

Rampion 2 Wind Farm

Post Examination Herring Issues

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1. INTRODUCTION

At the close of the Rampion 2 Offshore Windfarm (Rampion 2) Examination, the Applicant and the MMO were in advanced discussions to agree suitable underwater noise mitigation for spawning Downs stock herring. As detailed in the Applicant's Closing Statement, submitted at Deadline 6 [REP6-233, paragraph 5], the Applicant has continued to seek agreement with the MMO, and update the SoS on any progress prior to determination of the application. As set out in the MMO's Deadline 6 Submission [REP6-302, paragraph 5.7.15], the MMO had two outstanding concerns that affected their confidence in the underwater noise modelling for herring:

- The MMO raised a concern that the herring potential spawning habitat heatmaps submitted at Deadline 1 [REP1-020], and updated by the Applicant at Deadline 4 [REP4-061] were not completely aligned with the heatmap methodologies preferred by the MMO, namely Reach *et al.*, (2013) and MarineSpace (2013). The Applicant updated the heatmaps at Deadline 6 [REP6-250] following the MMO's preferred methodology, but the MMO had not had the opportunity to review this update in time for their Deadline 6 submission [REP6-302]. During a meeting with the MMO on the 16 October 2024, the MMO confirmed that the heatmaps submitted at Deadline 6 are now in accordance with the suggested methodology. Consequently, this concern has now been resolved.
- The MMO also had concerns regarding the level of noise abatement that could be achieved by commitment C-265 (as secured by 11 (1) (k) of the deemed Marine Licence, Schedules 11 and 12 of the **draft Development Consent Order [REP6-007]**) to using double big bubble curtains (DBBC) throughout the piling campaign in the deeper areas of the Rampion 2 Array Area. This concern was raised following the Deadline 4 submission by the Applicant of **Information to support efficacy of noise mitigation / abatement techniques with respect to site conditions at Rampion 2 Offshore Windfarm [REP4-067]** which detailed that the efficacy of DBBC may (depending on how quickly technology advances) be reduced by 1 to 2 decibels (dB) in waters deeper than 40m, reducing the overall predicted dB reduction from -15dB to -13dB. The Applicant has since shared with the MMO noise modelling for herring, showing the underwater noise impact ranges, relative to herring larval densities (displayed as a heatmap) with a predicted -13dB reduction as the worst-case mitigated piling scenario. The updated heatmaps are provided in this document in **Appendix A**.

As a result of the concerns regarding the level of noise abatement that could be achieved, the MMO recommended in its Deadline 6 submission that the following condition be included in the Development Consent Order (DCO):

“(XX) — (1) The undertaker must not undertake pile driving during the herring spawning period.

(2) The “herring spawning period” means a period within 1 November and 31 January, inclusive.”

Following the presentation of **Figure 3 (Appendix A)** to the MMO, which clearly shows that with a -13db noise mitigation, impacts on areas of moderate herring larvae density would be avoided if piling was only undertaken in the western portion of the array area during the herring spawning period. Subsequently, the MMO agreed that a piling ban during the herring spawning period (November to January) across the Array Area would not be required.

The Applicant has agreed the following condition wording with the MMO and provided it in the Statement of Common Ground – Post Examination Herring Issues Marine Management Organisation on a without prejudice basis, should the Secretary of State disagree with the Applicant's position at the close of the Examination (**Applicant's Closing Statement [REP6-233]** paragraph 5.8.19 *et seq.*)—that no significant effects on the Downs herring stock would occur and, as such, a piling ban for spawning herring is not required.

1. No piling activity can commence within the eastern array area during the herring spawning season until a spawning herring piling restriction plan (in accordance with the outline spawning herring piling restriction plan) containing updated underwater noise modelling has been submitted to and approved by the MMO. The updated underwater noise model shall be based on final project parameters to be used to install piles in the eastern array area and shall include details of any verified mitigation measures to be employed.
2. If the herring spawning plan demonstrates that noise levels associated with piling activity in the eastern array area during the herring spawning season will exceed the levels shown on the spawning herring piling restriction plan then no piling activity may be undertaken within the eastern array area during the herring spawning season without the approval of the MMO
3. All piling activity within the eastern array area during the herring spawning season must be undertaken in accordance with the details approved under sub-paragraph (1) or as required as a condition of approval under sub-paragraph (2)
4. In this condition:
 - a) "eastern array area" means the area identified as the eastern array area within the spawning herring piling restriction plan;
 - b) "outline spawning herring piling restriction plan" means the plan certified as the outline spawning herring piling restriction plan by the Secretary of State for the purposes of the Order under article 51; and
 - c) "herring spawning season" means 1 November to 31 January inclusive.

Figure 1, Figure 2 and Figure 3 (Appendix A of this document), display the -13dB noise mitigation, as defined using the MMO's suggested behavioural threshold for herring of 135dB SEL_{ss} (single strike sound exposure level) (as derived from Hawkins *et al.* (2014)).

However, as set out in detail in **Chapter 8: Fish and Shellfish Ecology [REP6-179]** the Applicant considers that 135dB SEL_{ss} suggested by the MMO, is an overly precautionary threshold which is not backed by robust scientific evidence for the following reasons:

- The use of the 135dB SEL_{ss} threshold is not supported in the literature (Hawkins *et al.*, 2014) for use in impact assessments;
- The 135dB SEL_{ss} behavioural threshold is based on a study undertaken within a quiet loch on fish not involved in any particular activity (i.e. not spawning), and it is therefore not considered appropriate to use this threshold within a much noisier area such as the English Channel (which is subject to high levels of anthropogenic activity and noise) as the fish within this area would reasonably be expected to be accustomed to higher levels of noise and would thus have a correspondingly lower sensitivity to disturbance by noise; and
- The 135 dB SEL_{ss} threshold represents only a brief startle response (sudden short-lived changes in swimming speed) in a species known to be particularly sensitive, sprat, and should not be considered suitable to represent the major behavioural changes that would constitute a population level effect on Downs stock herring.

As set out in paragraph 5.8.19 *et seq.* of the **Applicant's Closing Statement [REP6-233]**, the Applicant has maintained the position set out in the Environmental Statement, and through Examination, that there will be no population level effect on spawning herring at the Downs stock spawning ground, as there is no overlap of the recognised spawning ground (as defined by Coull *et al.*, 1998) at a noise level that will disturb spawning adult herring (186dB SEL_{cum} (cumulative sound exposure level)), and no interaction of noise at injurious levels for eggs and larvae (210dB SEL_{cum}) with areas of high larval abundances. The Applicant remains confident, that on the basis of the mitigated underwater noise contours (-15dB mitigation from the use of DBBC (Commitment C-265) (**Commitments Register [REP6-226]**)) presented in **Figure 2** below,

which do not interact with the herring spawning ground (as defined by Coull *et al.*, 1998) or areas of the highest densities of herring larvae, even when adopting the 135 dB SEL_{ss} threshold suggested by the MMO, there is no requirement for a seasonal piling restriction for herring.

Programme Implications

As detailed in paragraph 9.4 the **Applicant’s Closing Statement [REP6-233]** piling bans for both black seabream and spawning herring would elongate the development programme. Preliminary construction modelling has strongly indicated that multiple piling bans would be extremely challenging, leading to an additional year or more of offshore installation activity being required. It would likely result in a reduction of the total capacity of generation that could be installed or could make the project unviable by considerably limiting the project’s prospects of securing funding and getting built. This would be in conflict with the urgent need for renewable energy set out in NPS EN-1 (2011), the Critical National Priority status for offshore wind set out in NPS EN-3 (2023), and the 50 GW by 2030 target for offshore wind set out in the British Energy Security Strategy (2022).

Concluding Remarks

The Applicant maintains that a piling ban during the herring spawning period of November – January is not required and introducing one would place a significant burden on the construction schedule of Rampion 2 (as shown on **Table 1**), particularly when considering the existing commitments of the Applicant regarding the black seabream spawning period of March – July (C-265, C-274, C-280 and C-281), as set out in the **In Principle Sensitive Features Mitigation Plan [REP5-082]** which provides full details of the suite of mitigation measures proposed to reduce underwater noise impacts on spawning black seabream.

Table 1: Piling bans proposed by statutory bodies
Blue indicates the MMOs’ suggested piling ban for herring, grey indicates Natural England’s and the MMO’s suggested piling ban for black seabream

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

2. REFERENCES

Coull, K.A., Johnstone, R. and Rogers, S.I. (1998). Fisheries Sensitivity Maps in British Waters. Aberdeen; UKOOA Ltd

Hawkins, A.D., Roberts, L. and Cheesman, S. (2014). Responses of free-living coastal pelagic fish to impulsive sounds. *Journal of the Acoustic Society of America*, 135(5), pp.3101–3116.

MarineSpace Ltd, ABPmer Ltd, ERM Ltd, Fugro EMU Ltd and Marine Ecological Surveys Ltd, (2013). Environmental Effect Pathways between Marine Aggregate Application Areas and Atlantic Herring Potential Spawning Habitat: Regional Cumulative Impact Assessments. Version 1.0. A report for the British Marine Aggregates Producers Association.

Reach, I.S., Latta P., Alexander, D., Armstrong, S., Backstrom, J., Beagley, E., Murphy, K., Piper, R. and Seiderer, L.J. (2013). Screening Spatial Interactions between Marine Aggregate Application Areas and Atlantic Herring Potential Spawning Areas. A Method Statement produced for the British Marine Aggregates Producers Association

3. APPENDIX A

To address the potential uncertainties of the efficacy of the proposed NAS (DBBC) in water depths of >40m, the Applicant has undertaken modelling of -13dB mitigation for piling operations in the eastern portion of the array area (where water depths mostly exceed 40m). The -13dB mitigated impact contours are presented alongside the -15dB contours in the western array area (where waters are predominantly $\leq 40\text{m}$ in depth) in **Figure 1**, **Figure 2** and **Figure 3**. The unmitigated impact ranges are also provided for context. The impact ranges are presented relative to the Downs stock herring spawning ground, as defined by Coull et al. (1998), and densities of herring larvae (shown as a heatmap), as informed by 10 years of International Herring Larvae Surveys (IHLS) data (2007-2020).

Figure 1 shows the predicted worst case and mitigated (DBBC, -13dB) behavioural response impact ranges for spawning herring, from the piling of monopile foundations, as defined using the 135dB SEL_{ss} threshold (as supported by the MMO) and the 141dB SEL_{ss} impact threshold¹. As evident in **Figure 1**, the -13dB mitigated contour, as defined using the 141dB SEL_{ss} threshold shows a clear reduction in the underwater noise impact ranges. In contrast, the mitigated contour defined using the 135dB SEL_{ss} threshold (the use of which the MMO support), has a slight interaction with moderate densities of herring larvae.

Figure 2 shows the reduced impact ranges afforded by -13dB mitigation in the eastern portion of the array area, where deeper waters are apparent ($\geq 40\text{m}$), relative to the -15dB mitigated impact contours (which were initially provided to the Planning Inspectorate at Deadline 4 [REP4-061]). As evident in **Figure 2**, the mitigated (-13dB) contour from piling in the eastern portion of the array area has a slight interaction with moderate densities of herring larvae. In comparison, the mitigated (-15dB) impact contour, overlaps a much smaller portion of moderate densities of herring larvae.

Figure 3 shows the reduced impact ranges afforded by -13dB mitigation relative to -15dB mitigation contours, from piling operations in the western portion of the array area only, to reflect a commitment for a piling restriction across the eastern portion of the array during the herring spawning season. As evident in **Figure 3**, with piling operations in the western and southeastern extents of the west portion of the array area only, there is no interaction of the impact contours with any areas of moderate densities of herring larvae. It should be acknowledged that water depths in the western portion of the array are predominantly under 40m, and therefore the use of DBBC in this area will achieve -15dB noise abatement (as detailed in **Information to support efficacy of noise mitigation / abatement techniques with respect to site conditions at Rampion 2 Offshore Windfarm [REP4-067]**).

Figure 4 shows the Outline Spawning Herring Piling Restriction Plan, as relative to the condition defined above. The eastern and western array areas as referred to in the condition are clearly defined. The Plan shows the reduced impact ranges afforded by -13dB mitigation in the eastern array area, where deeper waters are apparent ($\geq 40\text{m}$). Reduced impact ranges afforded by -15dB mitigation are also presented, from piling operations in the western portion of the array area only where water depths are predominantly under 40m, and therefore the use of DBBC in this area will achieve -15dB noise abatement (as detailed in **Information to support efficacy of noise mitigation / abatement techniques with respect to site conditions at Rampion 2 Offshore Windfarm [REP4-067]**).

¹ The 141dB SEL_{ss} threshold has been presented for context purposes only; the 141dB SEL_{ss} threshold has been presented by the Applicant as an alternative behavioural impact threshold to the 135dB SEL_{ss} threshold, for sensitive fish species in the Environmental Statement [REP6-179] and throughout Examination [REP1-012, REP3-045, REP4-053, REP5-082].

Figure 1: Predicted worst case and mitigated (DBBC) behavioural response impact ranges (135dB SEL_{ss} and 141dB SEL_{ss}) for spawning herring from the piling of monopile foundations

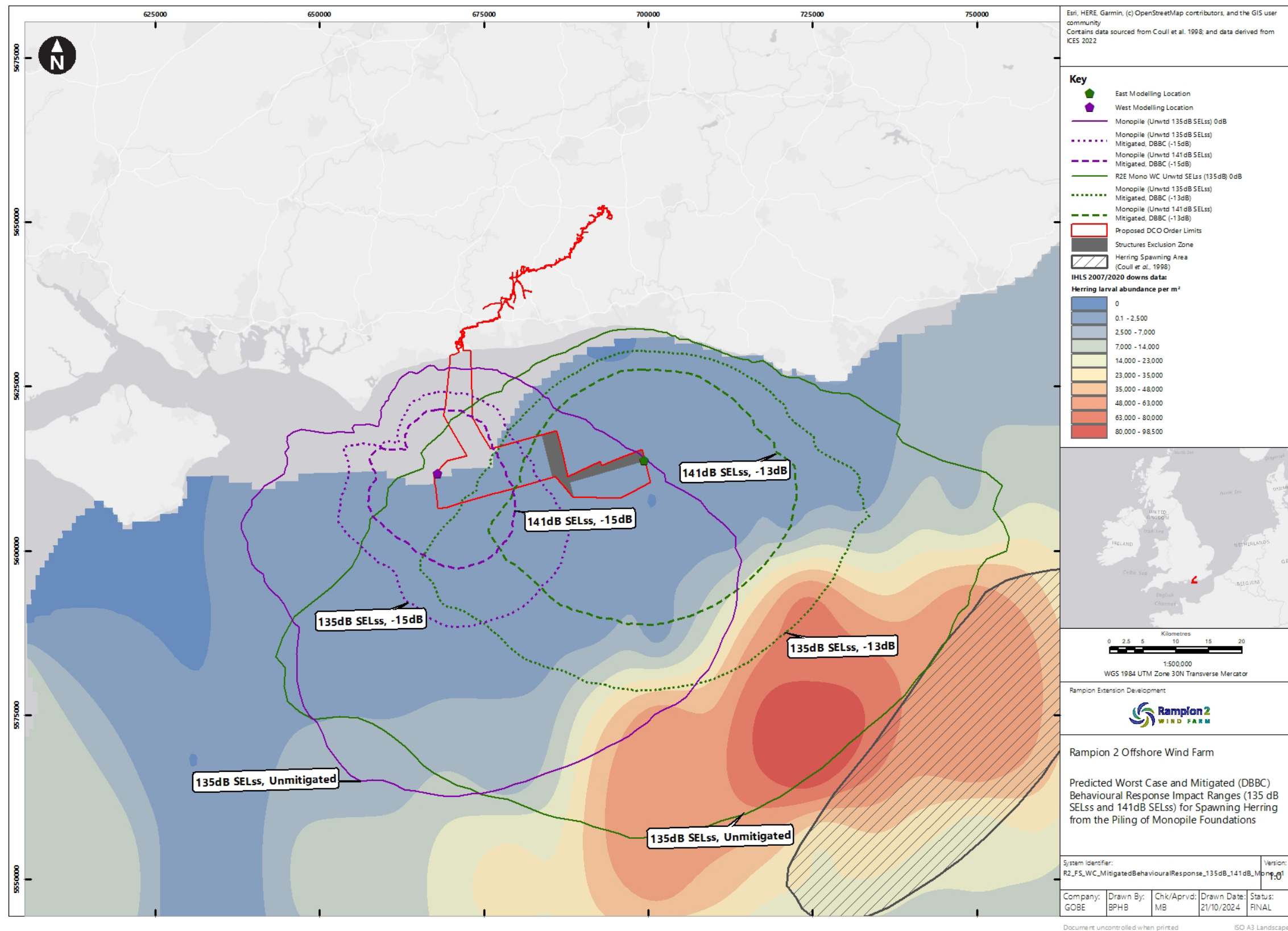


Figure 2: Predicted worst case and mitigated (DBBC) behavioural response impact ranges (135dB SEL_{ss}) for spawning herring from the piling of monopile foundations

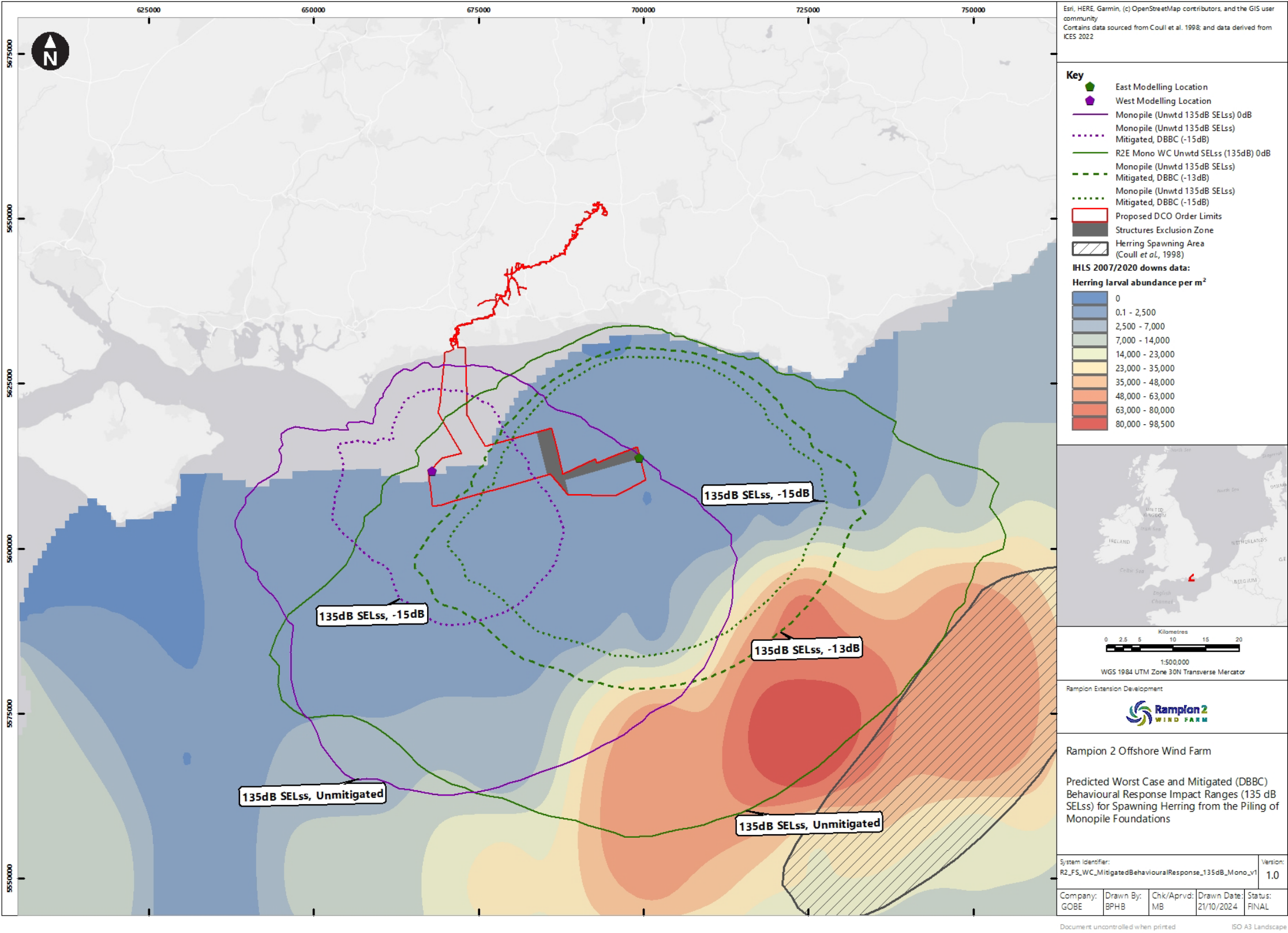


Figure 3: Predicted worst case and mitigated (DBBC, -13dB, -15dB) behavioural response impact ranges (135dB SEL_{ss}) for spawning herring from the piling of monopile foundations (spatial piling restriction)

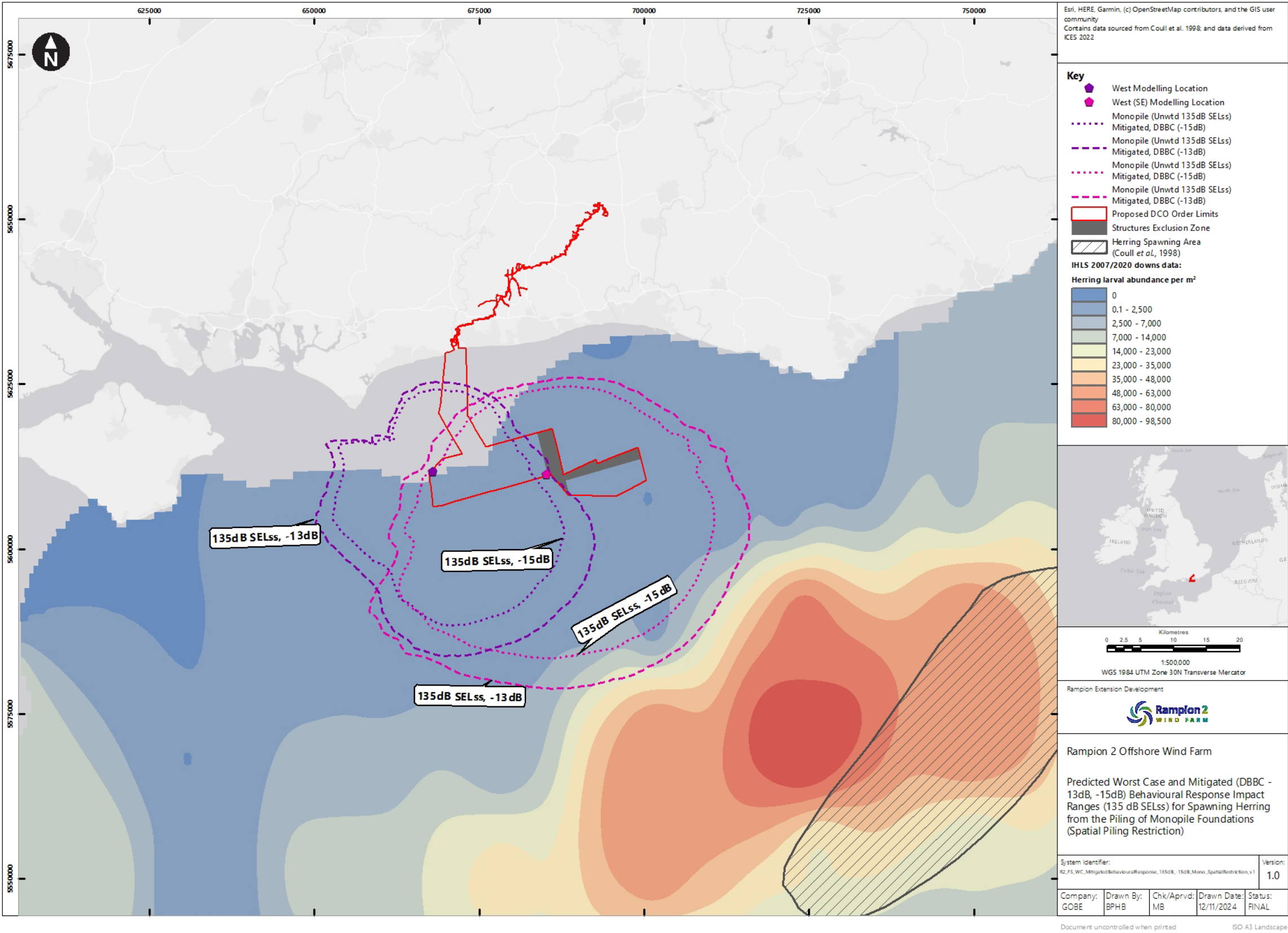


Figure 4: Outline Spawning Herring Piling Restriction Plan

