The London Resort Development Consent Order

BC080001

Environmental Statement
Volume 2: Appendices

Appendix 13.1 – Marine Ecology and Biodiveristy Consultation

Document reference: 6.2.13.1
Revision: 00

December 2020

Planning Act 2008
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009
Regulation 5(2)(a)
The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
Regulation 12(1)

[This page is intentionally left blank]

Revisions

Revision	Description	Issued by	Date	Approved by
00	Issue for DCO Submission	RA	24/12/2020	APEM/MH

The Environmental Dimension Partnership Ltd
Tithe Barn
Barnsley Park Estate
Barnsley
Cirencester
Gloucestershire
GL7 5EG

[This page is intentionally left blank]

Executive Summary

This appendix provides details of stakeholder's comments during the Scoping and Preliminary Environmental Information Report (PEIR) phases of the Environmental Impact Assessment (EIA) process in relation to Marine Ecology and Biodiversity. An indication of how comments have been addressed has been provided.

Contents

[This page is intentionally left blank]

List of Tables

[This page is intentionally left blank]

Glossary

CEMP	Construction Environmental Management Plan
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ES	Environmental Statement
EQS	Environmental Quality Standards
HRA	Habitat Regulations Assessment
KCC	Kent County Council
MCAA	Marine and Coastal Access Act
MCZ	Marine Conservation Zone
MMO	Marine Management Organisation
MPA	Marine Protected Area
NE	Natural England
PEIR	Preliminary Environmental Impact Assessment
PINS	Planning Inspectorate
PLA	Port of London Authority
Ro-Ro	Roll-On Roll-Off
SSSI	Site of Special Scientific Interest
SoS	Secretary of State
WFD	Water Framework Directive

[This page is intentionally left blank]

Chapter One ◆ PEIR Consultation

SCREENING

1.1 The table below outlines the comments received by consultees on the Preliminary Environmental Information Report (PEIR) in 2020 (Table 1-1). Details on comments from consultees in relation to marine ecology and biodiversity during scoping in 2020 are provided in ES Chapter 13: *Marine Ecology and Biodiversity* (document reference: 6.1.13).

[This page is intentionally left blank]

Table 1-1. Summary of Consultation Responses on the Preliminary Environmental Information Report.

Consultee	Response	How the response has been addressed
Buglife	Potential impacts on the Swanscombe Marine Conservation Zone The proposal is likely to cause both direct and indirect impacts to the Swanscombe Marine Conservation Zone (MCZ). The Swanscombe MCZ was designated in 2019 for the nationally scarce Tentacled lagoon worm (*Alkmaria romijni*) and its intertidal mud habitat, under the Marine and Coastal Access Act (MCAA) (2009). The proposed ferry terminal and jetty are within the MCZ but Paragraph 13.84 worryingly dismisses the impacts, despite the species being vulnerable to sediment disturbance and Natural England raising concerns. It is essential that the applicant works with Natural England to ensure that impacts on the MCZ area properly addressed.	Effects on the Swanscombe MCZ are addressed within Appendix 13.8 MCZ Assessment (document reference: 6.2.13.8). Consultation has been held with Natural England in relation to the Proposed Development and the MCZ and its features.
Natural England	Based upon the information provided, we advise that the London Resort proposal is likely to result in significant direct and indirect impacts to local, nationally and internationally designated nature and geological conservation sites, protected species and a number of priority habitats and species of significant nature conservation value. In summary, we advise that the PEIR has identified that the proposal will result in: Direct loss of habitat from within the Swanscombe Marine Conservation Zone and significant indirect impacts.	Effects on the Swanscombe MCZ are addressed within Appendix 13.8: *MCZ Assessment* (document reference: 6.2.13.8). When considering the feature 'intertidal mud', the assessment has concluded that for Option A, B and C it is considered unlikely the Proposed Development will hinder the achievement of the conservation objectives stated for the MCZ and the public authority would be able to exercise its functions to further the conservation objectives stated for the MCZ. When considering the feature 'tentacled lagoon worm' under Option C it is considered that there is a potential significant risk of hindering the conservation objective of Swanscombe MCZ. It is considered that Options A and B are less likely to hinder the conservation objective of Swanscombe MCZ. For this reason Option C will only be considered further if Options A and B prove to be unfeasible. NE has reviewed a draft MCZ assessment and recommended that in relation to tentacled lagoon worm, Stage 2 assessment would likely be required for Options A, B and C.
Environment Agency	Kent project site Waste Water location and its potential impact on the Marine Conversation Zone (MCZ) should be included in the EIA. The flows in terms of physical impact as well as the chemical or temperature change will all need to be considered, and the placement of the outfall is therefore crucial. It is not acceptable to exclude this. Tilbury Pier Extension The ES will need to confirm why dredging will not be required, i.e. we will need to see current depth and sediment information to confirm that there is sufficient water to avoid this. This applies to both sites. Saltmarsh and Mudflat losses should be provided in the context of the inner Thames area, rather than looking at the entire estuary. Saltmarsh in particular is a very rare habitat upstream of Gravesend and many areas of inter-tidal mud are heavily impacted by river uses on the Thames. There needs to be an explanation of why rare priority habitats are not being avoided in the hierarchy of assessing the environmental impact, particularly given their rarity in this part of	The effects of changes in water quality as a result of discharges from the waste water treatment facility are considered in Paragraph 13.202 – 13.216 of ES Chapter 13: *Marine Ecology and Biodiversity* (document reference: 6.1.13). The locations of the outfalls have been provided in Chapter 17: *Water Resources and Flood Risk*. There will not be a temperature change caused by waste water. Dredging has been considered as Option C within ES Chapter 13 : *Marine Ecology and Biodiversity* (document reference: 6.1.13). Dredging is not required at the Port of Tilbury which already provides berthing for vessels. Habitat loss has been considered in terms of the Thames Middle WFD water body, which was considered to be a suitable spatial extent (rather than the entire estuary) and is an area for which extents of specific habitat types are readily available from the EA. The mitigation hierarchy has been followed and text explaining this has been included within Paragraph 13.22 of ES Chapter 13: *Marine Ecology and Biodiversity* (document reference: 6.1.13).

Consultee	Response	How the response has been addressed
	the estuary, and the legal protection afforded the inter-tidal mud within the MCZ.	The mitigation hierarchy is 'Avoid'; 'Reduce, moderate, minimise'; 'Rescue (relocation, translocation)'; 'Repair, reinstate, restore'; 'Offset'; 'Compensate'. The first step of the mitigation hierarchy is avoid. Numerous alternative sites have been considered and considerations applied when determining the proposed location of the London Resort on Swanscombe Peninsula (see ES chapter Four: *Project Development and Alternatives*). With the decision to construct the jetty at the proposed location, the next aspect of the mitigation hierarchy is to reduce, moderate and minimise. Efforts have been made to minimise the footprint of infrastructure in the intertidal and subtidal zone while still allowing the proposed new ferry terminal and associated structures to operate as effectively as they need to, to service the requirements of the Proposed Development and meet building regulations. Other measures are proposed to minimise potential effects of the project on marine ecology receptors. The next step of the mitigation hierarchy is rescue 'relocation/translocation', however, relocation of intertidal mud or tentacled lagoon worm is not considered a feasible option for reasons including the fact populations are predominantly subtidal populations, they are patchily distributed and cannot be targeted, there are strong tidal currents, and tentacled lagoon worm has specific salinity/substate requirements. The proposed habitat creation for saltmarsh in the area (see ES Appendix 12.3: *Ecological Mitigation and Management Framework*, document reference: 12.2.12.3) will have aspects of restoring some areas of the saltmarsh, potentially offsetting some loss of intertidal mud and compensating for loss of saltmarsh. Opportunities for creation of areas of intertidal mud will be explored when finalising the creation plans for additional saltmarsh habitat.
	Loss of mudflat within the MCZ is not compatible with the requirements of positive management of the site. Any loss of priority habitat should be fully compensated for. Sub-tidal losses. Given the legal protection afforded to the tentacled lagoon worm, the MCZ designation, and therefore for the high priority of retaining sub tidal habitats at this location on the Thames, we question how these losses are being assessed as minor adverse.	When assessing subtidal losses the area of footprint of the Proposed Development in the subtidal zone has been considered with the knowledge that suitable habitat for tentacled lagoon worm is present on the western section of the peninsula (with most records to the west of the proposed development area). The methods for assessment taking into account conservation value or receptors has been clearly outlined in the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13). An MCZ assessment (Appendix 13.8, document reference: 6.2.13.8) has been produced specifically to assess potential effects on the intertidal mud and tentacled lagoon worm MCZ features.
	Changes in hydrodynamics and sediment accretion and erosion are particularly pertinent to the MCZ and saltmarsh areas. No information is presented on how this modelling will be conducted. We are not aware of any known modal for the specific vessels proposed to be used at this site. Therefore this needs a much better explanation.	Changes in sediment accretion and erosion as a result of the permanent structures to be constructed have been modelled and the results are provided as a standalone report (Appendix 17.4: *Hydrodynamic and sedimentation assessment*, document ref: 6.2.17.4). The findings of this model are provided within the ES Chapter 13: *Marine Ecology and Biodiversity* (document reference: 6.1.13). Effects from boatwash have been assessed qualitatively and vessel movements have not been included in the model.
	Fisheries Generally, the PEIR documents correctly characterise the main fisheries receptors and issues that we would expect to see. As work progresses we would expect to see more detail on specific elements of the scheme and would encourage regular meetings/discussions with the	Ongoing consultation with the EA has been conducted including meetings to discuss potential designs for intakes for a Combined Heat and Power Plant (now no longer included within the design), designs for the passenger pier and saltmarsh creation (see the Consultation Report (document ref: 5.1). There are no plans for abstraction of water from the Thames.

Consultee	Response	How the response has been addressed
	developer's teams and other regulators to ensure early identification of any new risks or changes to what has been described. The proposed Combined Heat and Power plant should be discussed in the future ES, with specific reference to its fisheries implications. The screening proposed and how this will mitigate its impacts.	The Combined Heat and Power Plant has been removed from the project design.
Kent Wildlife Trust	Kent Wildlife Trust has the following concerns on the basis of the information submitted in the PEIR: The mitigation hierarchy has not been applied when proposing mitigation throughout the PEIR The impacts of disturbance and habitat loss on qualifying features of the Swanscombe Marine Conservation Zone have not been properly assessed nor mitigated.	The mitigation hierarchy has been followed and text explaining this has been included within the ES. See response to Environment Agency comment above outlining the mitigation hierarchy and related considerations. Effects on the Swanscombe MCZ are addressed within Appendix 13.8 MCZ Assessment (document reference: 6.2.13.8).
Gravesham Borough Council	66. The proposed analysis that needs to be done and that the designating of the Swanscombe Marine Conservation Zone has been taken on board. It is noted that a sensitive lighting strategy is under consideration for the marine as well as the land based environment. No further comment is offered as this stage.	Noted - the Outline Lighting Strategy is available as Document 7.10: Lighting Statement.
Environment Agency	Chapter 13: Marine Ecology 13.12 Boat wash, from fast ferry/passenger vessels should be assessed with regard to the effects of greatly increased boat movements, combined with high energy, fast moving vessel wash upon intertidal habitats. Especially in the jetty areas where vessels will be accelerating and decelerating at all points of the tide. Maintenance dredging requirements should also be considered within the ES. 13.36 It is important to note that if there are major changes to the scheme that then led to different areas of the site or different habitat types undergoing changes or losses, then additional survey work may be required in order to assess these changes. For example; relocation of the jetty structures, capital dredging of foreshore areas and similar activities. 13.43 We disagree with this assumption. The physical footprint and impact of the proposed discharge will need to be considered as part of the ES. This assessment should include the discharge and the infrastructure needed, including the physical footprint of the outfall structure, any proposed scour protection, location and impact of any pipeline, construction method and duration (marine works on the foreshore would need to be assessed). Appropriate mitigation would need to be identified and agreed for these impacts. 13.49 Any lighting used should be aimed away from the water in order to prevent any disturbances to migratory marine species. Direct lighting of the watercourse should be avoided. 13.50 We seek clarity on whether the saltmarsh habitat mitigation will be like for like in terms of	The potential effects of boatwash has been considered in Paragraph 13.195 & 13.196 of the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13). Maintenance dredging has been considered in the ES. The site characterisation survey was designed to provide sufficient characterisation of the Zones of Influence and the Project Site to allow flexibility in project design. The potential footprint of outfalls and cofferdams associated with construction of the outfalls within the intertidal zone, including saltmarsh habitat, has been included in the ES based on consideration of their proposed locations (see Paragraph 13.70 of the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13). Effects of the discharge have been considered in Paragraph 13.202-13.216. A realistic worst case scenario has been assessed in terms of the duration of works and detailed methods have been considered in the ES. Noted. This mitigation for lighting has been included within Paragraph 13.274 of the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13) and the Outline Lighting Strategy (Document 7.10: Lighting Statement). The area of saltmarsh to be created will be greater than that lost within the infrastructure footprint. It is proposed that approximately 3 ha will be created which is stated in the ES (details

Consultee	Response	How the response has been addressed
	area. 13.51 Intertidal terracing is not the same in terms of like for like mitigation in regards to the loss of mud flat. We would be happy to assist in providing further guidance on the intertidal terraces. There are features and design options that will optimise utilisation of terraces by fish. 13.59 We would welcome the avoidance of dredging. However, if this changes, a new assessment will need to be carried out. We recommend closed bucket dredging is the best method to avoid extensive suspension of sediment into the estuary. Dredging activity is best performed in the winter months, when water quality impacts will be less. For information, upstream of Tilbury Lock there is a long standing agreement with the PLA that here should be no dispersive maintenance dredging activity June to August due to the large numbers of sensitive juvenile fish, spawning activity and higher risk of hypoxia events in summer months. This period may need to be extended to include the spring (March - May) at sites close to spawning areas The ES should look at any maintenance dredging requirements for the proposed boat operations associated with the London Resort, during both the construction and operational phases. Regular dredging will cause a degradation of functional subtidal habitat. 13.71 We would like clarification on the estimated amount of saltmarsh that will be recreated with the defence realignment. 13.73 The ES should consider any negative impacts of the loss of contiguous foreshore from the jetty and Ro-Ro area upon juvenile fish species and migratory species (e.g. elvers) passing the site on their upstream migration within the estuary. 13.78 Saltmarsh is not widespread on the Thames, this statement is inaccurate, as the vast majority of this habitat has been lost and new areas that have colonised do not have the ecological quality of older, long-established saltmarsh habitats. 13.84 The Tentacled Lagoon worm is only known from this stretch of the Thames, therefore any displacement is unlikely to be 'negligible'. The species also has full legal protection under the Wildlife and Countryside Act, and as the reason for the designation of the MCZ. Therefore it is inaccurate to assess the displacement 'negligible'.	in ES Appendix 12.3: *Ecological Mitigation and Management Framework*, document reference: 12.2.12.3). Intertidal terracing is not compatible with the saltmarsh creation design and has been removed from the mitigation proposed for the Proposed Development The potential for dredging has been assessed as part of the requirements under Option C only throughout ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13). This has also been considered within the MCZ assessment (Appendix 13.8, document reference: 6.2.13.8). Noted. The advice for the best practice has been considered. Paragraph 13.274 of ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13) sets out best practice mitigation including phasing of dredging works to avoid sensitive seasons for marine species e.g. fish spawning or migration periods. This will be secured by a requirement in the DCO. It is proposed that approximately 3 ha will be created which is stated in the ES (see ES Appendix 12.3: *Ecological Mitigation and Management Framework*, document reference: 12.2.12.3). These effects have been considered within the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13) (see Paragraph 13.159-13.167). This statement was in relation to intertidal mud. Text in the ES has been updated to reflect this (see Paragraph 13.84 of ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13). The assessment for disturbance and displacement within the subtidal habitat has been assessed to be of minor significance for *A. romijni* and negligible for all other organisms (Paragraphs 13.89-13.98) following the methodology outlined in the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13).

Consultee	Response	How the response has been addressed
	There are also underwater noise and piling risks associated with this site.	The effects of underwater noise and vibration from piling have been assessed (see Paragraphs 13.101 to 13.140) in the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13).
	13.88-13.93 – Increase in underwater noise and vibration We believe that the impact upon fish, particularly migratory activity, may still be significant with the mitigation measures proposed. The risk is particularly associated with the jetty construction and marine works. Consideration should be made to avoid percussive piling during those sensitive periods when fish will be migrating past the site.	One of the potential mitigation measures proposed is to avoid piling during sensitive periods for fish.
	13.90 The statement seems to state an appropriate size and hammer energy for a worst- case scenario, but it should also consider piling duration and the time of year that it will take place.	The effects of underwater noise and vibration have been assessed using a worst-case scenario that piling could take place at any time of year.
	The ES should look at planned piling activity as a specific issue with regard to fish, as has been done for the PEIR. This should look at proposed piling methods, duration of piling work, the hammer size and energy and the noise and vibration transmitted to the marine environment.	The effects of underwater noise and vibration from piling have been assessed on fish in Paragraphs 13.101 to 13. 132) in the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13).
	We would want confidence that migratory fish are able to pass the construction sites where piling is taking place and that at least half of the river width is available them to do this in terms of the transmitted noise and vibration through the water column and riverbed. This should look at a behavioural response as being significant, rather than permanent or temporary injury or mortality.	As numerical criteria for assessing the effects of noise and vibration on fish do not exist it is not possible to provide a specific distance at which behavioural effects are expected to be observed in relation to the width of the river. However, consideration of the likely physical effects (threshold shifts in hearing for example) can provide an indication of the likely scale of effects on fish and are provided in Paragraphs 13.101 to 13.132 of the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13).
	The ES should further consider how far the above thresholds will extend from the piling site, the duration of the piling work, the sensitivity of the likely fish species and life stages present and implications upon migratory behaviour. Cumulative effects should also be assessed if piling work is to be performed concurrently at the Essex and Kent sites.	Some details for the piling have not yet been determined and so a realistic worst-case scenario has been assessed which has been clearly indicated in the text (e.g. size of piles assumed and assumption that piling could be undertaken at any time of year).
	Avoiding percussive piling activity might provide further mitigation at sensitive times of year when fish are activity migrating past the site. Wherever technically feasible we would request that non-percussive methods of piling are adopted in order to reduce any impacts on aquatic life that may be in the vicinity.	Avoiding sensitive periods has been proposed as a potential mitigation measure in Paragraphs 13.269 of the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13).
	If percussive piling is deemed to be the only feasible way to achieve the design depth, then we would want a technical justification for the reasons that other piling methods are not viable, and that also details the specific fish protection/mitigation measures to be adopted.	These details have not yet been determined and so a realistic worst-case scenario has been assessed. It is not yet known which piling methods will be feasible.
	We also request that a soft start method be adopted, for all piling methods in order to allow any marine life to move away from the disturbance before any physical damage occurs. As an example: For the Tideway Tunnel project the period April to September was identified as the sensitive period when adult and juvenile fish (of a range of species) would be actively migrating, this period was extended to March to September for sites near spawning areas.	A soft start approach has been proposed as a mitigation measure in Paragraph 13.269 of the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13).

Consultee	Response	How the response has been addressed
	In the London Resort Area, there will be adult European smelt aggregating and moving upriver to spawn in the Wandsworth area in late February to early March. This is a short lived species, so disruption to its migration that reduced natural recruitment could be significant. Juvenile eels will also be moving upstream at around this time. We need to ensure that they are able to pass the site during this migration period. The future ES needs to clearly identify the mitigation measures appropriate for the avoidance and reduction of adverse impacts upon resident and migratory fish, and key lifestages e.g. adult smelt and glass eel/elver upstream migrations. 13.164 We would like to understand the definition of "localised impacts". 13.166 We are concerned about how this is being modelled, and the provisional assessment is therefore questionable at this stage. The overnight lighting of all the structures needs to be factored in. The impact on the estuary and the potential impact of additional lighting needs to be understood It is noted that the Clipper frequency is based on the current Woolwich Ferry visits – it needs to be assessed what the actual frequency will be for the development. 13.212 These mitigation measures identified by the PIER will reduce the negative impact, but only if fully adopted. The ES need to be explicit about what measures will be used. The adopted mitigation requirements should then also be clearly identified in the Construction Environmental Management Plan and also communicated in tender documents, so that future contractors are aware of what piling equipment to obtain, when its use would be appropriate and any other mitigation measures that apply. For example, avoidance of certain sensitive periods, or low tide percussive piling will limit the constructors working window, so will come under pressure from contractors. They will need to be clearly defined and stated in the CEMP and preferably in tender documents to ensure that the mitigation is delivered. Please also be aware that non-percussive/vibration piling techniques will avoid any negative impact upon migrating fish and can be used all year around. Additional mitigation measure for consideration could be: • Limit percussive piling to the winter months when migratory activity is less. • Use of silent/hydraulic piling methods, if technically feasible. • Acoustic shielding around the pile being driven (if percussive).	These details have not yet been determined and so a realistic worst-case scenario has been assessed. The avoidance of piling during fish migration periods and other sensitive periods has been indicated as a potential mitigation measure in the ES. Mitigation measures are proposed in Paragraph 13.269 of the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13). As per CIEEM guidance (2018), the magnitude of impacts is considered in terms of local, regional and national extents. 'Localised' where used as a general term is referring to impacts extending tens or a few hundreds of metres from an impact source. Details of the hydrodynamic modelling approach are provided in a standalone report (Appendix 17.4: *Hydrodynamic and sedimentation assessment*, document ref: 6.2.17.4). Lighting will be provided that avoids light spill into the estuary (see Lighting Statement, document reference: 7.9). The ES has assessed effects from vessels based on the proposed frequency for the Project (see Paragraph 13.243 of the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13). Mitigation that has been secured through the DCO is stated in Paragraphs 13.267-13.274 of the ES Chapter: *Marine Ecology and Biodiversity* (document reference: 6.1.13).

[This page is intentionally left blank]