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Your reference:
BC080001
Our reference:
DCO/2014/000026

31 March 2021

Dear Sir/Madam,

Planning Act 2008: The London Resort Limited, Proposed London Resort Theme Park

Relevant Representation

On 16 February 2021, the Marine Management Organisation (“MMO”) received notice under Section 56 of the Planning Act 2008 (“the 2008 Act”) that the Planning Inspectorate (“PINS”) had accepted an application made by London Resort Limited (the “Applicant”) for a Development Consent Order (“DCO”). This document comprises the MMO’s initial comments in respect of the DCO Application in the form of a relevant representation following consultation with our technical advisors at The Centre for Environment, Fisheries and Aquaculture Science (“Cefas”).

This is without prejudice to any future representation the MMO may make about the DCO Application throughout the examination process. This is also 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,



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1. The Role of the MMO

The MMO was established by the Marine and Coastal Access Act, 2009 (the “2009 Act”) to contribute to sustainable development in the marine area and to promote clean, healthy, safe, productive and biologically diverse oceans and seas.

The responsibilities of the MMO include the licensing of construction works, deposits and removals in English inshore and offshore waters and for Northern Ireland offshore waters by way of a marine licence¹. Inshore waters include any area which is submerged at mean high water spring (“MHWS”) tide. They also include the waters of every estuary, river or channel where the tide flows at MHWS tide. Waters in areas which are closed permanently or intermittently by a lock or other artificial means against the regular action of the tide are included, where seawater flows into or out from the area. The MMO is an interested party for the examination of DCO applications for Nationally Significant Infrastructure Projects (“NSIPs”) in the marine area.

As a prescribed consultee under the Planning Act, 2008 (the “2008 Act”), the MMO advises developers during pre-application on those aspects of a project that may have an impact on the marine area or those who use it. In addition to considering the impacts of any construction, deposit or removal within the marine area, this also includes assessing any risks to human health, other legitimate uses of the sea and any potential impacts on the marine environment from terrestrial works.

In the case of NSIPs, the 2008 Act enables DCO’s for projects which affect the marine environment to include provisions which deem marine licences (“DML”)². Where a marine licence is deemed within a DCO, the MMO is the delivery body responsible for post-consent monitoring, variation, enforcement and revocation of provisions relating to the marine environment. As such, the MMO has a keen interest in ensuring that provisions drafted in a DML enable the MMO to fulfil these obligations.

Alternatively, developers can look to have the marine elements of NSIP’s consented via a marine licence under Part 4 of the 2009 Act. The MMO is the Licensing Authority for the purpose of Part 4 of the 2009 Act, and is also responsible for post-consent monitoring, variation, enforcement and revocation of provisions relating to the marine environment. Where a marine licence is sought under Part 4 of the 2009 Act for an NSIP, the MMO will engage with PINS throughout the DCO process to ensure that NSIPs are considered in their entirety, and do not conflict with any licence issued under Part 4 of the 2009 Act.

The MMO is responsible for post-consent monitoring, variation, enforcement and revocation of provisions relating to the marine environment of consents issued under both Acts. Further information on licensable activities can be found on the MMO’s website³. Further information on the interaction between PINS and the MMO can be found in our joint advice note⁴.

¹ Under Part 4 of the 2009 Act <http://www.legislation.gov.uk/ukpga/2009/23/contents>

² Section 149A of the 2008 Act

³ <https://www.gov.uk/topic/planning-development/marine-licences>

⁴ https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2014/12/Advice-note-11-v3_1.pdf



2. The Proposed Development

The DCO Application is for the construction, operation and maintenance of the London Resort Leisure and entertainment resort, including a theme park, hotels, bars, restaurants, business space, training academy, monorail and associated infrastructure works (“the Project”). In regard to the marine environment the proposed activities are primarily river transport infrastructure on both sides of the Thames, including floating jetty and ferry terminals and the repair or replacement of White’s Jetty. Subject to further structural assessment, remedial works will be carried out to the existing White’s Jetty and Bell’s Wharf on the north-eastern side of the Swanscombe Peninsula to enable use for construction and service deliveries and the removal of waste. In addition, a new floating pontoon jetty is proposed between Bell’ Wharf and Ingress Park for use by Thames Clippers passenger ferry services between the Resort and central London and passenger ferry services from Tilbury.

3. Draft Development Consent Order (DCO) and Deemed Marine Licence (DML)

3.1. Deemed marine Licence

3.1.1. The Application contains one DML.

3.1.2. With reference to Part 1 (Introductory) and the interpretation of maintain. –Some terms appear beyond just maintain. ‘Maintain’ on the MMO website notes - ‘Maintenance’ means the upkeep or repair an existing structure or asset wholly within its existing three-dimensional boundaries.

<https://www.gov.uk/guidance/construction-alteration-or-improvement-of-works>

3.1.3. Part 2, (3). Another article of section 66 is required here for dredging - S66 (9).

3.1.4. Part 2 (5). What is the limit of deviation?

3.1.5. Part 4 (7) All of these conditions are required to have copies of the notification provided to the MMO’s Marine Case Management System within 24 hours of issue.

3.1.6. The DML refers to ‘days’ and ‘weeks’ It would be preferable to use the term ‘days’ and ‘months’ and not interchange with weeks.

3.1.7. United Kingdom Hydrographic Office (UKHO), notification should be 7 working days with notification to MMO 5 working days before, rather than 2 weeks.

3.1.8. The Construction Method Statement timeframe for submission is listed as 13 weeks. The MMO had determined that this should be 3 months, in line with the wording used on other DMLS. This time frame of 3 months should be used throughout the document.

3.1.9. A condition should be added that a written Construction Environmental Management Plan (CEMP), should be submitted and approved by MMO.



- 3.1.10. The MMO note a licence condition should be included such that all dredge disposal volumes known as “Returns” are provided in a timely way to the MMO for inclusion in the UK returns data to OSPAR. For this, a disposal site would need to be included on the licence (this is required if the disposal is to an existing offshore site or a new beneficial use site for which the site would require designation). If disposal at sea is required then the following must be added to the draft DML; disposal activities with a designated (characterised) disposal site stipulated and OSPAR returns. For dredging conditions, there should be mitigation and sampling provided for throughout the lifetime of the project.
- 3.1.11. Part 4 (8) -(1) The licence holder must submit a construction method statement, for approval by the MMO, at least 3 months prior to the commencement of any construction activity.
- 3.1.12. Part 5 (21), *Further information regarding return* is not acceptable. The MMO endeavour to provide a response as soon as possible but must be able to consult for statutory timeframes. Part 5 (21) would hinder the MMO’s ability to protect the marine environment.
- 3.1.13. Part 5 (23), The notice of determination information is not acceptable. The MMO endeavour to provide a response as soon as possible, must be able to consult for statutory timeframes. Part 23 would hinder the MMO’s ability to protect the marine environment.
- 3.1.14. Part 5 (24) Arbitration - Subject to article 47 (procedure in relation to approvals, etc., under Schedule 2) and except where otherwise expressly provided for in this Order and unless otherwise agreed between the parties, any difference under any provision of this Order must be referred to and settled by a single (a) 1978 c. 30. 36 arbitrator to be agreed between the parties or, failing agreement, to be appointed on the application of either party (after giving notice in writing to the other) by the Secretary of State. As has previously been brought to the attention of the Applicant, the MMO do not consider that it should be subject to arbitration. Please see Annex 1 for an outline of this position.
- 3.1.15. In terms of Coastal Processes, the DML does not specify the use of booms to limit vessel wash (which is listed as embedded in 13.37) and this should be added.
- 3.1.16. In the light of the indication in the Hydrodynamics and Sedimentation Assessment Appendix 17.4 that saltmarsh habitat may potentially establish very slowly, the DML should contain provision to ensure that this benefit is realised as proposed, via monitoring to verify that satisfactory performance is being achieved. The MMO suggest that a condition is added to the DML which stipulates monitoring of saltmarsh habitat over the course of the project. The MMO defer to Natural England for appropriate methods to monitor the habitat.
- 3.1.17. In terms of Benthic ecology, potential measures regarding the impact on subtidal mud (a designated feature within the Swanscombe Marine Conservation Zone (MCZ) may require further consideration). The MMO defers to Natural England on this matter.



- 3.1.18. Should option C for the Kent site be required the MMO would support a commitment to mitigate impacts on the tentacled lagoon worm *A. romijni* (a designated feature within the Swanscombe MCZ).
- 3.1.19. In terms of fish ecology most of the mitigation proposed is secured in the DML, e.g.(using quieter installation methods, soft start procedures) However some (Planning pile driving works so that piling does not occur simultaneously at the Kent and Essex project sites, using small piles which require less energy to install, thus reducing noise and vibration and piling at low tide), is not.
- 3.1.20. A temporal piling restriction for all forms of piling between February – September (inclusive) should be included in the DML in order to prevent significant effects to fish species.
- 3.1.21. Other conditions relating to piling best placed in the DML are:
- Using small piles which require less energy to install when compared to those generated by the installation of larger piles (reducing noise and vibration levels generated).
 - Piling at low tide or 'in the dry' (reduces the extent of noise propagation and therefore noise effects on fish).
 - Use of 'soft-start' procedures on commencement of piling in accordance with Joint Nature Conservation Committee 'JNCC' (2017) guidelines (provides mobile receptors with an opportunity to move away from the sound source).
- 3.1.22. Condition 5(d) of the supplied DML contains reference to the requirement for scour protection at all outfalls while condition 5(e) specifies creation of the Saltmarsh habitat.
- 3.1.23. The DML does specify scour protection at outfalls but this is not currently listed as embedded mitigation in 13.37 and so should be added.

3.2. Development Consent Order (DCO)

- 3.2.1.Part 1 (Preliminary). With reference to the interpretation of maintain' – some terms appear beyond just maintain. Maintain on MMO website notes - 'Maintenance' means the upkeep or repair an existing structure or asset wholly within its existing three-dimensional boundaries. <https://www.gov.uk/guidance/construction-alteration-or-improvement-of-works>
- 3.2.2.Part 4 (18) – Discharge of water. Any activities required within the UK marine area may be licensable under the Marine and Coastal Access Act (2009), and therefore the MMO recommend where practicable, inclusion of these activities within the DML. Any works not identified may require a separate Marine Licence in future. The MMO draws the Applicant's attention to the other consenting bodies, such as the Port of London Authority, from whom they may also require consent.
- 3.2.3.Part 4 (20) 'Authority to survey and investigate land' 20 – The MMO reiterates that if any activities which fall within the remit of the MMO are not provided for in the DML,



separate consent may be required from the MMO. As above (3.2.2), the MMO would like to draw the Applicant's attention to other consenting bodies who may require consents to be sought.

- 3.2.4. Part 6 (39) 'Temporary closure of, and works in, the river Thames. The MMO note there may be licensable activities here that need to be captured within the DML.
- 3.2.5. SCHEDULE 2 Articles 3 and 47 REQUIREMENTS (5) (Construction environmental management plan) . The MMO wish to avoid duplication where possible but will require a Construction Environmental Management Plan(CEMP)as a condition in the DML as the MMO is one of the regulators for the marine environment, controlling activities and ensuring compliance in the marine environment. The MMO would consult with Natural England and the Environment Agency during the discharging process.
- 3.2.6. SCHEDULE 2 (19) Navigational Risk. The MMO suggest a condition be added to the DML in relation to this. The MMO would welcome engagement on this condition.
- 3.2.7. SCHEDULE 2 Part 2 (22) (Further information). This does not apply to the MMO – we are a regulatory body, and this may impact our ability to carry out consultations within statutory timeframes and protect the marine environment.
- 3.2.8. SCHEDULE 2 Part 2(23) (Fees). MMO has its own fees/charging structure – <https://www.gov.uk/government/publications/marine-licensing-fees/marine-licensing-fees>

4. Environmental Statement (ES)

4.1. General Comments

- 4.1.1. Chapter 3 Project description - Marsh landscape (3.77) The extent of the salt marsh habitat creation as noted in Chapter 3 Project Description, Marsh Landscape must be clarified.
- 4.1.2. Chapter 5 – Relevant law and policy - Marine planning (starts 5.60) The MMO note this may need to be updated if the draft plan is adopted later this year. It is currently not yet adopted.
- 4.1.3. Chapter 10 – River transport. The MMO acknowledge that the potential effects of decommissioning have not been assessed and assume that impacts should be within what has been assessed for the construction/operational phases. This will require further discussion with relevant regulatory bodies in the future.
- 4.1.4. The MMO defer to the Port of London Authority (PLA)as the Statutory Harbour Authority (SHA), the Maritime and Coastguard Agency (MCA) as the Navigational Safety Body and Trinity House (TH) as the Lighthouse Authority, for further comments on the Navigation Risk Assessment and any marking requirements. If any conditions are required on the DML then welcome engagement from these bodies.
- 4.1.5. There is incorrect reference to our name in 10.31- Marine Maritime Organisation (MMO) and incorrect spelling of licensing 'licencing'.



- 4.1.6. OSPAR/sampling must be considered for any disposal within the marine area-DML conditions may be required.
- 4.1.7. This reference to the draft marine plan may need to be updated during examination if the plan is adopted this year. However, the MMO appreciate consideration of the marine plan(s).

4.2. Coastal Processes

Observations:

- 4.2.1. The site is largely terrestrial and is described geographically in detail in Chapter 2 of the ES. Its functional Thames estuary setting is discussed (with respect to jetties, ports, coastal path and so on), as well as elements of the inter-tidal geomorphology (saltmarshes).
- 4.2.2. The MMO notes that in line with the absence of any specific focus on coastal processes, no description is provided in Chapter 2 of the flows or sedimentary processes which act on the marine margin of the development. The intertidal baseline is established in relevant chapters in terms of species present and designation (e.g., Thames Estuary and Marshes Special Protection Area (SPA), Swanscombe Marine Conservation Zone (MCZ), and various Marshes Sites of Special Scientific Interest (SSSI), but not processes.
- 4.2.3. The hydrodynamic and sedimentation assessment (Appendix 17.4) establishes baseline coastal processes for the present environment via modelling, for comparison with modelled changes due to the proposed development. Appropriate conclusions are drawn with respect to changes affecting the inter-tidal, sub-tidal and compensatory habitat creation areas to allow for reasonable assessment of the impacts on receptors established in the relevant chapters of the ES.
- 4.2.4. Embedded mitigation (as defined in Section 13.37 of the ES) for coastal process impacts consists of: the alteration of flood defence and riverbank lines to provide saltmarsh habitat, to offset losses at the Ferry terminal; and booms at the ferry terminals to minimise boatwash impacts on bank sediments.
- 4.2.5. The cumulative and in-combination impacts assessment chapter does not reference any coastal process, hydrodynamics or sedimentation impacts. Section 13.279 to 13.310 of the ecology chapter considers cumulative effects but also does not reference directly changes to the processes supporting the habitats assessed. Section 17.455 to 17.458 of the Water resources and flood risk Chapter 17 briefly considers cumulative impacts on water quality.
- 4.2.6. The assessment of effects around marine structures are signposted in Section 10.19: "Construction activities connected to the marine infrastructure have the potential to create disturbance to marine habitats through sediment disruption and underwater noise (especially piling activities). These effects are considered in chapters 13: Marine ecology and biodiversity (document reference 6.1.13) and 15: Noise and



vibration (6.1.15) of this ES”.

4.2.7. The Ecology chapter gives particular attention to changes in water quality and the sediment transport regime, habitat loss and disturbance, underwater noise and vibration, use of artificial light, collision risk, the potential for spread or introduction of non-native species, and accidental pollution events.

4.2.8. Coastal process information contributing to this assessment is derived from the Hydrodynamics and Sedimentation Assessment Appendix 17.4. The data presented indicate very localised and largely negligible changes to coastal processes which supports the assessment of effects in the relevant sections of the ecology and water quality chapters.

4.2.9. The assessment does not appear to consider the cumulative loss of intertidal habitat associated with the developments recognised, since it compares the impacts of activities at each site pairwise and in turn, rather than altogether, which would provide a clearer indication of overall impact on the geomorphic integrity of this section of the Thames waterbody. However, the MMO note that the likely cumulative impacts on coastal processes (hydrodynamics and sedimentation) to be insignificant, in agreement with the Applicant’s assessment and that this more complete assessment would not change the outcome.

Changes Required

4.2.10. The Applicant states in Section 1.22 that the responses to the previous advisory comments on the Preliminary Environmental Information Report (PEIR) are distributed throughout the relevant environmental topic chapters. However, as there was no specific coastal process chapter in either the PEIR or the ES, it is difficult to identify whether issues may be outstanding. Please see below for further comments:

4.2.10.1. Previous comments for both Scoping and PEIR expressed concern over some of the definitions and internal inconsistency of terminology. The Applicant has not engaged with these matters and made no changes.

4.2.10.2. Previous inconsistency in reference to potential dredging has been resolved and the impacts of dredging on suspended sediment, infill, hydrodynamics and sedimentation has been assessed.

4.2.10.3. Previous concerns over the assessment of the wastewater treatment works (WWTW) have been partially addressed, both in terms of the use of a temporary cofferdam and scour effects from operational discharges. The presence of the cofferdam has been assessed for its direct impact on defined receptors, but apparently has not been assessed for its effect on river flow and sedimentation. It is not mentioned explicitly in the hydrodynamics study (Appendix 17.4).

4.2.10.4. Since the structure is only temporary and the effects likely to be reversible, the MMO do not consider this a major omission. However, in addition, the impact of scour due to outflow is not directly calculated but is mitigated by the installation of scour protection (concrete mats, or similar).



The scour protection itself represents an intervention in the nearshore but we are unable to determine whether the location and hydrological impact of structures has been presented and assessed in the submission. The Applicant should confirm the extents and locations of scour protection which has been accounted for in calculations of intertidal habitat loss / disturbance.

4.2.11. The ES does not identify coastal processes as receptors and so does not propose direct mitigation (only the embedded mitigation discussed above) for the changes in sedimentation and flow identified, since they are not considered sufficient to have a significant impact on the defined ecological receptors or designated habitats. The only proposed mitigation for impacts to coastal processes is the scour protection proposed for the WWTW outflow. The ES does not explore the design of this structure and whether feasible alternatives have been explored e.g., discharge via an alternative route, but scour aprons are a reasonable measure and is applied widely throughout the Thames at wastewater discharge sites.

4.2.12. Mitigation for the loss of intertidal habitat is via the constructed wetlands. However, it is noted in the Hydrodynamics and Sedimentation Assessment Appendix 17.4 that the sedimentation rates in the selected sites is likely to be very low and that these benefits may be slow to be realised. The MMO is uncertain whether this has been accounted for when considering residual impacts.

4.2.13. Further to the comments made regarding the WWTW outfall – the application contains provision for a further 5 road drainage outfalls, plus additional outfalls at Tilbury riverside terminal and a potential leachate facility. The DML part 5(d) indicates that each outfall would incorporate scour protection. The MMO is unclear if the application has accounted for the total area of intertidal lost to this protection or the locations of each relative to the areas affected by flow changes around the marine structures modelled in the Hydrodynamics and Sedimentation Assessment (Appendix 17.4). This has the potential to degrade an additional area of the intertidal which may not have been fully accounted for in the assessment. Nevertheless, the MMO is satisfied that the impacts of the scour protection will be localised and not significant, however, as stated in 4.2.10.4, the Applicant should confirm the extents and locations of scour protection which has been accounted for in calculations of intertidal habitat loss/disturbance.

4.3. Dredge and Disposal

Observations:

4.3.1. The MMO note the method and quantity of dredging is not currently known, along with the nature of the material.

4.3.2. The MMO note that although the dredge for Bell Wharf is identified in the DCO the management of the dredging will be covered in the Navigational Risk assessment plans to be developed and agreed with MMO and PLA where the potential adverse impacts identified can then be addressed.



Changes required:

- 4.3.3. The MMO note the method and quantity of dredging is not currently known or the nature of the material. Further information is required for the MMO to be able to advise the Applicant regarding the Project. Chapter 10 (10.7) states that *“potential dredging will be required in order to bring Bell Wharf back into a suitable condition, but the extent of the dredge has not been finalised – impacts of the construction of plant require to undertake any dredging is included in Navigational Risk Assessment (pNRA)7. (document reference 6.2.10.1) and at paragraph 10.75 of Chapter 10.* For this assessment the MMO assume that that dredging using a backhoe and hopper barges was used. This would appear acceptable.
- 4.3.4. Chapter 10 (10.31) notes impacts of the construction plant required to undertake any dredging that might be required have been included in the pNRA (document reference 6.2.10.1, PINS reference APP-135) and in 10.75 of Chapter 10 and that any further assessments of dredge materials required during the detailed design of the Project will be conducted to satisfy the requirements of both the Port of London Authority (PLA) and MMO. The MMO agree with this approach but would encourage early engagement with the MMO to allow for adequate time for a sample plan response, sample collection and the analysis of contaminants to be undertaken, as some contaminant analyses take considerable months to acquire for relevant permissions. This will prevent potential timely delays for the Project.
- 4.3.5. Chapter 10 (10.74) indicates that a hopper barge towed from Kent to the project site would be used to remove likely remove in the region of 100,000 metres cube (m³) (60 barge trips). Please note that any deepening or dredging of areas that have not been dredged in the last 10 years or have not been dredged before are likely to be considered “capital dredging”. Samples would be required and need to be representative of the dredge area (both vertically and horizontally) and the analysis selected for the characterisation of those samples. The Applicant should do this by requesting a sample plan from the MMO who can then consult with the PLA to ensure the sampling is adequate for both licensing regimes. Due to historic contamination and use of the River Thames, not all material proposed for dredge material after testing is assessed as suitable for disposal to sea. Therefore, potential dredge material should be sampled and tested in good time for the Applicants to be able to find suitable sites for the material whether on land offshore or beneficially. No disposal options have been considered in the ES. DML requirements relating to this are discussed in section 4 (4.1.12).
- 4.3.6. Chapter 17 (17.253) states dredging techniques will be confirmed by further investigations. The material will either be disposed of in a *“licensed offshore spoil area”* (this should be described as a designated offshore disposal site) or if possible, used beneficially either within the works or at other sites. To determine if the material can be used beneficially (including where mitigation or compensation include restoration or improvement of habitats using dredge material) it should be noted that often the beneficial use site must be analysed, also to determine suitability of the dredge material to go to the receiving site (site characterisation). An assessment of



alternative use including beneficially should be made prior to determination of suitability for disposal either offshore or to land.

- 4.3.7. The MMO note that Chapter 17 (17.316) states that the dredging associated with Option C could have an annual infill rate of approximately 29,700m³ per year, which would require periodic dredging campaigns. The rate is a conservative estimate as the rate is likely to reduce as the dredged area fills and considering the effects of the operating vessels. No discernible effect is seen on suspended sediment concentration. Any DML should consider the future maintenance dredge as well as the initial capital works.
- 4.3.8. The MMO note ES states that potential in-combination effects where Tilbury 2 construction and option C for the Project are undertaken at the same time, the capital dredge at the Thurrock Flexible Generation Plant and Option C or a combination of the operational phase C development impacts with the Thurrock Flexible Generation Plant which are all considered to result in potential for effects of minor adverse significance. No mitigation is suggested with regard to in-combination impacts of the dredging in Section 21 and should be provided. Please note that any mitigation may require the addition of a condition within the DML.
- 4.3.9. Further information on potential disposal/beneficial use sites and potential contingency for contaminated material should be provided. The works should be included in the Environmental Management Plan (currently they are in the pNRA) to ensure full consideration by relevant parties.

4.4. Benthic Ecology

Observations:

- 4.4.1. Samples collected during the 2020 site-specific surveys, including intertidal and subtidal habitats, are summarised in Table 13.8. There is a very brief summary of the baseline marine ecological environment in Table 13.12 and the relevant benthic ecology receptors (habitats and biota) are referenced for the assessments of some pressures in the ES. A more detailed description of the findings of the 2020 benthic surveys (and pre-existing data) is provided in Appendix 13.2. The approach to the surveys appears to be reasonable and the benthic ecology baseline described (habitats and biota) is consistent with what the MMO would expect for the area.
- 4.4.2. The MMO agree that the benthic ecological features of concern are saltmarsh, intertidal mud, and the tentacled lagoon worm *Alkmaria romijni* (the latter two are designated features within the Swanscombe Marine Conservation Zone (MCZ)).
- 4.4.3. The MMO note that it is proposed that effects on saltmarsh will be mitigated by habitat enhancement and erosion prevention methods (see paragraphs 13.37 and 13.267 in the ES). The effects of trampling on sensitive habitats such as saltmarsh will also be limited by restricting access by personnel and construction plant to clearly delineated routes (see paragraph 13.274). The MMO is content with these mitigation measures.



- 4.4.4. The effect of habitat loss on tentacled lagoon worm *A. romijni* is identified as moderate adverse if Option C for the Kent Site is selected, thus requiring of mitigation measures (see paragraphs 13.82 and 13.218 in the ES). MMO agree that this option should be avoided if possible and that, if it cannot be avoided, then mitigation options should be discussed with statutory consultees/regulators, as proposed by the Applicant.
- 4.4.5. The effects of the Project on the spread of invasive non-native species (INNS) and accidental pollution events (oil spills) are considered moderate adverse for intertidal and subtidal habitats (see paragraphs 13.171-13.172 & 13.254-13.257 for INNS and paragraphs 13.179 & 13.266 for accidental pollution events) and, thus, require mitigation. MMO support the application of the project-specific Biosecurity Plan to mitigate the risk of spreading INNS (see paragraph 13.272) and the two Environmental Management Plans to mitigate the risk of oil spills (see paragraph 13.273). MMO recommend the Applicant engages with the EA further any further advice regarding INNS.
- 4.4.6. The MMO would support a commitment to mitigate impacts on the tentacled lagoon worm *Alkmaria romijni* (a designated feature within the Swanscombe MCZ) should Option C for the Kent Site be required.
- 4.4.7. The MMO note that the Applicant has consider the Swanscombe MCZ but take this opportunity to reiterate that the works must comply with the Wildlife and Countryside Act (1981). As such a Wildlife Licence may be required from the Marine Conservation Team (MCT) within the MMO. Early engagement is advised.

Changes required:

- 4.4.8. The MMO agree with the potential impact pathways between pressures and benthic ecology receptors (intertidal species & habitat, subtidal species & habitats, saltmarsh, and Designated sites), which are identified in Table 13.13. MMO do not have any strong disagreements with the conclusions of the assessments in the ES. However, there remain some issues relating to the assessment of significance and the use of modelling that require clarification (please see below for further details):
- 4.4.8.1. The approach used to define value, sensitivity and magnitude for Marine Ecology receptors is reasonable (see Tables 13.3, 13.4 and 13.5 in the ES); however, this approach differs from the approach outlined in the Environmental Impact assessment (EIA) Scope and Methodology section (see Tables 6.2 and 6.3 and the associated text). The Applicant must clarify the reason for this apparent inconsistency.
- 4.4.8.2. Some assessments in the ES make no reference to the sensitivity of receptors, but instead focus only on receptor value and impact magnitude. MMO would expect sensitivity of benthic biota to be incorporated into all assessments where it is applicable (e.g., water quality changes, displacement of sediment/smothering), as per the assessment criteria outlined on pages 13-16 to 13-20 of the ES. This is particularly important for species of conservation importance, such as the tentacled lagoon worm *A. romijni*. Moreover, where sensitivity is assessed it should be made clear how



the conclusion has been reached. For example, it is stated that accidental pollution events during the construction phase would have a moderate adverse effect on benthic ecology receptors because the sensitivity of some species is assessed to be high (see paragraph 13.179). Further details must be provided in order to comment on whether this assessment is valid (e.g., which species were assessed as highly sensitive).

4.4.8.3. There is no quantitative assessment of changes to suspended sediment concentration (SSC) during the construction phase in the section on 'Changes in Water Quality (Suspended Solids and Release of Sediment Chemicals)' in the Marine Ecology chapter of the ES (see paragraphs 13.42-13.52). Rather, it seems that the impact on water quality is focused only on the potential release of contaminants. Similarly, no quantitative assessment of the sediment deposition footprint is reported in the section on 'Physical disturbance and displacement' (see paragraphs 13.89-13.94). Were changes to SSC and sediment deposition modelled? If so, then the results should be incorporated into the Marine Ecology EIA; if not, then an explanation as to why they were not modelled (or otherwise assessed) should be provided. The MMO note that the assessment for Designated Sites suggests that such modelling was conducted (see paragraph 13.62).

4.4.8.4. There is no assessment of the effects of 'Changes in water quality' during the construction phase on saltmarsh, despite Table 13.13 indicating that there is an impact pathway from this pressure to this receptor. This assessment should be conducted, or the receptor should be scoped out for this pressure with justification.

4.4.8.5. Use of artificial lighting' is not highlighted as having a potential impact on benthic ecology receptors in Table 13.13, yet such impacts are assessed in the Marine Ecology EIA (see paragraphs 13.144-13.145 & 13.237-13.238). MMO suggest this is amended but nevertheless agree with the assessment that the effect of artificial light on intertidal habitats and species is likely to be of minor adverse significance.

4.4.8.6. It is concluded that indirect foodweb effects are negligible because the effects on plankton and intertidal and subtidal species/habitats have all been assessed to be of negligible or minor significance following embedded mitigation (see paragraph 13.174). However, a moderate adverse effect was concluded for habitat loss under Option C for the Kent site, albeit linked specifically to the potential effect on *Alkmaria romijni* (see paragraph 13.82). Clarification should be provided on whether a greater than negligible foodweb effect could occur because of the increased habitat loss associated with Option C.

4.4.9. Over 5,000 metres squared (m²) of intertidal mud would be lost within the Swanscombe MCZ due to the construction of the Project (see paragraph 13.73 in the ES). This loss constitutes a very small proportion of this habitat within the area (~0.1% within the Thames Middle Water Framework Directive (WFD) water body) and, therefore, no mitigation measures are proposed. However, as intertidal mud is a



designated feature within the MCZ, any loss of this habitat could arguably be considered unacceptable or necessitate mitigation/compensation measures. MMO will defer to Natural England on this matter as the Statutory Nature Conservation Body (SNCB).

- 4.4.10. The MMO support inclusion of saltmarsh enhancement, measures to prevent saltmarsh erosion, and restricting access to clearly delineated routes to prevent trampling of saltmarsh as requirements of the DCO (see paragraphs 13.37, 13.267 and 13.274 of the ES). The MMO request the Applicant outline measures to be taken ensure the success of the proposed scheme and whether there are there are contingency plans if the measures aren't successful.
- 4.4.11. Potential mitigation measures regarding the impact on subtidal mud (also a designated feature within the Swanscombe MCZ) may require further consideration.
- 4.4.12. Potential cumulative impacts of relevance to benthic ecology receptors are dredging for Tilbury2 and dredging for Thurrock Flexible Generation Plant (see paragraphs 13.291 and 13.298-13.300 of the ES). More information is needed to support the claim that the cumulative impact of simultaneous dredging activities would not be greater than the impacts in isolation. If this cannot be confirmed, then simultaneous dredging should be avoided, if possible.

4.5. Fish Ecology

Observations:

- 4.5.1. A dedicated characterisation of the environment for fish has not been presented as a standalone section in the ES. Instead the report has identified the fish species present in the vicinity of the Project site within the impact assessments. Specifically, the report recognises that the Thames Estuary provides spawning and nursery grounds for Dover sole, herring and lemon sole and also serves as a nursery ground for European seabass. Migratory species and species of conservation importance found in the Thames Estuary for part or all of their life stages have also been recognised, including smelt, European eel, Atlantic salmon, sea trout, river lamprey, sea lamprey, twaite shad and allis shad. The approach used is adequate, though the MMO would have expected a high-level description or table of the sensitive spawning and migration seasons of fish to have been included within the assessments.
- 4.5.2. The additional information provided within Appendices 13.3, 13.4, 13.5 and 13.6 presents the results of intertidal and subtidal benthic and fish ecology surveys undertaken to support the EIA. These reports provide suitable evidence to support the overall characterisation of fisheries for the Project Site and surrounding area.
- 4.5.3. Following the above, the MMO are content that potential impacts to fish receptor species have been assessed appropriately according to the nature of each activity.
- 4.5.4. MMO note that at PEIR stage, dredging was no longer included within the schedule of works. However, dredging is now proposed (under Option C) and an appropriate assessment of impacts to fish receptors has been included in the ES.



4.5.5. As stated in the PEIR, an assessment of impacts to fish from underwater noise and vibration has now been presented which uses the Popper *et al.* (2014) guidance to inform the assessment. This is appropriate.

4.5.6. The MMO note the ES recognises that the effects of underwater noise and vibration arising from piling activities have the greatest potential to cause significant adverse impacts to marine and migratory fish. The assessment of impacts to fish from underwater noise and vibration has identified the potential physiological and behavioural effects of noise on fish. Fish species have been classified within the categories described by Popper *et al.* (2014), according to their hearing capabilities. Underwater noise modelling has not been undertaken to inform the assessment, although case studies of piling at other locations have been used to support the assessment.

4.5.7. The MMO note that due to uncertainties regarding the timing of the construction programme it is not possible to determine whether the impacts of noise and vibration arising from piling will overlap with the 'sensitive' seasons of fish (e.g. periods of migration). Furthermore, in the absence of an accurate underwater noise assessment informed by modelling, to determine the expected range of noise propagation from piling, it is not possible to determine whether underwater noise will cause an acoustic 'barrier' to fish movement. The Applicant has recognised the uncertainties regarding the construction schedule within the assessment and concluded that there is potential for moderate adverse significance effects on fish to occur. On this basis, the Applicant has proposed a series of mitigation measures relating to piling. The MMO have highlighted in 4.1.19 and 4.1.20 of this document that these need to be added to the DML. They are as follows:

- a) Planning pile driving works so that piling does not occur simultaneously at the Kent and Essex project sites.
- b) Using a quieter installation method than percussive piling, such as vibro-piling or rotary auger drilling, depending on local geology.
- c) Using small piles which require less energy to install, thus reducing noise and vibration levels generated.
- d) Piling at low tide when intertidal areas will be exposed to air and noise will not propagate as far through the water column.
- e) Employ 'soft-start' procedures on commencement of piling to provide mobile receptors an opportunity to move away from the sound source.

4.5.8. A high-level cumulative assessment has been presented which has identified a potential overlap in construction activities for the Project sites with Tilbury 2, Thurrock Flexible Generation Plant, The Pier, Crest Nicholson and Purfleet Centre Regeneration Operation.

4.5.9. The MMO agree with the conclusion that there would be potential for effects of minor adverse significance providing the temporal piling restriction is captured within the DML.

Changes required:



- 4.5.10. MMO advice to the Applicant during review of the PEIR noted that a number of paragraphs referred to fish as '*highly mobile and could swim away from the area if disturbed*'. MMO highlight that these statements are still used within the ES and wish to reiterate that this statement is too generalised as it overlooked the physiological factors in fish such as size and swimming capabilities.
- 4.5.11. The Applicant has also proposed that they will develop a construction programme that avoids piling at sensitive times of the year including fish migration and spawning periods, if it is required in addition to the mitigation measures proposed in points a – e (see above), due to the uncertainties regarding the potential for noise to create an acoustic 'barrier' to fish movement and migration, and because of the uncertainties regarding the timing of construction activities, there is potential for significant adverse impacts to fish to occur.
- 4.5.12. Accordingly, the MMO recommend that a temporal restriction on piling activity should be applied to the marine licence, based on the sensitive seasons of Thames fish of conservation importance. MMO would recommend engagement with the Environment Agency as migratory fish are within their jurisdiction. The sensitive season for those species of conservation importance can be broadly outlined as follows; February – April (inclusive) for smelt migration and spawning, April to September (inclusive) for adult Atlantic salmon and sea trout upstream migration, and April to June (inclusive) for salmon and sea trout smolts downstream migration. MMO therefore recommend that no underwater piling of any kind is permitted between February – September (inclusive) in order to prevent significant adverse effects of underwater noise to the aforementioned species. MMO note that any seasonal restrictions will need to be included as a condition on the DML. (See part 4.1 of this document).
- 4.5.13. Of the mitigation measures proposed (please see 6.5.7 above), some have not been captured within the DML. The onus should be on the Applicant to refine their construction programme as their project design evolves and becomes finalised in order to adopt mitigation measures a, c and d under a Construction Environmental Management Plan (CEMP) and/or through conditions on the DML.
- 4.5.14. The MMO has made further comments in relation to mitigation required to prevent/minimise any impacts to fish in 4.6 (Underwater noise).

4.6. Underwater Noise

Observations:

- 4.6.1. MMO raised a comment previously during the PEIR process that detailed information on each specific activity had not been provided, such as the number of piles required, the length of time required to complete each activity, or the expected months of the year when work will be taking place. Chapter 13 (13.103) of the ES confirms that the largest pile used for the project will be 2 metres (m) in diameter, and provides the number of piles that will be required:

- Two 2 m diameter piles for the Roll on-Roll off (Ro-Ro) slipway;
- Four 1 m diameter piles for the Ro-Ro gangway;



- Two 0.9 m piles for the passenger pier at the Kent Project Site;
- Eight 0.9 m diameter piles for the extension of the jetty at the Essex Project Site.
- Piles for the cofferdam would likely be AZ steel sheets which are generally smaller than the 1-2 m diameter piles.

4.6.2. The MMO note it is still not known at this stage of the project when piling will take place (including duration of piling operations) and so a worst-case scenario is assumed where piling may take place at any time of year.

4.6.3. MMO note that no construction works will be taking place at night. General construction hours will be 08.00 hours to 18.00 hours Monday to Friday and 08.00 hours to 13.00 hours on Saturdays, with no working on Sundays without prior agreement from the relevant local authority (para 13.105). This, as highlighted in the assessment, will provide windows of no piling or construction activity when fish could move past the area. Note that this measure will likely primarily benefit those species that are active or migrate during the night.

4.6.4. During the PEIR consultation, a reference was requested to support the piling noise study and estimated noise levels mentioned in this report. The reference has now been provided in Chapter 13 (13.103).

4.6.5. Also, during the PEIR consultation, it was unclear how many vessels are likely to be required for the construction works. The ES states that up to 10 construction barges may travel to the Kent and Essex Project Sites a day during the construction period. The MMO note 13.138 and support the approach that many construction vessels will use anchors to remain in position whilst working on site, and so will have engines switched off thereby generating less noise.

4.6.6. The MMO support the proposed mitigation presented in 13.269 to reduce the potential effects of underwater noise and vibration. For further comments regarding piling mitigation please see 4.5.7 of this response.

4.6.7. The MMO supports the measure to develop a construction programme that avoids piling at sensitive times of the year, including fish and spawning periods in the tidal River Thames. Please see comments provided in 3.1.20 of this response for the MMO's recommendation of a temporal piling restriction.

4.6.8. Piling will be required for the new passenger pier at the Kent Project Site, extension of the jetty and mooring area at the Essex Project Site, and potentially for cofferdams (if required) during the installation of outfalls and saltmarsh creation. The assessment has assumed a worst-case scenario that piles will be installed using percussive piling. Noise will also be generated by dredging activity, and by barges and other boats utilised to construct the new jetties and mooring structures. It is estimated 80% of construction materials would be delivered by river.

4.6.9. Regarding the operational phase, noise and vibration would be generated by the vessels and Clipper ferries utilising the new jetties and mooring structures. The new passenger ferry between the Essex Project Site and the Kent Project Site is expected to operate with 84 movements per day and a new passenger service between central



London and the proposed development will comprise 54 movements per day.

4.6.10. Regarding the operational phase, noise and vibration would be generated by the vessels and Clipper ferries utilising the new jetties and mooring structures. The new passenger ferry between the Essex Project Site and the Kent Project Site is expected to operate with 84 movements per day and a new passenger service between central London and the proposed development will comprise 54 movements per day.

4.6.11. Cumulative effects are considered from 13.279 onwards in Chapter 13. A number of other projects have been identified that will also be undertaking piling works and dredging within the River Thames and have increased vessel traffic.

4.6.12. A desk-based assessment has been undertaken (i.e. no site-specific modelling has been conducted). The MMO are generally in agreement with the conclusions presented- regarding underwater noise i.e. that during construction, the effects on fish species are likely to be of minor adverse significance or moderate adverse significance (depending on the hearing group), with potential effects including masking, behavioural effects, Temporary Threshold Shift (TTS) and injury. For marine mammals, the significance of effect has been assessed as moderate adverse significance, with potential effects including auditory injury.

Changes required:

4.6.13. The conclusions for the increase in underwater noise and vibration during the operational phase are presented from para 13.221. However:

- The MMO note that 13.223 appears to be referring to construction phase, rather than the operational phase.
- The MMO note 13.226 states that “*the number of vessels that will be used for operational activities for the Proposed Development is not currently known and so the duration and frequency of vessel noise cannot be determined. Taking account of the points indicated above, however, the potential effects of noise and vibration on marine mammals from vessels is assessed to be of minor adverse significance. This will be confirmed through further assessment at the ES stage*”. Further information on vessel activity has been provided, so it appears that this section may not have been updated since the PEIR.
- The MMO note for 13.107 and Table 13.15 it doesn't appear as though the values provided in Table 13.15 have any bearing on the actual assessment, but please note that root means square (rms) metric is the correct metric for vessel noise (the MMO is unsure as to why the peak-peak extrapolated noise levels have been provided in this table).

4.6.14. It should be noted that during piling operations, there may also be the risk of underwater noise creating an acoustic barrier to fish movement within the river although it is the understanding of the MMO that this has not explicitly mentioned in the ES. MMO recommend that this is noted by the Applicant.

4.7. Commercial Fisheries



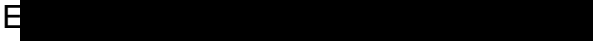
Observations:

4.7.1. Due to the location of the Project there is unlikely to be any significant impacts on commercial fishing operations from construction activities and/or once operational.

4.7.2. For further comments on fish ecology and fisheries please refer to 4.5 above.



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References

JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys, JNCC, August 2017.

Popper, A.N., Hawkins, A.D., Fay, R.R., Mann, D.A., Bartol, S., Carlson, T.J., Coombs, S., Ellison, W.T., Gentry, R.L., Halvorsen, M.B., Løkkeborg, S., Rogers, P.H., Southall, B., Zeddes, D.G. & Tavalga, W.N. (2014). Asa S3/Sc1.4 Tr-(2014) Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report Prepared by ANSI-Accredited Standards Committee S3/Sc1 a (Springerbriefs in Oceanography).



Annex 1

The MMO has provided its position on arbitration to PINS for other DCO applications. For convenience it is summarised below:

When the MMO was created by Parliament to manage marine resources and regulate activities in the marine environment, the Secretary of State delegated his/her functions to the MMO under the 2009 Act. As both the role of the Secretary of State (in determining DCO applications) and the role of the MMO (as a regulator for activities in the marine environment) are recognised by the 2008 Act, the responsibility for the DML passes from the Secretary of State to the MMO once granted. The MMO is responsible for any post-consent approvals or variations, and any enforcement actions, variations, suspensions or revocations associated with the DMLs.

It was not the intention of Parliament to create separate marine licensing regimes following different controls applied to the marine environment. In fact, one of the aims of the 2008 Act is the provision of a 'one stop shop' for applicants seeking consent for a NSIP's. The new regime allows for the applicant to choose whether to include a DML issued under the 2009 Act within the DCO provision or apply to the MMO for a stand-alone licence covering all activities in the marine environment. In any case, it is crucial that consistency is maintained between DMLs granted through the provision of a DCO, and Marine Licences issued directly by the MMO independent of the DCO process

It is the MMO's opinion that the referral to arbitration in situations where 'difference' may arise, is contrary to the intention of Parliament and usurps the MMO's role as regulator for activities in the marine environment. Considering the draft DMLs, the MMO believes that the 'differences' to which arbitration would be applied are those situations in which the MMO is required to give further consent or approval. These situations appear to arise when small re-determinations of aspects of the marine licence process have to take place.

Generally, the MMO considers these to be technical determinations that fall properly to the MMO to make, (as the expert regulator in this field and the body created by Parliament for this purpose), and that MMO's determinations in this regard should not be open to challenge through an arbitration process. Furthermore, once the DCO is granted, the DML falls to be dealt with as any other Marine Licence, and any decisions and determinations made once a DML is granted fall into the regime set out in the 2009 Act. Any decisions or actions the MMO carries out in respect of a DML should not be made subject to anything other than the normal approach under the 2009 Act. To do so introduces inconsistency and potentially unfairness across a regulated community. In the case of any disagreement which may arise between the applicant and the MMO throughout this process, there is already a mechanism in place within that regime to challenge a decision through the existing appeal routes under Section 73 of 2009 Act. The MMO feels it is inappropriate to take such decision relating to post consent issues with a DML outside of the normal mechanisms available to challenge such decisions, and to apply arbitration.

The MMO considers that Article 43 would shift the MMO's decision making responsibility from the hands of the regulator with primary responsibility for administering the marine licensing regime to an independent arbitrator. This would be contrary to the intention of Parliament set out in the 2009 Act and would potentially usurp the MMO's role as a regulator. The MMO therefore requests that the MMO is explicitly not subjected to these



provisions, in line with the recommendation of the Planning Inspectorate in their proposed changes to the draft DCO for the Hornsea Three Offshore Wind Farm (Relevant Representation PD-017: The Examining Authority's Schedule of Changes to the draft DCO).

