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Dear Airports Commission,

Thames Estuary Airport options – Inner Thames Estuary feasibility study 1: Environmental Impacts

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

Natural England's evidence submission to the Airports Commission of the 23rd May 2014 focused on the terms of reference for the first feasibility study, looking at environmental impacts and the application of the Habitats Regulations to an inner estuary airport option. In response to the Commission's two consultation questions regarding the final study, we recommend that some additional facts and some inaccuracies in the feasibility study report are addressed; our detailed comments on these are set out at Annex 1 of this letter.

We welcome the feasibility study report's conclusions that:

- any of the airport options considered would entail adverse impact on integrity of the Natura 2000 (N2K) network and could only proceed via the derogation process under Article 6(4) of the Habitats Directive. That process requires that three sequential tests are met: No satisfactory alternatives (NSA), imperative reasons of overriding public interest and the provision of compensation to protect the integrity of the N2K network. We agree that satisfying the NSA test will be challenging;
- compensation would be on an unprecedented scale and be technically extremely challenging to deliver. The report states that "*a minimum of around 2130 hectares (ha) is likely to be needed for habitat compensation for the airport proposals and displacement of other compensatory habitat. An upper estimate of 6800ha attempts to capture some of the potential indirect losses. The road and rail links to the airport are also likely to result in additional direct losses to Natura 2000 sites and these are therefore likely to add to the total area required for compensation.*" Table 4.3 from which these figures are taken is an estimate of habitat loss rather than an estimate of the compensation that might be required, so this 'minimum' figure should be treated with caution; it would be unlikely to compensate for the full direct and indirect impacts of an Inner Thames Estuary airport and involves a 1:1 ratio which is unlikely to be acceptable. An estimate of losses from surface access infrastructure and other essential supporting infrastructure should be provided and included as part of the overall project if the proposals progress to a Sustainability Assessment, as the airport could not feasibly operate without this.
- Bird strike risk management will have an extremely significant effect on compensation

requirements; it will affect the proximity of compensation provision (with likely consequences for the compensation ratio applied), the options for compensating for any N2K impacts from future development, and will adversely impact on the remaining sites within 13km of the airport designated for their bird interest;

- Cumulative effects need to be accounted for and are a complex issue given the rate of change in/dynamic nature of the Thames Estuary;
- Compensation ratios would be key and are affected by a number of variables including proximity/function;
- Potential compensation areas would need to be investigated in detail to identify potential constraints in terms of availability, suitability and additional impacts and these would require significant study to determine realistic deliverability. Mapping would need to consider whether non-designated sites are functional habitat for other N2K sites.
- Intertidal habitat creation to compensate for adverse impact on the integrity of the N2K network is not a simple process and could require ongoing management and monitoring. The report should emphasise that compensation for impacts to seabirds and subtidal habitats has never been delivered and should be treated as extremely challenging (at best) but more likely impossible to deliver.

In preparing this response we have had discussions with the Environment Agency to ensure that we provide you with consistent messages on the environment.

For any queries relating to the specific advice in this letter only please contact Kathleen Covill on 07900 608194. For any new consultations, or to provide further information on this consultation please send your correspondences to consultations@naturalengland.org.uk.

Yours sincerely,

Kathleen Covill

Senior Adviser, Transport

Detailed comments on Inner Thames Estuary Feasibility Study 1: ENVIRONMENTAL IMPACTS

July 2014

Section 4

- (i) Table 4.2 – construction/piling noise: underwater noise from this type of large scale activity will affect marine mammals over a greater distance than 1km, so the scale of impact is underestimated here.
 - a. Impacts associated with dredge plume, siltation, suspended sediment, and water quality should be added to the table.
- (ii) Table 4.3 –Outer Thames SPA is not designated for wintering waterfowl and hen harrier, the interest feature is overwintering Red Throated Diver, which is associated with shallow coastal waters and sub-tidal sandbanks in the Outer Thames. Impacts to this feature will be different to waterfowl associated with intertidal flats in the Thames and need to be considered further.
- (iia) Table 4.3 – Thames Estuary & Marshes SPA is classified for wintering and passage waterfowl and wintering Hen Harrier.
- (iib) Table 4.3 – Foulness SPA is classified for wintering and passage waterfowl, wintering Hen Harrier and breeding waterfowl including Avocet, Terns and Ringed Plover.
- (iic) Table 4.3 – Blackwater Estuary SPA is classified for wintering and passage waterfowl, wintering Hen Harrier and breeding Little Tern, Pochard and Ringed Plover.
- (iii) Section 4.4.3 p31-32: this section could better reflect the marine interest features, the red throated diver and its supporting habitats, the subtidal sandbank of Margate and Long Sands SAC, plus subtidal features of Essex Estuaries SAC and The Medway MCZ.
- (iia) The Section 41 invertebrate species list referenced in this section is unlikely to be comprehensive. For example, a number of S41 Bombus (bee) species are known to occur in the Thames Estuary area, along with S41 SSSI/Ramsar listed species such as the spider Baryphyma duffeyi.
- (iv) Section 4.4.3 p31-32: this section could better reflect the marine interest features, including Red Throated Diver and its supporting habitats, the subtidal sandbank of Margate and Long Sands SAC, plus subtidal features of Essex Estuaries SAC and The Medway MCZ.
- (v) Sections 4.5.2. and 4.6.5 – should refer to the direct loss of habitat which supports SPA features but is outside of SPA boundary ('functional habitat') as this will also require Habitats Regulations Assessment and will need to be incorporated into mitigation/compensation requirements.
- (vi) Section 4.6.1 – should include indirect effects which may affect marine/subtidal interest features of the designated sites listed , as well as intertidal impacts.
- (vii) Section 4.6.2 – Several of the cumulative impact developments identified should be considered part of the greater project: the infrastructure needed to connect the airport and bird strike management should be included as part of the project as it could not reasonably proceed without it.

- (viii) Section 4.6.3 – also needs to make reference to marine aggregate sites and dredge disposal sites, licenses and on-going activity.
- (ix) Table 4.12 – direct loss of functional habitat under the airport footprint should be estimated here as well, and categorised as of ‘high’ certainty.
- (x) 4.7.3 page 65 – areas excluded as potential compensation should also be considered functional habitat supporting SPA interests and the 13km bird strike safeguarding zone around the airport.

Section 5:

- i. 2nd Para – makes reference to water quality impacts and contaminated sediments, these are not considered in the report and will need to be considered, the Thames does contain pockets of contaminated sediment. Water quality impacts and mobilisation of contaminated sediments needs to be considered as part of construction impacts including piling and dredging.
- ii. Section 5.1.1 should reference the Habitats Regulation and other legislation including Marine Strategy Framework Directive as Outer Thames Estuary goes beyond limits of the Thames River Basin Management Plan and WFD) which will have consequences due to the indirect effects causes altering estuarine processes.
- iii. Section 5.2.1 Grey box p73: value given is not tidal prism rather flood:ebb dominance of tidal current. Tidal prism is the volume of water between high water and low water.
- iv. Section 5.2.1 (iii) – suggest using the Port of London Authority website [description of Thames tidal currents here](#).
- v. Top p74, last two sentences: these statements imply a rather simplistic view, the subtidal has deepened due to navigation dredging, and there has been a decrease in upper intertidal and saltmarsh due to erosion. There have not been intertidal gains which correspond to deepening the subtidal channel. The [PLA website](#) gives a balanced overview of changes in morphology. Also the statement ‘the estuary was found to be not dependent on large sediment from marine sources’ is incorrect as the sediment budget proposed for the estuary by IECS 1993, indicates a 206,100 m³/yr source of marine sediment, x10 that of fluvial sources (see Table 6.2 <http://www.pla.co.uk/assets/WebBaselineDocument.pdf>).
- vi. P74 Human Influences, 2nd Para: This paragraph gives the impression that there are intertidal gains/accretion in the estuary overall, but this is disputed by the Thames 2100 plan (<http://www.pla.co.uk/Environment/Summary-of-Morphological-Characteristics>) which indicates that 1000-1200ha of intertidal habitat will be required to offset losses in the estuary up to 2050. More information can also be found in the Greater Thames Catchment Habitat Management Plan ([CHaMP](#)) which suggests a net loss of intertidal habitats in the Thames Estuary over next 20, 50 and 100 years, plus the reduction in exposure period of these habitats over the tidal cycle, reducing time available for feeding water birds.
- vii. P74 Human Influences, 3rd Para: Suggest reference to the Thames Estuary maintenance dredging protocol baseline document here - <http://www.pla.co.uk/Environment/Baseline-Document>
- viii. P75 Human Influences – Water Injection Dredging is not more of a concern than conventional dredging. It is used in the Thames and considered to have environmental benefits compared to removing material to deposit at sea, as it retains sediments within the estuary system (section 2.2.1 of PLA Baseline Document). However, this type of dredging

could not be used for contaminated sediments.

- ix. Section 5.2.3 – if Geological Conversation Review sites are referenced here, all other statutory designated sites should also be included for completeness.
- x. Section 5.2.4 (i) – The section should also refer to the changes and requirements associated with both national and international sites as a result of coastal change and sea level rise (highlighted in TE2100, SMP and CHaMP, in addition to the WFD).
- xi. Section 5.3.1 – Should include the sourcing of material including that from the estuary for the reclaim and potential associated impacts to estuary process and seabed. The section does not discuss the temporary changes to estuary process during construction resulting from the presence of temporary structures/cofferdams/causeways etc. The time scale it would require to build the airport means that these impacts should not be discounted and it is likely that some ‘temporary’ structures may be in place for months to years. Best practices and standard mitigation would not offset all the construction impacts.
- xii. Section 5.3.2 (i) – The Thames should be defined as a heavily modified water body (as classified in Thames river Basin Management Plan), due to the extensive changes made to the river over time altering the hydrodynamics of the Tidal Thames; the construction of an airport encroaching into the estuary will modify it further. Also under sources of impact, further capital dredging may also be required as a result of altering existing navigation channels/routes around the airport.
- xiii. Section 5.3.2, p81 – *“Changes in the tidal prism could also alter the duration and extent of tidal inundation. The tidal prism is the volume of water in an estuary held between mean high tide and mean low tide, or the volume of water leaving at ebb tide. If it is known how much water is exported compared to how much of the estuarine water remains, the duration of inundation can be determined. There could be lateral encroachment of water / sediment on inter-tidal areas. This could lead to indirect changes to the extent of inter-tidal and sub-tidal habitats arising from changes of water levels”* It is recommended that this sentence is altered to the following to ensure clarity: *“Changes in tidal prism will alter high and low tide levels, which can lead to the loss of intertidal habitats due to the elevation of the mean low water level or lowering of mean high tide level; resulting in changes in distribution and extent of intertidal and subtidal habitats and consequences for the biodiversity of the estuary in particular the loss of supporting habitat for overwintering birds”*. This section should also discuss changes to flood:ebb dominance of the tide, and changes to tidal current speeds, which will have implications for erosion/accretion of sediment both intertidally and subtidally.
- xiv. Section 5.3.2 P82 –
 - First bullet - use high and low water rather than maximum and minimum water levels to simplify. An overall change in low water level of 40mm, combined with predicted sea level rise to an overall increase of 250mm over 30yr life of airport is not a minor change, but major/significant, as this will result in the loss of 100ha of habitat. The justification for considering the airport over thirty years only should be set out here. This also does not discuss any changes to high water which may also occur; as the ABPmer study identified a 20mm reduction in high water in addition to changes at low water which would further decrease the intertidal area.
 - Second and third bullet – current speeds and direction should include the predicted wave height alteration and the implications for habitat loss/erosion.
 - Fourth bullet – should clarify the scale over which morphological change will occur. The

elevation in the low water mark alone will likely affect the entire estuary and surrounding coast.

- Fifth bullet – should provide a break down of this 2500ha value, and what the various changes equate too i.e. 100ha from changes in tidal prism would suggest the rest is a result of intertidal erosion; this seems great compared to tidal prism losses.
 - This section should discuss (or explain that it does not discuss) loss/changes to subtidal habitats including those associated with MCZs, SAC or supporting SPA habitats. Changes or loss of subtidal features are particularly difficult to mitigate or compensate for. While it is technically feasible to create intertidal habitats, to date limited/no satisfactory solutions to offsetting or recreating lost subtidal habitats have been found, however the issue has been considered previously by Severn Barrage Schemes and the Offshore Wind industry in England.
- xv. Section 5.3.2 (ii) Fluvial and (iii) –these sections have not been reviewed, though it is likely that changes to the estuary will have knock on impact to river, freshwater habitat adjoining the Thames.
- xvi. Section 5.3.4 – highlights that a large encroachment into the estuary may affect navigation channels, which could result in the need for further dredging. If this has a high probability it will also need to be considered as part of the project as a whole alongside other transport links/supporting infrastructure requirements.
- xvii. Section 5.3.5 – this could also reference the changes highlighted in [CHaMP](#)
- xviii. Section 5.5. -
- – it is unlikely that the only significant issue will be suspended sediment plumes; see previous comments at (xi) above regarding the impacts of cofferdams and other temporary structures on hydrodynamics. It is unlikely that all significant issues during construction can be mitigated via best practice and pollution prevention guidelines etc.
 - It is unlikely that enough mitigation measures can be put in place to offset operational impacts, for example SuDs, as SuDs, attenuation ponds and similar measures may have operational constraints in the marine/estuary environment.
 - We have not commented on the WFD mitigation provisions.
- xix. Section 5.6 – Discusses the impacts associated with cofferdams, causeways and temporary structures. As per comments at X above, these should be referenced and incorporated earlier in the document.
- xx. Final bullet, top p90 – with regard to compensation requirements, this should also consider the requirements to offset loss/damage to subtidal habitats, and the wider impacts to designated sites/features in the outer estuary and beyond as a result of hydrodynamic changes.
- xxi. Section 5.7, p90
- 1st bullet - does not consider changes to hydrodynamics/flows or other impacts to the tide other than tidal prism, such as changes to tidal currents and asymmetry. Also need to include sediment budget and sediment transport (suspended and bedload).
 - Changes from max/min water levels would be major not minor.

- It is not clear if this section has considered the implications for tributary and nearby estuaries in the Greater Thames , this kind of scale of change will probably also affect Swale, Medway and Essex Estuaries.

xxii. In summary, it is likely that the estuarine/morphological impacts from the airport will be large, highly significant, and adverse. More studies and supporting information will be required to determine the impacts to designated sites and features, functional habitats, protected species and the wider biodiversity of the Tidal Thames and Greater Thames Estuary, resulting from changes to estuary process and geomorphology caused by the construction of the airport.