledging the inconsistencies in Figures 8.9 and 8.10 of Chapter 8: Fish and Shellfish – Figures, Volume 3 (APP-081), and for providing revised figures as recommended by the MMO in Chapter 8: Fish and Shellfish, Volume 3 of the ES – Figures (REP1-007), submitted at Deadline 1.
- 1.12.3 MMO 4.6.16: The MMO thanks the Applicant for providing clarity on how the conclusions of the Applicant's herring habitat suitability assessment were reached. The MMO will provide a more detailed response at Deadline 3.
- 1.12.4 MMO 4.6. 20: The MMO welcomes the Applicant's acknowledgment of the limitations of the aggregates monitoring data and the submission at Deadline 1 of the In Principle Sensitive Features Mitigation Plan [(APP-239). The MMO is in the process of reviewing this document along with its scientific advisors and will provide further comments at Deadline 3.
- 1.12.5 MMO 4.6.22: The MMO maintains the position that the use of a threshold of 141 decibel (dB) re 1 micropascal ( $\mu$ Pa) Sound Exposure Level, single strike (SELss) as defined by Kastelein *et al.*, (2017) is not an appropriate or conservative threshold for adult black Sea Bream. The MMO welcomes the





Applicant's commitment to continued engagement with the MMO and Natural England to seek resolution in respect of this matter, and the MMO hopes that this can be resolved during examination.

1.12.6 MMO 4.6.27: The MMO acknowledges that the Applicant has undertaken noise modelling of both mitigated and unmitigated piling scenarios, using the precautionary 135 dB to define the potential range of effect on spawning. The MMO response to these modelling outputs (PEPD – 023) are included within this response (Section 7).

1.12.7 MMO 4.6.36: The MMO welcomes the Applicant's acknowledgment of serious concerns with the level of impact that piling within the Rampion Array will have on spawning herring and the submission at Deadline 1 of the In Principle Sensitive Features Mitigation Plan (APP-239). The MMO is in the process of reviewing this document along with its scientific advisors and will provide further comments at Deadline 3.

1.12.8 MMO 4.6.37: The MMO welcomes the Applicant's acknowledgment of concerns over the sensitivity and levels of risk presented to Black Sea Bream from UWN and the submission at Deadline 1 of the In Principle Sensitive Features Mitigation Plan (APP-239). The MMO is in the process of reviewing this document along with its scientific advisors and will provide further comments at Deadline 3.

1.12.9 The MMO acknowledges the Applicant's concerns (MMO 4.6.58) that a full piling exclusion from March-July inclusive would have significant issues for the practical development of the Proposed Development. The MMO is still of the view that seasonal restrictions in the month of July are required. The MMO will review the mitigation proposed in the In Principle Sensitive Features Mitigation Plan (APP-239) along with its scientific advisors and will provide further comments at Deadline 3.

## **Under Water Noise**

1.13.1 MMO 4.7.4: The MMO acknowledges that the Applicant will submit a European Protected Species (EPS) licence for consultation with the MMO, NE and other relevant Statutory Nature Conservation Bodies (SNCBs)

### Appendix 11.3 Underwater noise assessment technical report (table)

1.13.2 Analysis of environmental effects (2.2): The MMO understands that the Applicant is using a flee receptor approach for fish receptors as long as species are not spatially restricted, however the MMO are not aware of any empirical evidence to support this.



1.13.3 Modelling confidence (3.1): The MMO welcomes the Applicant's offer to include details of hammer energies, SELs, and the intention for greater transparency in modelling parameters to be taken on board for future report revisions.

1.13.4 Modelling parameters (3.2): The MMO acknowledges that the Applicant has amended the worst-case monopile (changing from 12m to 13.5m).

#### Other comments

1.14.1 MMO 4.7.10: The MMO acknowledges that the Applicant feels the sensitivity score for cetaceans is appropriate in the ES report. The MMO still recommend that cetaceans should be assessed as having a high sensitivity to PTS until the Applicant is able to demonstrate clearly that PTS would have a medium risk.

1.14.2 MMO 4.7.20: The MMO acknowledges that the Applicant has requested empirical data from the manufacturers (IHK Menck hammers) and the MMO hopes to see this data in future Applicant submissions.

1.14.3 The MMO welcomes the clarifications provided by the Applicant and corrections of errors relating to points raised by the MMO in the UWN section of its RR.

#### **Outline Project Environmental Management Plan (OPEMP)**

1.15.1 The MMO understands that there are recent DCOs that have review periods of four month. The MMO welcomes future discussion with the Applicant to work towards determining if the OPEMP can have a review period of six months opposed to four.

1.15.2 The MMO is pleased to see that commitments to reduce the release of plastics into the marine environment have been added within the commitments register. The MMO will review the next iteration of the Outline Scour Protection and Cable Protection Plan accordingly.

1.15.3 The MMO welcomes the clarifications provided by the Applicant and corrections of errors relating to points raised by the MMO in the Outline Project Environmental Management Plan of its RR.

#### **Outline Offshore Operations and Maintenance Plan (OOOMP)**

1.16.1 MMO 5.6.1: The MMO understand that there are recent DCOs that have review periods of four months. The MMO welcomes future discussion with the Applicant to work towards determining if the OOOMP can have a review period of six months opposed to four.

1.16.2 MMO 5.6.3: The MMO thanks the Applicant for clarifying what 'New Cable Protection' means, but requests that this is made clear within the Outline Offshore Operations and Maintenance Plan also.



1.16.3 MMO 5.6.4: The MMO thanks the Applicant for expanding on 'Additional Scour protection around foundations' and request that this explanation also be included within the Outline Offshore Operations and Maintenance Plan.

1.16.4 The MMO welcomes the clarifications provided by the Applicant and corrections of errors relating to points raised by the MMO in the Outline Offshore Operations and Maintenance Plan of its RR.

### **In Principle Sensitive Features Mitigation Plan**

1.17.1 MMO 5.7.9: The MMO acknowledges that the Applicant's responses regarding noise abatement, and notes that an agreed behavioural threshold for Black Sea Bream is yet to be agreed by all parties. The MMO continues to collaborate with the Applicant on this point and there is a meeting due to take place on 25<sup>th</sup> March 2024 to discuss this further.

1.17.2 MMO 5.7.1: The MMO acknowledges that the Applicant is confident with the suitability of their underwater noise assessment, but the MMO still recommends that a conservative approach to include noise abatement measures across the entire site rather than zoning should be adopted.

1.17.3 The MMO acknowledges that there are several points relating to Black Seabream and UWN that require further discussion. As mentioned above, a meeting has been planned to address these points on 25<sup>th</sup> March 2024.

### **Offshore in Principle Monitoring Plan**

1.18.1 MMO 5.8.2: The MMO acknowledges that there are recent DCOs that have review periods of four months. However, the MMO remain of the belief that these deadlines should be six months as opposed to the stated four months, in order to allow appropriate time for consultation. The MMO does not consider this issue to be fully resolved but is hopeful that ongoing discussions with the Applicant during Examination will lead to resolution.

1.18.2 MMO 5.8.3: The MMO acknowledges that the Applicant will endeavour to validate the predictions made within Chapter 11. The MMO continues to seek clarification regarding the worst-case scenario piles and requests that this will be updated when the piling programme and specific conditions of the ground are determined.

### **Habitats Regulations Assessment (Without Prejudice) Derogation Case**

1.19.1 The MMO acknowledges that the Applicant has included a draft condition within PEPD 00017. The MMO will include comments on this in our next deadline response.

## **2. MMO response to Interested Parties Written Responses**



## Sussex Wildlife Trust

- 2.1.1 The MMO notes that Sussex Wildlife Trust (SWT) still has concerns regarding the landfall location, and that SWT strongly support Natural England's (NE) proposed commitment (C-217) to avoid drilling under the SSSI during winter periods.
- 2.1.2 The MMO notes several concerns relating to Coastal Process (ES Chapter 6) including disposal locations; trenching through chalk; sensitivities at Climping Beach and the location/use of gravel bags during construction. The MMO have commented on these topics in our Relevant Representation and Written Responses, and therefore will keep a watching brief on the SWT's position regarding Coastal Processes.
- 2.1.3 The MMO notes several concerns relating to Fish and Shellfish Ecology (ES Chapter 8) including offshore piling mitigation technologies; piling and the use of European Bass as a proxy for Black Sea Bream behaviour. The MMO have commented extensively on these topics in our Relevant Representation and Written Responses, and therefore will keep a watching brief on the SWT's position regarding Fish and Shellfish Ecology and hope to reach a resolution during the examination process.
- 2.1.4 The MMO notes several concerns relating to Benthic, Subtidal and Intertidal (ES Chapter 9) including but not limited to, Worthing Lumps Local Wildlife Site; *Sabellaria spinulosa*; MarESA assessment for benthic subtidal habitats; Marine Invasive and Non-Native Species; Predictive seabed mapping and statutory consultation feedback. The MMO have commented on Benthic Processes in our Relevant Representation and Written Responses, and therefore will keep a watching brief on the SWT's position regarding Benthic, Subtidal and Intertidal features, and hope a resolution is reached during the examination process.

## Inshore Fisheries and Conservation Authority (IFCA)

- 2.2.1 The MMO understands that the proposed array falls outside of but closely borders the Sussex IFCA district, and therefore the construction and maintenance phases will affect Sussex IFCA fisheries and habitats.
- 2.2.2 The MMO notes that IFCA have requested that all Rampion 1 and Rampion 2 survey data should be made publicly available, which the MMO supports.
- 2.2.3 The MMO notes specific concerns relating to Chapter 8, Fish and Shellfish Ecology. IFCA have serious concerns about the likelihood of significant impacts to Black Sea Bream, noting that IFCA welcome clarity on how the Applicant will be held accountable on any commitments made at this stage in the process.



The MMO notes that IFCA support Natural England's advice to Rampion on this matter.

2.2.4 The MMO notes that IFCA have concerns relating to Herring (under water noise) and Seahorses (conclusions in the ES). The MMO share concerns relating to both the impacts of underwater noise to sensitive herring, and that the current conclusions in the ES regarding seahorses is not cautious enough, and that a more cautious approach should be adopted to control the risk to this highly sensitive species.

2.2.5 The MMO notes that IFCA have additional concerns relating to Chapters 9 and 10 of the ES, and the MMO will keep a watching brief on these issues.

## Historic England

2.3.1 The MMO notes that Historic England (HE) have several concerns not limited to, but including the following topics;

- Insufficient Evaluation in advance of application for onshore, intertidal and offshore areas;
- Embedded environmental measures do not include convincing and practicable provision to avoid the risk of harm to potentially nationally important archaeological remains;
- The Applications Outline Marine Written Scheme of Investigation (WSI) is not of a high enough standard and should not be accepted as a certified document;
- The wording of the WSI conditions in Schedules 11 and 12 of the Deemed Marine Licences need amending to ensure implementation in the crucial post-consent and pre-construction phases;
- The ExA requiring the Applicant to better reveal the significance of identified heritage assets.

2.3.2 The MMO notes that HE is working with the Applicant to see how the above issues can be resolved. The MMO will keep a watching brief on the above matters and hopes to see them resolved throughout the examination process. However, the MMO defers to HE for matters relating to the Historic Environment.

## Natural England

### Offshore In-Principal Monitoring Plan

2.4.1 The MMO notes that NE have several concerns relating to the Offshore In-Principal Monitoring Plan (IPMP). NE believe much more detail is required than is currently provided in the IPMP. Specifically: what hypotheses will be tested? How will monitoring be designed to achieve desired outcomes? What will the timing of these surveys be? What lessons can be learnt from previous surveys?



- 2.4.2 The MMO notes that NE advise that any monitoring employed should be effective in informing suitable mitigation measures and the effectiveness of such measures as to comply with assessments stipulated in the DCO/DML and mitigate significant effects. Additionally, NE advises that greater consideration is given within the IPMP to the monitoring and potential risks of the proposed works to coastal processes and designated site features.
- 2.4.3 The MMO ultimately defers to NE on these matters as the Statutory Nature Conservation Body (SNCB) and hopes that the Applicant and NE can resolve these matters prior to the close of Examination. The MMO welcomes inclusion in discussions if resolutions require change or input to the DML, additionally, should it be considered that a Wildlife Licence is required due to certain species being protected by the Wildlife and Countryside Act 1981, the MMO will need to be involved in such discussions.

#### Draft Development Consent Order

- 2.4.4 The MMO notes NE acknowledges multiple changes to the draft DCO by the Applicant following recommendations from NE. The MMO acknowledge that NE believe there are still outstanding amendments to the draft DCO which require further consideration or more precise wording put in place.
- 2.4.5 NE note that discussions regarding the compensation requirements for Kittiwake are still ongoing and therefore, their position on the compensation schedule may be subject to change.
- 2.4.6 NE note that Schedule 17 should be amended to include provisions for a timetable for preparation and delivery of the Kittiwake Implementation and Monitoring Plan (KIMP), a schedule of meetings and an agreed dispute resolution procedure. It should also include provisions for decommissioning and the requirements to notify and seek approval from the SoS of installation and removal timescales.
- 2.4.7 NE advise that timing requirements be put in place to ensure that compensation can be delivered four full breeding seasons prior to operation as has been the case for several previous offshore wind developments.

#### Summary of NE key environmental concerns

- 2.4.8 The MMO notes NE's previous comments relating to potential disruption of coastal processes and coastal/seabed morphology and the impacts this may have on designated sites [RR –265]. The MMO notes that NE request that further consideration is given to monitoring times and duration of campaigns in order to better understand if there are any lasting impacts/and or recovery.
- 2.4.9 The MMO acknowledges that NE note the IPMP as submitted does not include any ornithological monitoring based on the EIA or report for Appropriate Assessment concluding no Adverse effect on Integrity (AEoI) for ornithological receptors. NE acknowledges the Applicant has submitted a case for



compensation for potential AEol for kittiwake for Flanborough and Filey Coast SPA. Natural England is not currently able to provide advice on the potential for AEol on the guillemot and razorbill features of FFC SPA and on the guillemot feature of the Farne Islands SPA without a full in-combination assessment being provided. The MMO defers to NE for matters relating to ornithology.

2.4.10 NE advise that consideration is given to the monitoring requirements of all the Priority/Annex I habitats raised within their previous Relevant/Written Representation [RR-265] and the potential risks to Marine Conservation Zone (MCZ) features from secondary impacts.

2.4.11 The MMO acknowledges NE consideration that piling activities from 1st March-31st July inclusive have the potential to hinder the conservation objectives of Kingmere MCZ in relation to Black Sea Bream and that the Applicant has not included the seasonal restriction in its entirety in the Rampion 2 application, as advised in their Relevant/Written Representations [RR-265].

2.4.12 The MMO acknowledges NE concerns that the Applicant's Marine Mammal Mitigation Plan (MMMP) contains no considerations for monitoring the effectiveness of suggested mitigation measures in reducing the underwater noise impacts to acceptable levels.

#### Black Seabream Underwater Noise Technical Note and Survey Results - Revision A (PEPD-023)

2.4.13 The MMO acknowledges NE's observation that both of the proposed noise thresholds for behavioural responses in black seabream (148 and 142 dB SPLRMS) are significantly above the observed baseline conditions.

2.4.14 NE observe that while the Applicant's claim that "*314.3 dB SPLRMS is regularly exceeded under baseline conditions*" this does not consider that these events account for around 1% of total time, are short term and may occur only once per day.

2.4.15 NE believe, based on the evidence provided, that background noise levels rarely reach the thresholds proposed (148 & 142 dB SPLRMS), and when they occasionally do it is only for short periods of time.

2.4.16 NE believe piling would represent a notable increase from baseline conditions and therefore the data presented does not support the Applicant's assertion that there will be no impact on breeding black seabream under prolonged exposure to 148 & 142 dB SPLRMS conditions.

2.4.17 The MMO attended a joint meeting between NE and Cefas on 11<sup>th</sup> March 2024 to discuss Black Seabream Underwater Noise Technical Note and Survey Results.

2.4.18 Several issues were raised in this meeting including:

- The need for a conversion table to properly assess how the single strike sound exposure level (SELs) is converted to the SPLrms specifically when considering the differences between impulsive and continuous noise.
- The rational and suitability of the 135dB disturbance threshold.



- The unproven nature of proposed mitigation techniques and the absence of adequate monitoring to provide data to fill those gaps.
- The practical challenges of enforcing and monitoring the use of a zonal piling sequencing plan.
- The risk that current proposed mitigation will not be enough to reduce dB levels to below a threshold which is deemed acceptable.

### NE Issues Log

2.4.19 The MMO has briefly reviewed NE's Issues Log (REP1 –059) regarding the following sections:

- DCO/DML;
- Offshore Ornithology.
- Marine Mammals;
- Coastal Processes;
- Fish and Shellfish Ecology;
- Benthic Ecology;
- Other Plans

2.4.20 The MMO understands that NE have several Red (unresolved) points relating to the DCO, Coastal Processes, Fish and Shellfish Ecology, Benthic Ecology and Other Plans. The MMO understands that if these points are not resolved during examination, that NE will advise that it is not possible to ascertain beyond reasonable scientific doubt that the project will not affect the integrity of a Special Area of Conservation (SAC)/Special Protected Area (SPA)/ Ramsar and /or significantly hinder the conservation objectives of a Marine Conservation Zone (MCZ)/ or damage or destroy the interest features of a Special Site of Scientific Interest (SSSI) and/or have significant adverse effects on landscape/ seascape and/or comply fully with the Environmental Impact Assessment requirements.

2.4.21 The MMO hopes to see red points resolved throughout examination, especially points D15, E8, E21- E23, E25-26, E28, E29, E30, E31-E35, E36-38, E43-45, E70 – 74, E77-79, E82, E88, E91, E94, E96, E99-100, F7, F12, F39, G2-3, and G11. The MMO will keep a watching brief on future NE responses, and comment accordingly throughout examination.

2.4.22 The MMO generally support the points raised by NE but would like to draw attention particularly to points relating to Under Water Noise and Black Sea Bream. There is still no agreed behavioural sound threshold for Black Sea Bream, and the MMO will continue to work closely with NE, the Applicant and its technical advisors throughout examination to ensure that an appropriately conservative threshold is met.

### **West Sussex County Council**





- 2.5.1 The MMO has reviewed the Local Impact Report provide by West Sussex County Council (WSCC) at deadline 1. The MMO notes the following overarching concerns that WSCC have with regards to Rampion 1:
- Seascape, Landscape and Visual Impacts – concern that worst-case scenario relative to West Sussex receptors has not been presented;
  - Socio-economics – low economic impact/growth locally as a result of the project and potentially negative impact on tourism;
  - Local impacts during construction phase and operational phase;
  - Onshore Ecology – risks resulting from HDD and landfall site
- 2.5.2 The MMO acknowledges the above concerns of WSCC and understands that their Deadline 1 response covered several other areas not included in our review. The MMO will keep a watching brief on further responses submitted by WSCC and corresponding responses from the Applicant and hopes to see the above concerns resolved during examination.
- 2.5.3 The MMO understand that Trinity House (TH) and the Maritime and Coastguard Agency (MCA) have not submitted a Written Response at Deadline 1, and therefore the MMO are not able to provide any comments regarding TH and the MCA.

### 3. MMO response to ISH1 Action Points

- 3.1.1 The MMO acknowledges the Applicants updated Outline Fisheries Liaison and Co-existence Plan which addresses issues raised regarding lessons which can be learnt from Rampion 1 and clarification of the dispute resolution process commented on in response to MMO relevant representation.
- 3.1.2 The MMO notes the submission of Appendix 7 – Further Information for Action Point 33 – Kittiwake Implementation and Monitoring Plan to address comments raised by Natural England. The MMO acknowledges that this document sets out the need for compensatory measures with regards to Kittiwake as well as proposals for the implementation and monitoring of these projects. The MMO defers to NE as SNCB on matters relating to ornithology but will maintain a watching brief on responses from the Applicant relating to concerns raised in Agenda Item 10.
- 3.1.3 The MMO notes the submission of Appendix 8 – Further Information for Action Point 34 – In Combination Assessment Update for Guillemot and Razorbill to address NE’s disagreement with the Applicant’s position on Guillemot and Razorbill within Flamborough and Filey Coast SPA and Guillemot within the Farne Islands SPA. The MMO defers to NE on matters relating to ornithology but will maintain a watching brief on responses from the Applicant relating to concerns raised in Agenda Item 10.



- 3.1.4 The MMO acknowledges the Applicants submission at Deadline 1 of Issue Specific Hearing 1 Appendix 9 - Further information for Action Points 38 and 39 – Underwater Noise to provide an assessment of the worst-case operational noise scenario. The MMO will review this document along with its scientific advisors and provide further comments at Deadline 3.
- 3.1.5 The MMO notes that the Applicant has provided a detailed response to NE's concerns regarding UXO clearance in their response to NE Relevant Representations.
- 3.1.6 The MMO thanks the Applicant for their submission of spawning and habitat suitability heatmaps for both sandeel and herring following the MarineSpace *et al.*, (2013a) methodology.
- 3.1.7 The MMO thanks the Applicant for their additional consideration of the potential impacts of noise disturbance on spawning herring. The MMO welcomes the new figures provided in Chapter 8: Fish and shellfish ecology, Volume 3 [APP081] to assess Temporary Threshold Shift (TTS). The MMO will review this document along with our scientific advisors and provide further comments at Deadline 3.
- 3.1.8 The MMO notes that the Applicant has the acknowledged in their In Principle Sensitive Features Mitigation Plan that piling activity in the Western array may need to be restricted in the month of July.
- 3.1.9 The MMO notes that at present it is the Applicant's intention to implement a piling sequencing plan for July in combination with proposed mitigation, including, the use of low noise hammer technology and Double Big Bubble Curtain (DBBC). The MMO reiterates that carrying out piling activity of any kind continues to go against strong recommendations by NE. The MMO will further review documents submitted at Deadline 1 along with its scientific advisors and provide further comments at Deadline 3.
- 3.1.10 The MMO acknowledges the additional clarifications on impacts to seahorses from underwater noise provided in Appendix 9 - Further information for Action Points 38 and 39 – Underwater Noise (REP1-020). The MMO defers to NE on features of MCZs as the SNCB but will maintain a watching brief on this matter.
- 3.1.10 The MMO thanks the Applicant for submitting an updated Chapter 11: Marine mammals (tracked & clean) Volume 2, Environmental Statement to address issues raised regarding marine mammals in Agenda Item 12. The MMO will review this document along with its scientific advisors and will provide further comments at Deadline 3.
- 3.1.11 The MMO notes the submission of Appendix 10 - Further Information for Action Point 42 – Proximity to Marine Wildlife in lieu of an Outline Vessel Management Plan. The MMO recognises this information will form part of the Vessel Management Plan submitted as part of the DCO Application. The MMO will



review this document along with its scientific advisors and may provide further comments at Deadline 3.

3.1.12 The MMO notes the submission of Appendix 13 - Further Information for Action Point 45 and 46 – Physical Processes and Benthic. The MMO will review this document along with its scientific advisors and will provide further comments at Deadline 3.

3.1.12 The MMO acknowledges that the Applicant is considering the issues raised regarding the draft DCO and will address them as necessary in the updated version of the draft DCO to be submitted at Deadline 2.

## 4. MMO response to the Statements of Commonality SoCG

4.1.1 The MMO attended a meeting with the Applicant on 23<sup>rd</sup> February 2024 in which the categorisation of issues listed in the Statement of Common Ground were discussed. There was no disagreement between the MMO and the Applicant as to the status of any listed issues. Confirmation of the MMO's position on outstanding issues is summarised below.

4.1.2 The statement within the introduction detailing that "*The MMO is an executive non-departmental public body whose purpose is to protect and enhance the UK marine environment and support economic growth by enabling sustainable marine development*" should be amended to reflect that the MMO is the regulator for English and Northern Ireland offshore waters.

4.1.3 Issues pertaining to Draft DCO - Article 5, Benefits of the Order and Part 4 Supplemental Powers (20(2) Public rights of navigation. The MMO maintains concerns about the Draft DCO and considers this an ongoing point of discussion. The Applicant stated they would provide comments regarding these issues in their responses to relevant representations submission at Deadline 1.

4.1.4 Issues pertaining to determination dates listed in Draft DCO – Schedules 11 & 12 Condition 12. The MMO remain of the belief that these deadlines should be six months as opposed to the stated four months, in order to allow appropriate time for consultation. The MMO does not consider this issue to be fully resolved but is hopeful that ongoing discussions with the Applicant during Examination will lead to resolution.

4.1.5 Issues pertaining to Draft DCO – Schedules 11 & 12 – Additional Conditions. The MMO maintains the belief that additional conditions should be added to Schedules 11 & 12 of the Draft DCO. The Applicant stated they would provide comments on these issues in their responses to relevant representations submission at Deadline 1.

4.1.6 Draft DCO – Condition 9: The agreement by the MMO to a list of Notified Chemicals approved for use by the offshore oil and gas industry. The MMO



considers this to be an ongoing point of discussion and will provide further comments following upcoming updates from the MMO Strategic Renewables Unit which will affect all DCOs. The MMO is hopeful this will be resolved during Examination.

- 4.1.7 Inconsistencies in reference to the maximum number of proposed turbines at Rampion 2 with both 116 and 90 turbines stated. Applicant has confirmed the maximum number of turbines will be 90. The MMO considers this matter resolved.
- 4.1.8 Offshore maintenance & Noise plans deadlines. The MMO remain of the belief that these deadlines should be six months as opposed to the stated four months, in order to allow appropriate time for consultation. The MMO believes this issue may not be fully resolved but is hopeful for ongoing discussions during Examination.
- 4.1.9 Physical and Chemical Contamination. The MMO restated our concern that the name of the laboratory used to conduct the Physical and Chemical Contamination testing could not be found and therefore could not be verified. The Applicant has since clarified (REP1-017) that all organic matter, hydrocarbon and metals analysis was undertaken by SOCOTEC UK Limited, and that all other analysis of sediment samples was undertaken by Ocean Ecology Limited.
- 4.1.10 Coastal Processes and Benthic Monitoring. The MMO maintains the belief that multiple updates are still required to address issues with coastal processes and benthic monitoring plans. The MMO acknowledges the Applicants responses to points raised by the MMO on this topic in REP1-017 relating to coastal processes and benthic monitoring, as well as the submission of additional documents (REP1 - 036 and REP1 - 030). As stated throughout this response, the MMO will provide comments on these reports in our next deadline response.
- 4.1.11 Fish Ecology: MMO restated its concerns over risks to fish species and commercial fisheries particularly in relation to black seabream and herring spawning grounds. MMO restated the concerns raised by its scientific advisors about the suitability and effectiveness of impact modelling specifically in relation to seasonality, spawning area contours and decibel (dB) thresholds. The MMO acknowledges the Applicants comments in REP1-017, and the MMO will provide comments on this in our next deadline response.
- 4.1.12 Agreement between the Applicant and the MMO that any unresolved issues which are still present at the end of Examination will be escalated to the Secretary of State (SofS).
- 4.1.13 The MMO has reviewed the Statement of Commonality for Statements of Common Ground (SoCG) and the MMO believes that the categorisation of Coastal Processes, Benthic/Subtidal/Intertidal Ecology, Marine Mammals and DCO and Securing Mechanism as light green (Some matters agreed / some matters under discussion) is misleading. The MMO believes these sections should be re categorised as purple (Some matters agreed, some matters not agreed, some matters under discussion) to reflect the levels of ongoing



negotiations and significance of existing MMO concerns more accurately. The MMO are in the process of reviewing the Applicant's Deadline 1 submissions along with its technical advisors to determine the status of ongoing discussions more accurately.

## 5. MMO comments on Applicant's responses to Relevant Representations

5.1.1 The MMO has reviewed the Applicants comments (REP1-017) on the Relevant Representations of the following interested parties:

- Natural England
- Historic England
- Sussex Wildlife Trust
- Maritime Coastguard Agency
- Trinity House
- West Sussex County Council

### Sussex Wildlife Trust

5.2.1 The MMO acknowledge comments made by the Sussex Wildlife Trust (SWT) and understand that there are major concerns regarding the use of the Rochdale Envelope which has led to significant uncertainty. Similarly, SWT are also concerned about the caveats and lack of clarity in the commitments register. SWT also have concerns about several offshore aspects of the development, and the MMO will keep a watching brief on further responses from the SWT, with the hope to see concerns resolved, especially concerns relating to Black Sea Bream.

### Historic England

5.3.1 The MMO acknowledge comments by Historic England (HE) regarding the limitations of marine archaeology evaluation, specifically the lack of geotechnical survey works. The MMO understands that Historic England would like to see geoarchaeological analysis of geotechnical survey materials within the Written Scheme of Investigation (WSI). The MMO acknowledges the Applicant's comments in response to this, and understands that further advice may be provided by HE in subsequent WRs.

5.3.2 The MMO acknowledge HE's overall position, and understands the specific areas of concern are as follows:

- insufficient evaluation has been done in advance of the application for onshore, intertidal and offshore areas,
- the onshore route selection process was determined without due regard to the potential significant effects on heritage, and
- the embedded environmental measures do not include convincing and practicable provision to avoid the risk of harm to potentially nationally important archaeological remains.



- 5.3.3 The MMO understands that an updated WSI will be provided at examination deadline 3, and the MMO will keep a watching brief on whether HE concerns are resolved.
- 5.3.4 The MMO acknowledges HE request for provisions within the Schedule of Requirements to secure avoidance and/or mitigation of harm by requiring the approval of Relevant authorities. The MMO notes the Applicant's comments and will keep a watching brief on further documents provided by HE to the Applicant related to this.

## Natural England

- 5.4.1 The MMO has reviewed the Applicant's responses to major issues (red) requiring resolution only, due to the size of NE Relevant Representation.

### Coastal Processes

- 5.4.2 The MMO notes NE's concern relating to Climping Beach SSSI regarding impacts from cable protection in the nearshore and intertidal. The MMO understands that NE have advised that an Outline Cable Specification and Installation Plan should be provided by the Applicant. The MMO acknowledges the Applicant's detailed response, concluding that the 'coastal vulnerability of the Proposed Development is considered to be low' and that the Applicant will continue engaging with the EA.

### Fish and Shellfish

- 5.4.1 The MMO acknowledges that the Applicant has provided clarification regarding worst-case scenarios being presented in E8 (table 8.17).
- 5.4.2 The MMO acknowledges the Applicant's response to points relating to Kingmere MCZ, underwater noise and Black Sea Bream, specifically:
- E23 - NE advice habituation is not considered within assessment.
  - E33- NE do not support a behavioural threshold for Black Seabream being derived on studies based on proxy species, playback, undertaken in captivity, using akin noises rather than actual piling noises and studies within quiet lochs.
  - E34 – NE disagree with the addition of 30dB to the background noise levels of Radford *et al* (2016)
  - E35 – NE do not support the use of 141dB re 1 uPa SELss as a threshold for black seabream ( Kastelein *et al.* (2017) and that this study cannot be used to predict fish behavioural responses for many reasons.
- 5.4.4 The MMO understands that these points are areas of ongoing discussion between the MMO, NE and the Applicant, and the MMO will continue to work closely with both to resolve these issues.
- 5.4.5 The MMO acknowledge the Applicant's response to NE points E37-39 (MCZ). Similarly to the above point, the MMO will continue to work closely with both NE and the Applicant to resolve issues relating to black seabream.
- 5.4.6 In response to NE advice to amend commitment C-265 to reflect the magnitude of TTS impacts on seahorses (currently classified as negligible by the



Applicant), the MMO acknowledges that the wording of C-265 has been amended to reflect the wording in the MCZ and understands that the Applicant is confident that the implementation of a noise abatement system year-round will ensure the conservation objectives of the Beachy Head West MCZ are not hindered.

- 5.4.7 The MMO acknowledges comments made by the Applicant in response to seahorses – underwater noise – behavioural impacts (E45 46) and understands that the Applicant is confident that a suitably precautionary assessment has been undertaken to establish the potential impacts from underwater noise on seahorses.
- 5.4.8 The MMO has reviewed responses by the Applicant to NE points E73 – 76, E80 –81 and E84 and understands that the Applicant is confident that the conservation objectives of the Kingmere MCZ will not be hindered, and that where applicable, suitably precautionary assessments have been undertaken to establish the potential impacts on seahorses. The MMO understands that the Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where Noise Abatement Systems (NAS) have been deployed, which will be submitted into examination.
- 5.4.9 With regard to NE points E86, E90, E98-99, E102-105, E107 and E110-114, the MMO understands that the Applicant is undertaking additional work to provide a comparison of the environmental conditions at the Proposed Development with other projects where NAS have been deployed, which will be submitted into examination. The MMO also understands that the Applicant is not proposing to adopt the suggested July piling restriction. The MMO is still of the view that seasonal restrictions in the month of July are required.

#### Benthic, Subtidal and Intertidal Ecology

- 5.4.10 The MMO acknowledges the Applicant's response to NE F6, reiterating that the assessment does not rely upon a habitat model based solely on historic data. The MMO notes that the Applicant has confirmed it is committed to undertaking detailed pre-construction surveys as referenced in the Offshore In Principal Monitoring Plan, which is secured in Schedules 11 and 12 of the draft DCO.
- 5.4.11 The MMO acknowledges the Applicant's response to NE point F11 and understands that Rampion 1 data cannot be made publicly available until they are discharged by the respective authorities.
- 5.4.12 The MMO acknowledges the Applicant's response to F36 with regard to the impacts within the 500m buffer, should they occur, being minor. The MMO understands that the Applicant considers their assessment to be robust and adequate, and no further consideration will be provided.

#### Other Plans

- 5.4.13 The MMO acknowledges that the Applicant will consider whether any additional detail is required within the current in-principal Plan, and the MMO hopes to see this point (point G2) resolved throughout examination.



- 5.4.14 The MMO acknowledges NE concern regarding how the purpose of the monitoring is conditioned within the DCO, and how this may prevent adaptive management, should impacts be identified that are outside of those predicted. The MMO notes that both NE and the Applicant have stated that they will work together to ensure all monitoring is fit for purpose.
- 5.4.15 The MMO acknowledges the Applicant's response to point G11 (Outline Scour Protection and Cable Protection Plan)

### **Environment Agency**

- 5.5.1 The MMO acknowledges the Environment Agency (EA) response with regards to the marine environment, and notes that overall, they are satisfied with the Water Framework Directive (WFD). The MMO notes that concerns remain relating to the release of significant quantities of bentonite during the drilling processes and offshore construction. The Applicant has responded stating that there is ongoing engagement with the Sussex Kelp Recovery Project (SKRP), and the MMO will keep a watching brief on how this progresses throughout examination.
- 5.5.2 The MMO notes concerns regarding the landfall location at Climping beach, but notes that the EA are satisfied that the Applicant has understood the rapidly changing coastal morphology of the site. The Applicant has stated that further ground investigations will be carried out, which in combination with the future beach profile estimations will help identify further mitigation measures, if required. The MMO is pleased to see this dialogue and will keep a watching brief on this issue.

### **West Sussex County Council**

- 5.6.1 The MMO notes that the Applicant agrees with WSCC regarding point 2.3.2, that the proposed development will likely have significant impacts on seascape, landscape and visual effects for several local areas. The Applicant summarises that the wider benefits of Rampion 2 must be weighed against the adverse impacts locally (e.g., visually), and that this should be taken into account to achieve net zero carbon emissions in 2050.
- 5.6.2 The MMO has reviewed the Applicant's responses to the WSCC Relevant Representation and understands that the majority of the WSCC concerns are related to onshore issues, and in these instances the MMO fully defer to the WSCC as the local planning authority and to Natural England for matters relating to the natural environment.

### **Other Interested Parties**

- 5.7.1 The MMO has reviewed the Applicant's responses to the Maritime Coastguard Agency and Trinity House and have no comments to make.





## 6. MMO comments on Applicant's Deadline 1 submissions

6.1.1 The MMO acknowledges the revisions to the submitted documents below. The MMO Rampion Case Team have not been able to consult with its technical advisors and will therefore provide detailed responses to these documents separately, or within our Deadline 3 response:

- Chapter 11: Marine mammals (REP1 – 004)
- Outline Fisheries Liaison and Co-existence Plan, Revision B (REP1-014)
- Fish and Shellfish (Figures) (REP1-007)
- In Principle Sensitive Features Mitigation Plan, Revision B (REP1 – 012)
- Benthic - Subtidal benthic characterisation survey report appendices (REP1-036)
- Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 9 - Further information for Action Points 38 and 39 – Underwater Noise (REP1-020)
- Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 10 – Further Information for Action Point 42 – Proximity to Marine Wildlife (REP1-028)
- Applicant's Post Hearing Submission – Issue Specific Hearing 1 Appendix 13 – Further Information for Action Point 45 and 46 – Physical Processes and Benthic (REP1-030)

6.1.2 The MMO may also provide additional responses to the Applicant's comments on our Relevant Representation, and any additional comments will be included in our Deadline 3 response.

## 7. MMO Response to Updated Black Sea Bream Report (PEPD - 023)

### Fisheries Response

7.1.1 The Updated Black Sea Bream Report aims to provide new evidence to inform the Under Water Noise (UWN) modelling and Environmental Impact Assessment (EIA) predictions on the likelihood of significant impacts to Black Sea Bream during their nesting season. No new mitigation measures have been proposed within the report.

7.1.2 Additional peer-reviewed publications have been used in Section 6 to support the discussion on a suitable noise threshold for black seabream such as Radford *et al.* (2016), Kastelein *et al.* (2017) and Hawkins *et al.* (2014), and whilst none of these papers provide a noise threshold for black seabream, they do provide noise thresholds for other fish species (e.g. European seabass and sprat) which can aid decision-making on establishing a suitable threshold.



- 7.1.3 The MMO note that there are a number of outstanding issues relating to impacts to fisheries and fish ecology that have been not yet been addressed. Please refer to our previous responses for further details as there are numerous issues outstanding – key areas include UWN modelling in relation to black seabream and Atlantic herring, the cumulative impact assessment, post-construction monitoring, impacts to black seabream nesting areas during construction of the export cable corridor, and the need for post-construction monitoring.
- 7.1.4 The monitoring report as a standalone document does not change the current position of the MMO regarding the need for temporal mitigation to protect Black Sea Bream during their breeding period (March – July inclusive). The MMO maintain that a precautionary approach should be taken and recommend that no piling be conducted during the whole breeding season of black seabream.
- 7.1.5 As mentioned above, there are a number of outstanding issues relating to impacts to fisheries and fish ecology that have been not yet been addressed. For this reason, it is not yet possible to determine whether additional mitigation measures or monitoring of fisheries and fish ecology are required.
- 7.1.6 The report does not address concerns raised previously by the MMO with regard to Black Sea Bream thresholds. A discussion is presented in Section 6.2.2 of the report which sets out the potential use of noise abatement measures that could be employed during piling to reduce noise to an acceptable level ,i.e. an agreed threshold for black seabream. A threshold of 141 dB SELss – is recommended by the report author as a reasonable precautionary threshold, based on a study of adult European seabass that displayed an initial startle response of between 141 dB SELss and 147.4 dB SELss. It is unclear whether the author is citing results from Radford *et al.* (2016) or Kastelein *et al.* (2017) as the footnotes to reference studies do not make it clear. The MMO have previously highlighted the limitations with using the thresholds from Radford *et al.* (2016) or Kastelein *et al.* (2017) in previous advice, but they are summarised again below for ease:
- The first concern is that whilst European seabass may be anatomically similar to black seabream, the fish used in the study were captive bred specimens and the experiments were conducted in tanks. The MMO must therefore consider whether wild black seabream might respond differently.
  - The next concern is that the European seabass were not engaged in spawning or nesting guarding behaviour, in fact they are broadcast spawners so are not reliant on particular seabed habitats for reproduction, so there is also uncertainty on how wild black seabream might respond if they were exposed to increased noise disturbance during their breeding season. Abandonment of nests by male black seabream will result in nests being untended from a build-up of sediments, algae etc and smothering of eggs in their developmental stage, as well as predation of eggs by other fish and invertebrates.



- The MMO have also previously highlighted that in the study by Kastelein *et al.* (2017), a 50% initial response threshold occurred at an SELss of 131 dB re 1 mPa<sup>2</sup> s for 31 cm fish and 141 dB re 1 mPa<sup>2</sup> s for 44 cm fish; thus, the small fish reacted to lower SELss than the large fish. Black Sea Bream attain reproductive maturity at 30cm, so noting that the smaller seabass of 31cm showed initial responses at a threshold of SELss of 131 dB re 1 mPa<sup>2</sup> s it can be argued this (131dB) threshold is more suitable.
- Given the limitations of the studies outlined above, but acknowledging that 131dB is a very low threshold, in line with our previous advice, we maintain that the threshold of 135 dB SELss, as per Hawkins *et al.*, (2014), should be used as a precautionary approach to modelling. Although still making inferences from a proxy species (sprat), the 135 dB threshold was based on a study of wild sprats *i.e.*, clupeids with greater hearing capability and higher sensitivity to UWN than black seabream and seabass, and as a result this threshold is already considered sufficiently conservative for the purposes of modelling UWN.
- The report author states that ‘there appears to be no evidence to support the use of 135 dB SELss other than that it is lower than 141 dB SELss’. However, as outlined in point 28iv, the 135dB threshold is based on a peer-reviewed paper on a field study involving piling playback with wild sprat which are more sensitive to UWN than black seabream. The study also took place in a quiet lough. For these reasons, the 135dB can be considered precautionary, but less precautionary than if we were to use the threshold of 131dB which was found in the study by Kastelein *et al.* (2017) for seabass that were of the same size as reproductively mature black seabream.

7.1.7 Table 5-1 of the report (summarised below) summarises the maximum, minimum and mean noise levels that were recorded for each month of the monitoring period. The highest average noise levels were recorded in March:

Noise levels in March	Maximum	Minimum	Mean
SPLrms* (dB re 1 µPa)	147.7	106.3	118.4
SPLpeak** (dB re 1 µPa)	165.9	124.6	139.5

\* rms sound pressure level\*\* peak sound pressure level

7.1.8 According to the report author, a summary of the data captured in March show that the average noise levels were driven by consistently higher noise levels during the tidal cycle, not unexplained high noise level events.

7.1.9 A table summarising the statistical noise levels across the whole survey period is presented in Table 6-1 of the report, which shows that:

- The average background noise level over the period was generally around 108.4 dB SPLrms,90 *i.e.* the level was exceeded for 90% of the time.



- A background noise level over 112.1 dB SPLrms,50 was exceeded for 50% of the time.
- A background noise level of 134.3 dB SPLrms,01 was exceeded for 1% of the time. (on average just over 14 minutes a day).

7.1.10 On the basis of the Applicant's opinion that the 135 dB SELss is not an appropriate threshold for black seabream, the report author has suggested a threshold of 141 dB SELss (which they have stated is approximately equivalent to 148 dB SPLrms), based on the threshold observed in European seabass (which is not supported by MMO technical advisors) and notes that this is slightly above the noise levels that are already present. There is no explanation in the report of how the suggested value of 141 dB SELss has been converted to 148 dB SPLrms, or any justification on why it is acceptable to use such a conversion when the noise sources are different (*i.e.*, impulsive vs continuous noise sources). This is needed to contextualise the various SPLrms and SPLpeak values found during the noise monitoring. For example, even if it was appropriate to convert between SPLrms and SELss, it would be useful to understand what the 135 dB SELss would equate to in dB SPLrms and what the statistical noise levels for the 90, 50 and 1 percentiles would equate to in SELss:

- 108.4 dB SPLrms,90 =? dB SELss
- 112.1 dB SPLrms,50 =? dB SELss
- 134.3 dB SPLrms,01 =? dB SELss

7.1.11 Whilst the MMO agree with the author that a threshold of 141 dB SELss (148 dB SPLrms) is below the threshold of 186 dB SELcum for the onset of TTS in fish, and below the threshold of 210 dB SELss for damage to eggs or larvae (Popper *et al.* 2014), the key issue aiming to be addressed is determining a suitable threshold for behavioural effects in Black Sea Bream including abandonment of nests by male black seabream, *i.e.* not physiological damage to fish or damage to eggs and larvae. This comment therefore lacks relevance.

7.1.12 One additional note is that the UWN survey reports on background noise levels from continuous noise sources (e.g. shipping, dredging, and general ambient noise) in the Kingmere MCZ and Rampion 2 area. The data does provide a helpful overview of the overall noise levels that black seabream are exposed to during their breeding season. However, it should be understood that continuous noise is not the same type of noise as that generated by impact piling, which is an impulsive noise source. The noise generated by piling would be an addition to the existing background noise levels.

## Under Water Noise

7.1.13 The report attempts to compare different types of noise (*i.e.*, impulsive vs continuous). Throughout the report, the single strike sound exposure level (SELss) is 'converted' to the SPLrms. For example:



- Section 6.2.2: “Noting that these values are SELss, 135 dB is roughly equivalent to 142 dB SPLRMS....”
- Section 6.2.3: “Therefore 141 dB SELss (approximately equivalent to 148 dB SPLRMS) has been suggested”.

7.1.14 The report notes that “studies into the impact of impulsive underwater noise generally use a different metric to describe the level noise generated, the SELss...This captures well the energy in an impulsive sound but ideally metrics should be compared like-for-like. To provide a more reliable comparison these will be converted to SPLRMS, roughly equivalent to 7 dB greater than an equivalent SELss based on data previously measured by Subacoustech”. Nevertheless, it is not clear how these empirical conversions are being made, and it would be helpful if further contextual clarity was provided. For example, what assumptions have been made regarding the pulse length / number of pulses in 1 minute? (The RMS averaging appears to be done over 1 minute intervals). By definition (see equation shown on page 5, section 3.4), the SEL over 1 second has a value equal to that of the SPLrms. Therefore, if there was one single pulse per second, the SELss and SPLrms would have similar values. Conversely, if SPLrms has higher values than SELss, this implies that there are multiple pulses within 1 second. While this is very plausible in some contexts (e.g., vibropiling noise), it is unlikely to be the case for impact piling.

7.1.15 Furthermore, the MMO would argue that it is not entirely appropriate to apply such conversions to noise thresholds (such as the 135 dB SELss) as this further removes them from their relevant biological context. The best practice for comparing with such thresholds would be to express the generated noise levels (or the measured noise levels, if feasible) in the metric of the thresholds.

7.1.16 The MMO also find the report somewhat misleading in parts. Section 6.2.3 states that “Therefore 141 dB SELss (approximately equivalent to 148 dB SPLRMS) has been suggested. It is slightly above the noise levels that are already present (the baseline monitoring showed that pre-existing noise levels are seen to exceed 140 dB and occasionally reach up to 148 dB)....”. Earlier on, in the Executive Summary, the report also notes that “The 2023 results support the findings of the 2022 survey and demonstrate that noise levels varied generally between 105 dB and 125 dB SPLRMS, although regularly exceeded 135 dB SPLRMS and exceedance of 140 dB SPLRMS was not unusual”. When the MMO look at the figures provided in Appendix A (showing the one-week data summaries), the noise levels only occasionally (and very briefly) exceed 135 dB SPLrms and on some days do not reach this level at all.

7.1.17 While these exceedances appear ‘regular’ when seen over a 6-month interval (Figure 5.1 on page 10 of the report ), the situation is very different when comparing to the piling noise and the associated timescales. While the ambient noise may exceed 135 dB SPLrms for a few minutes per day (e.g., roughly 1% of the time, according to Table 6.1), impact piling will be undertaken for



(potentially) hours at a time (and noise levels might presumably exceed 135 dB rms for the entire duration of piling).

- 7.1.18 Mitigation is not specifically discussed in detail in the report . Of relevance, section 6.2.2 of the document states that “To minimise adverse impacts from piling affecting bream in the Kingmere MCZ, noise reduction should be applied that reduces the risk of avoidance behaviour. As stated above, no criteria are available that can characterise this specific scenario, so previous studies carried out for this Project have referred to research<sup>1,2</sup> based on similar species (sea bass, red seabream) to make a recommendation for a noise limit at the Kingmere MCZ that can be met using commercially available noise abatement systems for piling as Best Practicable Means”.
- 7.1.19 We previously advised that the actual (noise) reduction in dB will depend on the site conditions at Rampion 2, and the source spectra. Frequency is an important component to consider. The efficacy of a noise abatement system to reduce the risk of impact depends on the frequency range at which sound energy is reduced and on the target species, as each species is sensitive to a certain frequency range. Fish, for example, are typically more sensitive to sound at low frequencies, where the noise reduction from noise abatement systems tends to be smaller (See MMO S56 Response).
- 7.1.20 The MMO recommended modelling the effect of noise abatement so that the regulator is aware of the risk reduction options available. It should be clear in the assessment which noise abatement measures, or combinations of measures, are being modelled. Ultimately, to determine the efficacy of such systems at Rampion 2, evidence will be required in the form of measurements of piling noise with and without noise abatement. The MMO understands that the Black Sea Bream spawning (nesting) season is March to July. Therefore, the MMO would recommend obtaining measurements of non-abated piling outside of this window.
- 7.1.21 The report does not present any new information as such relating to the thresholds for black bream. As the report notes, adult European seabass displayed an initial startle response between 141 dB SELss (single strike sound exposure level) and 147.4 dB SELss, which was short-lived (i.e. less than two minutes) at 141 dB SELss. The Applicant maintains that the selection of the lower value of these – 141 dB SELss – is recommended as a reasonable precautionary threshold. The MMO has suggested the use of a lower 135 dB SELss threshold, which was reported as leading to a behavioural reaction in sprat in a quiet inland environment.
- 7.1.22 The MMO note that the Applicant is of the opinion that the 135 dB SELss threshold is not only relevant to a much more sensitive species and derived from a different environment, it is also expected to be difficult to achieve across the Rampion 2 Order Limits, practically, even with two methods of direct noise mitigation (such as a double bubble curtain and attenuated hammer). Therefore



141 dB SELss has been suggested. However, the MMO maintain that the threshold of 135 dB SELss, as per Hawkins et al., (2014), should be used as a precautionary approach to modelling.

Yours faithfully.



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