

ABLE MARINE ENERGY PARK (MATERIAL CHANGE 2 – TR030006)

UPDATED ENVIRONMENTAL STATEMENT

CHAPTER 28: CONCLUSION

Able Marine Energy Park, Killingholme, North Lincolnshire



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28.1.0 Introduction

- 28.1.1 This Updated Environmental Statement (UES) has been prepared by SLR Consulting Limited (SLR) on behalf of Able UK Limited ('the Applicant') and sets out the results of various updated technical assessments in support of a proposed material amendment (Material Change 2)¹ to the Development Consent Order (DCO) for the Able Marine Energy Park (AMEP).
- 28.1.2 The application for the DCO was made in December 2011 and was accompanied by an Environmental Statement (ES). During the examination of the proposals additional environmental information was submitted by Able Humber Ports Limited (the Applicant) and was incorporated into the ES for the project. The documents forming the project ES are listed at Schedule 11, paragraph 1 of the AMEP DCO, and this complete set of documents is referred to in this UES as 'the original ES'.
- 28.1.3 This UES is necessitated by the submission of a material amendment application (Material Change 2) to change certain details of the consented scheme. Further information regarding the DCO, the application site and its surrounding area is provided within Chapters 1 (Introduction) and 4 (Description of Changes to Development) of this UES.
- 28.1.4 As detailed within Chapter 1 (Introduction), it has become apparent that a number of minor amendments are desirable for the AMEP scheme to be implemented. These minor amendments can be summarised as follows:
- 28.1.5 It has become apparent that a number of minor amendments are desirable for the AMEP scheme to be implemented. These minor amendments can be summarised as follows:
- Changes to the proposed quay layout to reclaim the specialist berth at the southern end of the quay, and to set back the quay line at the northern end of the quay to create a barge berth;
 - The addition of options to the form of construction of the quay whereby the piled relieving slab to the rear of the quay could be raised or omitted entirely (subject to detailed design), and the quay wall piles could be restrained with more conventional steel anchor piles and tie bars in lieu of flap anchors;
 - A change to the approved diversion of footpath FP50 in North Lincolnshire to avoid crossing over the existing rail track at the end of the Killingholme Branch Line;
 - Provision of a third cross dam within the reclamation area to enable greater flexibility for staged completion, and early handover of sections of the quay;
 - A change to the consented deposit location for 1.1M tonnes of clay to be dredged from the berthing pocket, to permit its disposal at HU081 and HU082 (see Figure 1-1 below); and
 - An amendment to the sequencing of the quay works (as illustrated on the consented DCO drawings AMEP_P1D_D_101 to 103; Indicative Sequence Plan View[s]) to enable those works to commence at the southern end of the quay and progress northwards.
- 28.1.6 It should be noted that the changes to the proposed quay layout would result in a reduction in

¹ Planning Inspectorate ref. TR030006

footprint area reclaimed from the estuary. The DCO quay alignment has a footprint of 45 hectares, whilst the proposed quay alignment within the material amendment would equate to a footprint of 43.6 hectares; a reduction of approximately 1.4 hectares.

- 28.1.7 In addition to the above, there are no alterations proposed to the operation or decommissioning of the site. As such, these elements remain as considered and assessed within the original ES.
- 28.1.8 Full details of the proposed material amendment are provided within Chapter 4 of this UES: Description of Changes to Development.

Requirements & Purpose of Report

- 28.1.9 This UES forms part of the application for Material Change 2 and it is being submitted under Schedule 6 of the Planning Act 2008 and Part 2 of the Infrastructure Planning (Changes to, Revocation of, Development Consent Orders) Regulations 2011.
- 28.1.10 The proposed change is considered to represent 'EIA development' as it meets the definition of Schedule 2 development as set out in The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regulations'); namely, the proposals represent a change to a Schedule 1 development, where that development is already authorised (by virtue of the AMEP DCO), and the changes have the potential to give rise to significant effects of a new or different nature to those reported in the original ES.
- 28.1.11 On this basis, the purpose of this UES is to provide an update (addendum) to the technical assessments and EIA for the AMEP scheme to enable the Planning Inspectorate to determine the environmental impact and, therefore, the appropriateness of the proposed changes.
- 28.1.12 It should be noted that the scope of this UES has been limited to those technical topics which will be directly affected by the proposed material amendment. This approach has been agreed through a formal Scoping exercise with the Planning Inspectorate. It has also been consulted upon during the Material Change 2 consultation held in Q2 of 2021 and no objections to this approach were raised. Information regarding the scope of this UES is contained within section 1.3.0 of this Chapter, whilst further information regarding the Scoping exercise and subsequent PEIR consultation is provided within Chapter 5: Scoping and Consultation.

28.2.0 Residual Effects and Conclusions

Geology, Hydrogeology and Ground Conditions

- 28.2.1 The proposed material amendment (Material Change 2) does not propose any changes to the approved terrestrial works which would affect the geology, hydrogeology (groundwater), ground conditions or gas assessments presented within the original ES.
- 28.2.2 Further to the original ES, additional sediment sampling and testing has been undertaken which identifies elevated trace metal and hydrocarbon concentrations beyond those identified within the original ES. Notwithstanding, these levels remain within the acceptable limits to allow the disposal of dredging material at identified locations within the Humber as proposed within the original ES. A copy of the sediment sampling and testing results is provided within Appendix UES9-5. It was confirmed by the MMO in their consultation response to the PEIR that the material is suitable for disposal at HU080, HU081 and HU082.
- 28.2.3 The Humber is known to be an environment where high hydrocarbon background levels are known to exist; therefore, there are no barriers considered towards the disposal of dredging material within the Humber. The existing Marine License for the projects permits disposal at sea on the basis of the 2011 sampling results and, whilst a variation to the Marine License will be required subsequent to the Material Change 2 application, this would be based on the more recent sediment sampling results (Appendix UES9-5) which are still within acceptable limits for disposal at HU080, HU081 and HU082.
- 28.2.4 The effects of additional dredging arisings being deposited in the Humber have also been considered, in the event that there are no alternative beneficial uses for the clay arisings from the berthing pocket. Further information regarding the potential for additional dredging arisings is provided within Chapter 4: Description of Changes to Development and Chapter 8: Hydrodynamics and Sedimentary Regime.
- 28.2.5 On this basis, there are no significant changes since the original ES and this topic has been scoped out of the UES.

Hydrodynamics and Sedimentary Regime

- 28.2.6 Disposal of dredged material to sites HU081 and HU082 by barge will result in localised changes to the tidal currents and wave action in proximity to the site. These changes to the hydrodynamics will have no effect on the ongoing coastal erosion to the north east of Hawkins Point or to the proposed site for managed realignment further to the east.
- 28.2.7 The material placed at sites HU081 and HU082 will be eroded by the action of the tidal currents and waves and the silt and clay sized material arising will disperse rapidly from the sites. Sands and gravel sized material arising from the placement will tend to accumulate in undulations on the seabed at the disposal site. Any glacial till dredged by BHD or CSD and placed by barge at HU081 or HU082 will slowly be eroded by the action of tidal currents and waves. Sands and gravel sized material at the disposal sites and arising from the erosion of the glacial till will reduce the overall rate of erosion of the placed till. It is expected that the majority of the glacial till placed at either site will erode within a few years of placement.
- 28.2.8 The proposed AMEP Amended Quay layout leads to no significant change in assessed impacts on

water levels.

- 28.2.9 The proposed AMEP Amended Quay layout leads to no significant change in assessed impacts to flood tide flows compared to the consented layout. During the ebb tide, a localised region of flow acceleration is predicted off the downstream end of the quay. This initial change may diminish with time but should be noted.
- 28.2.10 Similar patterns of bed shear stress are presented for the proposed AMEP Amended Quay layout as for the consented layout.
- 28.2.11 The proposed AMEP Amended Quay layout leads to no significant change in assessed impacts on waves compared to the consented layout.
- 28.2.12 The Amended Quay layout is predicted to slightly reduce by 29,000 wet tonnes per year (or <6% of the average annual disposal quantity of 503,000 wet tonnes for the period 2016 to 2019) of the HST/C.Ro berths and approaches. For the downstream Immingham Riverside berths, the Amended Quay is predicted to slightly reduce the annual siltation by about 26,000 wet tonnes per year (or ~1% of the average annual disposal quantity of 3,447,000 wet tonnes for the period 2016 to 2019).
- 28.2.13 The change to maintenance dredging requirements at the proposed AMEP Amended Quay layout when compared to the consented scheme is predicted to be an increase of up to 41,000 m³/year muddy sediments and a decrease of 34,000 m³/year for sandy sediments into the AMEP Berth Pockets. Significant localised sand deposition onto the dredged slopes of the proposed turning area / approach channel is predicted but the degree to which sandy infill occurs will be influenced by the availability of sand on the seabed. Presently material dredged from the area is described as silt.
- 28.2.14 To the northwest of AMEP, bed level rising is likely to be at a slightly lower rate with the proposed AMEP Amended Quay layout. To the southeast there is likely to be no significant change from that predicted, other than to note that significant accretion has taken place since the original assessment (as a result of HIT) which leads to less further accretionary effect possible by AMEP.

Residual Effects

- 28.2.15 Given that the effects are permanent, even with mitigation, the residual impacts remain as per the impacts described in the Assessment of Effects section of this chapter (Section 8.4.0 of Chapter 8: Hydrodynamics and Sedimentary Regime).
- 28.2.16 The predicted annual maintenance requirement arising from operations will be in the range 210,000 to 520,000 dry tonnes (previously consented scheme 250,000-630,000 dry tonnes) from the dredging of the AMEP Berthing Pocket and Dock. This is likely to require dredging by TSHD and disposal at the Sunk Deep Channel disposal site HU080.
- 28.2.17 Re-applying the same methodology adopted in the original ES to the infill volumes for the AMEP Amended Quay leads to an upper estimate based on present-day bathymetry modelling of 357,000 dry tonnes which is consistent with the value for the consented scheme (429,000 dry tonnes). It is noted however that an additional 21,000 dry tonnes per year is predicted to be deposited into the berth pockets, with 288 m of berth pocket now set 61 m further towards the shore in a slightly shallower location. Additionally, a potential reduction of 16,000 m³ in sand infill is predicted to occur in the AMEP Amended Quay berthing pockets compared with the consented Quay.
- 28.2.18 There is an increase in maintenance dredging requirement at the AMEP for the proposed AMEP

Amended Quay layout compared with the consented layout, this arises from the potential for sand infill in the manoeuvring area and approaches.

Technical Conclusion

- 28.2.19 Changes in water levels, bed shear stresses and waves are similar for the AMEP Amended Quay layout and the consented. There are small differences in the peak flow patterns on the ebb tide. Changes to dredging requirements at the AMEP and surrounding facilities are detailed in Table 8-10 of Chapter 8: Hydrodynamics and Sedimentary Regime.

Water and Sediment Quality

- 28.2.20 As detailed in the original ES residual effects relating to Water and Sediment Quality will be minimal provided that the proposed control measures and monitoring are fully implemented. Updated technical assessment and additional monitoring indicates that this conclusion will not be changed by the proposed material amendment.

Residual Effects

- 28.2.21 Within the ES submitted for the DCO, following consideration of mitigation, the residual effects relating to Water and Sediment Quality during the construction phase were identified to be restricted to minor impacts associated with the dredging operations. These were considered to be not significant. Following additional assessment, no further significant residual impacts have been identified.
- 28.2.22 The updated modelling (Appendix UES8-1) predicts that;
- for backhoe dredging of glacial till the increases in suspended sediment concentration at the Uniper Power Station intake were a maximum of 70mg/l (near bed),
 - for the proposed dredging of alluvium by TSHD (without overflowing) the maximum uplift in concentrations were just 45mg/l (near bed),
 - Should overflowing be utilised during the TSHD dredging of alluvium the predicted increases in suspended sediment concentration above background and the deposition of fine sediment arising from this dredging will be considerably larger. Overflowing for ten minutes on every load would result in increases in suspended sediment concentration of up to 630mg/l (near bed), and
 - For capital dredging with the CSD it was predicted that peak concentrations exceeding 200 mg/l would be restricted to the area immediately around the dredger and barge.
- 28.2.23 The modelling indicates that increases in peak sediment concentration of more than 10mg/l will occur up to 17km from the point of dredging and will extend slightly further upstream for the amended scheme than for the consented scheme. However, when compared to the baseline range of suspended sediment concentrations (see **Error! Reference source not found.**) these potential small uplifts are not considered to be significant.
- 28.2.24 During construction, the removal of sediment through dredging may result in changes to the composition of surface sediments. A number of heavy metal contaminants, including copper, exceed the UK CEFAS Action Level 1 Guidelines. The removal of sediments through dredging will

cause sediment bound contaminants to become widely redistributed within the estuary with a minor portion permanently removed from the estuary with the outgoing tides to coastal waters. The overall impact is not considered to be significant, because of the wide dispersion, and tendency of contaminants to remain bound to or quickly be readsorbed upon dissociation from the sediment. It is considered unlikely that average sediment quality in any given location will deteriorate.

- 28.2.25 Within the original ES, following consideration of mitigation, the residual effects relating to Water and Sediment Quality during the construction phase were identified to be restricted to thermal impacts and sediment impact associated with maintenance dredging. Following additional assessment, no further residual impacts have been identified.
- 28.2.26 In relation to thermal impacts it was previously identified that changes in circulation associated with the quay could reduce mixing around the E.On intake and result in a slight uplift in peak temperature. The predicted change in temperature compared to the baseline situation was however small ($<0.2^{\circ}\text{C}$). Updated modelling (Appendix UES9-5) has confirmed that the material amendment will result in no discernible change in this level of potential effect. This is not considered significant.
- 28.2.27 With regards to the impact associated with maintenance dredging this will be no greater than already considered in relation to the dredging required for construction. This should therefore not result in significant adverse effects.
- 28.2.28 It is concluded that there are no changes to the residual effects previously identified as part of the DCO.

Technical Conclusion

- 28.2.29 The AMEP site is located within and adjacent to the Humber Estuary which is a dynamic and energetic environment with valuable ecological characteristics.
- 28.2.30 The proposed material amendment would involve changes to physical works within and immediately adjacent to the estuary. As a result, there is a potential for a change in the effect of the scheme during construction associated primarily with dredging and deposition of estuarine sediment. Detailed analyses and assessment have however confirmed that these impacts will remain small and are not significant.
- 28.2.31 The proposed material amendment would also involve a variation to the final quay profile extending out into the estuary. While associated impacts of this on flow patterns and sediment deposition are considered in Chapter 8 of this UES there is also a potential for changes in mixing and circulation to impact water quality. Detailed analyses and assessment have however confirmed that these impacts will remain small and are not significant.

Aquatic Ecology

- 28.2.32 The potential pathways for environmental effects from the proposed material amendment arise from:
- Construction of the quay entailing: Loss of habitat (intertidal and subtidal) and benthic communities from the reclamation of ground required for the quay; underwater noise and vibration from piling; indirect changes to habitats from project-induced changes in hydrodynamic and morphodynamic regimes; and changes to aquatic environment in adjacent

water bodies.

- Dredging of the quay, berth pocket and approaches entailing: Habitat change from substrate removal; habitat and benthic communities disturbance from the sediment plume; indirect changes to habitats from project-induced changes in hydrodynamic and morphodynamic regimes; and disturbance to fish and fish eggs/larvae from habitat loss and disturbance.
- Dredge Disposal entailing: Loss of subtidal habitat and benthic communities from dredge spoil disposal; habitat and benthic communities disturbance from the sediment plume; indirect changes to habitats from project-induced changes in hydrodynamic and morphodynamic regimes; and disturbance to fish and fish eggs/larvae from habitat loss and disturbance.

28.2.33 The actual likelihood of any significant effects to occur to the aquatic ecology of the area from the material amendment have been discounted, with it being concluded that the effects as identified in the original ES remain valid.

28.2.34 Only very small scale localised alterations to the aquatic ecology of the area are expected. These alterations are not measurable against the background natural variability of the estuarine system.

Residual Effects

28.2.35 The review of revised baseline data where available and/or appropriate, in the context of the material amendment has not identified any significant new impacts and as such, no additional mitigation is considered necessary.

28.2.36 The residual effects on the Aquatic Ecology receptors from the material amendment and AMEP development as a whole remain as identified in the original ES.

Technical Conclusion

28.2.37 The baseline conditions have been reviewed and updated since 2012 to reflect the current baseline. No significant changes have been identified compared to those described in the DCO (2014) and the Examining Authority's Report (2013).

28.2.38 Based on the above assessment of potential changes to the aquatic ecology of the area against conditions identified in the original ES baseline, and from the assessment of the material amendment, no significant effects have been identified other than those assessed in the original ES from the DCO.

28.2.39 Mitigation measures provided in Chapter 10 Aquatic Ecology of the original ES are considered to remain valid, with no significant residual impacts to the aquatic ecology of the Humber Estuary expected following their discharge.

Ecology and Nature Conservation

28.2.40 Given that effects on the Terrestrial Ecology components have not changed compared to the original ES, and no additional mitigation is required, the residual effects on the Terrestrial Ecology receptors from the material amendment and AMEP development as a whole remain as identified in the original ES (section 11.8).

- 28.2.41 There would be a direct and indirect loss of the Humber Estuary European Marine Site designated as an SAC, Ramsar Site and SSSI. These losses cannot be mitigated and therefore residual impacts to the Killingholme Marshes intertidal and sub-tidal habitats will be significant and likely to affect the integrity of the AMEP site. As a consequence, it was concluded in the original ES that compensation would be required to offset this impact. A compensation scheme was developed and consented by the Secretary of State.
- 28.2.42 As a result of the proposed material change, the direct loss of habitat would reduce from 45 to 43.6 ha. The agreed compensation scheme would, however, be unchanged; compensation ratios for the habitat that will be lost are reviewed in Technical Appendix UES11-2.
- 28.2.43 The AMEP development, as consented, will result in a loss of 100.3 ha of terrestrial semi-natural habitat. Mitigation measures are being implemented to ensure that there will be no significant residual impacts associated with terrestrial habitat loss.
- 28.2.44 Mitigation plans, that were consented to when the DCO was granted, for great crested newt and water voles will reduce impacts on these protected species to a negligible level (and water vole mitigation may in fact enhance habitat in the long term), so there will be no significant residual effects on these species.

Residual Effects

- 28.2.45 Given that effects on the Terrestrial Ecology components have not changed compared to the original ES, and no additional mitigation is required, the residual effects on the Terrestrial Ecology receptors from the material amendment and AMEP development as a whole remain as identified in the original ES (section 11.8).
- 28.2.46 The residual effects of the AMEP development on habitat were set out in the original ES section 11.8. That assessment found there would be a direct and indirect loss of the Humber Estuary European Marine Site designated as an SAC, Ramsar Site and SSSI, agreed to represent a direct loss of 31.5ha of inter-tidal mudflat, an additional loss of 11.6ha of functional mudflat habitat, a direct loss of 13.5ha of estuarine habitat (all from Killingholme Marshes foreshore) and a permanent loss of 2ha of saltmarsh (which would become mudflat) from Cherry Cobb Sands due to the breach of the sea wall for the compensation site, (SoCG between the Applicant and MMO/NE², Table 3.2 and paragraphs 3.5.1 -3.5.2). It was noted that these losses cannot be mitigated and therefore residual impacts to the Killingholme Marshes intertidal and sub-tidal habitats will be significant and likely to affect the integrity of the site. As a consequence, it was concluded that compensation would be required to offset this impact. A compensation scheme was developed and consented by the Secretary of State.
- 28.2.47 As a result of the proposed material change, the direct loss of habitat would reduce from 45 ha to 43.6 ha. Further, the indirect loss of functional mudflat has reduced from 11.6 ha since the DCO application was made, as part of that area has converted to saltmarsh following accretion on the foreshore in the lee of Humber International Terminal. The agreed compensation scheme would, however, be unchanged; compensation ratios for the habitat that will be lost are reviewed in

²<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR030001/TR030001-001606-SOCG009%20TR030001%20Able%20Humber%20Ports%20Ltd%20Statement%20of%20Common%20Ground%20with%20Natural%20England%20and%20the%20Marine%20Management%20Organisation.pdf>

Appendix UES11-2.

- 28.2.48 Residual effects on wetland birds during construction, will include (1) the direct loss of feeding, staging and loafing habitat at Killingholme Marshes Foreshore intertidal mudflat and feeding/roosting resource of wetland birds on the Killingholme Fields; and (2) disturbance and displacement of wetland birds utilising the remaining Killingholme Marshes Foreshore intertidal mudflat and the Killingholme Fields. Consequential impacts associated with the loss of the Killingholme Marshes Foreshore intertidal mudflat also have the potential to affect the usage of NKHP as a roost site. A significant residual impact was predicted in the original ES and that remains the case for the proposed material change. However, compensation habitat provided on the northern bank is designed to provide suitable foraging and roost sites for these species in time. Further information is provided in the updated Habitats Regulations Assessment submitted with the application.
- 28.2.49 Overall, there are no changes to the residual effects identified within the Chapter 11 of the original ES.

Technical Conclusion

- 28.2.50 Where appropriate, new baseline conditions have been characterised and assessed against those described in the original ES. No significant changes have been identified outwith those described in the original ES and considered in the Examining Authorities Report (2013).
- 28.2.51 Based on the above assessment of potential changes to the terrestrial ecology and nature conservation of the area against conditions identified in the original ES baseline, and from the assessment of the material amendment, no significant effects have been identified other than those assessed in the original ES.
- 28.2.52 Mitigation measures provided in the original ES and secured in the DCO (principally by the requirement to obtain approvals for a series of Environmental Management and Monitoring Plans) are considered to remain valid.
- 28.2.53 Overall, there are no changes to the residual effects identified within the original ES and the approved compensatory habitat will remain suitable to offset effects that cannot be mitigated.

Commercial Fisheries

- 28.2.54 The potential pathways for effects to Commercial and Recreational Fisheries from the proposed material amendment arise from indirect impacts to the fish and shellfish communities present around the vicinity of the proposed development and/or using the area around the development sites to move through the estuary on migration.
- 28.2.55 On this basis, the main areas of potential effect arise from the impacts of the material amendment to the fish communities of the estuary around the development:
- Construction of the quay entailing: Loss of habitat (intertidal and subtidal); underwater noise and vibration from piling; indirect changes to habitats from project-induced changes in hydrodynamic and morphodynamic regimes.
 - Dredging of the quay, berth pocket and approaches entailing: Habitat change from substrate removal; habitat and benthic communities disturbance from the sediment plume; indirect

changes to habitats from project-induced changes in hydrodynamic and morphodynamic regimes; and disturbance to fish and fish eggs/larvae from habitat loss and disturbance.

- Dredge Disposal entailing: Loss of subtidal habitat and benthic communities from dredge spoil disposal; habitat and benthic communities disturbance from the sediment plume; indirect changes to habitats from project-induced changes in hydrodynamic and morphodynamic regimes; and disturbance to fish and fish eggs/larvae from habitat loss and disturbance.

- 28.2.56 The actual likelihood of any significant effects to occur to the commercial fisheries of the area from the material amendment have been discounted, with it being concluded that the effects as identified in the original ES remain valid in the context of commercial and recreational fisheries, with any alteration in effect arising from the material amendment being either so small as to not be measurable or accommodated within the natural variability of the estuarine system.

Residual Effects

- 28.2.57 The review and assessment of the revised baseline data where available and/or appropriate, in the context of the material amendment has not identified any significant new impacts and as such, no additional mitigation is considered necessary.
- 28.2.58 Following consideration of mitigation, residual effects relating to commercial and recreational fisheries during the construction phase are identified within the original ES. Given that the proposed material amendment will not alter the findings of the original ES, the residual impacts for the construction phase remain as 'minor' to 'negligible', with a level of effect of 'not significant' (Section 12.8 of the original ES).
- 28.2.59 Following consideration of mitigation, residual effects relating to noise during the operational phase are identified within the original ES. Given that the proposed material amendment will not alter the findings of the original ES, the residual impacts for the operational phase remain as 'minor' to 'negligible', with a level of effect of 'not significant' (Section 12.8 of the original ES).
- 28.2.60 The residual effects on the commercial and recreational fisheries receptors from the material amendment and AMEP development as a whole remain as identified in the original ES (Section 12.6). On this basis, the findings of the original ES are considered to be appropriate and robust when considering the proposed material amendment.

Technical Conclusion

- 28.2.61 The baseline conditions have been reviewed and updated since 2012 to reflect the current baseline although the importance of the area around the vicinity of the AMEP development is not considered to be high for commercial and recreational fishing activity.
- 28.2.62 These data, and potential impact pathways from the material amendment, have been assessed against those described in the original ES, these largely relating to indirect effects through potential impacts to the fish and shellfish communities of the area.
- 28.2.63 No significant changes have been identified outwith those described in the original ES and the Examining Authority's Recommendation Report (2013).
- 28.2.64 Based on the above assessment of potential changes to the commercial and recreational fisheries

of the area against conditions described in the original ES baseline, and from the assessment of the material amendment and pathways of potential impact, no significant effects have been identified other than those assessed in the original ES.

- 28.2.65 Mitigation measures provided in the original ES are considered to remain valid, with no significant residual impacts to the commercial and recreational fisheries of the Humber Estuary in the vicinity of the AMEP development expected following their discharge.

Drainage and Flood Risk

- 28.2.66 Chapter 13 of the original ES states that all potential residual effects (no greater than Minor Adverse) relating to Flood Risk and Drainage will be further controlled through the implementation of additional mitigation (see Section 13.8 therein). While not expressly stated in the original ES, it is therefore clear that the residual effects of the DCO scheme in relation to Flood Risk and Drainage would not be significant.

- 28.2.67 The Flood Risk and Drainage chapter (Chapter 13 of the UES) demonstrates that proposed material amendments will not result in increased levels of impact and therefore the residual effect of the scheme in relation to Flood Risk and Drainage will remain not significant.

Residual Effects

- 28.2.68 Within the original ES, following consideration of mitigation, the residual effects relating to Flood Risk and Drainage during the construction phase were identified to be:

- the accidental release of polluting substances into the sea and inland watercourses (control measures will be implemented to mitigate the impacts of pollution incidents).

- 28.2.69 Within the ES submitted for the DCO, following consideration of mitigation, the residual effects relating to Flood Risk and Drainage during the operation phase were identified to be:

- Flood risk due to breach of tidal defences (to be mitigated by implementation of a robust Flood Warning and Evacuation Plan);
- Flood risk due to over topping of the existing tidal defences to the north of the quay which, under the terms of legal agreement (Appendix UES13-2), will be restricted to no more than 2l/s/m for the 1 in 200 annual probability event over a 20 year period, following which the EA will be responsible for maintenance;
- Flood risk due to failure of the proposed NELDB pumping station (residual impacts are likely to be Minor Adverse and will be mitigated by the use of multiple pumps, alarms, etc); and
- Flood risk due to failure of the proposed foul pumping stations (residual impacts are likely to be Minor Adverse and will be mitigated by the use of standby pumps, alarms and flow storage facilities).

- 28.2.70 It is concluded that there are no changes to the residual effects previously identified within Chapter 13 of the original ES.

Technical Conclusion

- 28.2.71 The site is set in a context where flooding is possible; however, this risk is largely controlled through flood defences. The scheme design has been developed to reflect the prevailing risk and will not exacerbate flood risk elsewhere. Residual risk will then be managed through implementation of a robust flood warning and evacuation strategy.
- 28.2.72 With regards to drainage, storm water runoff from the site will be discharged to the Humber Estuary. Particularly during construction there is however a potential for pollution to occur to the adjacent surface water channels and networks. This will be controlled and managed through the implementation of good construction practices.
- 28.2.73 The proposed material amendment will make no difference to the potential effects identified within the original ES (not significant) and no additional mitigation will be required.

Commercial and Recreational Navigation

- 28.2.74 The residual effects of the proposed material change to the originally proposed DCO scheme have all shown to be Moderate or Low, and therefore 'not significant'. This is considered acceptable in terms of the EIA regulations.
- 28.2.75 A new hazard of mooring / breakout has been assessed, with the residual risk assessed as being Low in both the construction and operational phases of the project. Again, this is considered 'not significant'.
- 28.2.76 In comparison with the originally proposed scheme, all risks have been assessed to be similar for the construction phase, with the exception of impact on capsizing swamping which has reduced from Moderate to Low and 'not significant'.
- 28.2.77 For the operational phase, in comparison with the originally proposed scheme, all risks have been assessed to be similar, with the exception of Ship Contact and Grounding risks, which both fell from Moderate to Low, and impact of fire and explosion which increased from Low to Moderate. Again, these are all considered 'not significant'.

Residual Effects

- 28.2.78 The overall effect on collision risk as a result of the Project, considering all hazards identified within the NRA is assessed to be Moderate, which is neither acceptable nor unacceptable.
- 28.2.79 The overall effect on contact risk as a result of the Project, considering all hazards identified within the NRA is assessed to be Low, which is not significant in terms of the EIA regulations.
- 28.2.80 The overall effect on grounding risk as a result of the Project, considering all hazards identified within the NRA is assessed to be Low, which is not significant in terms of the EIA regulations.
- 28.2.81 The overall effect on capsizing/swamping risk as a result of the Project, considering all hazards identified within the NRA is assessed to be Low, which is not significant in terms of the EIA regulations.
- 28.2.82 The overall effect on fire/explosion risk as a result of the Project, considering all hazards identified within the NRA is assessed to be Moderate, driven by the potential for high consequences should

the event occur and the presence of COMAH sites in vicinity of the Project. This is neither acceptable nor unacceptable.

28.2.83 The overall effect on breakout risk as a result of the Project, considering all hazards identified within the NRA is assessed to be Low, which is not significant in terms of the EIA regulations.

28.2.84 All of the residual impacts for the revised scheme are the same or lower than those assessed within the original ES for the DCO, with the exception of the impact on fire/explosion risk which has increased from Low to Moderate, and mooring breakout which was not previously assessed.

Technical Conclusion

28.2.85 The proposed activities associated with the Project have been assessed and it has been concluded that the Project should have a minimal effect on the existing risk profile which should be managed and contained assuming compliance with embedded mitigation and regulations governing: movements, pilotage, towage, VTS and procedures.

28.2.86 A general decrease in risk is noted across all hazard categories when compared to the assessment undertaken in 2011 in support of the original DCO application. Factors influencing this decrease in risk profile include:

- An overall decline in Humber vessel transits past the Project (>50% reduction in passing transits from AIS);
- Improvement of the Humber-wide SMS and implementation of embedded mitigations over time;
- The embedding of many originally proposed additional mitigation measures into the project design;
- The review and associated reduction in construction phase vessel movements associated with dredging activities identified within scoping;
- The simplification of the quay design via the removal of the specialist berth; and
- The reduction of cumulative projects considered within the 2011 NRA that have either been completed or were not taken forward.

28.2.87 All residual effects for the amended project were assessed as Moderate or Low and therefore 'not significant'. This is considered acceptable in terms of the EIA regulations.

Traffic and Transport

28.2.88 With the exception of the minor diversion to Footpath 50, the proposed material amendment will not directly alter the highways arrangements or traffic movements associated with the proposed development. Further consideration of the minor diversion to Footpath 50 is provided within Chapter 21; Socio-Economics of this UES.

28.2.89 The proposed amendment to the agreed diversion route to Footpath 50 around the AMEP site is proposed to avoid crossing the operational Killingholme Branch line. The proposed new route would, by means of a 440m diversion, relocate the path onto a closed section of the railway line

where there is an existing agricultural crossing and no track. The addition to the length of the route is considered to be offset by the benefit to its users of removing a possible footbridge, especially to the ambulant disabled, and the footbridge would be inconvenient and prohibitive.

- 28.2.90 The proposed material amendment will not materially affect the level of traffic generated during the construction or operation phases of the development. Any changes to the construction traffic would be minimal in scale, and thus the original ES is considered to be suitable to assess the effects of traffic and transportation.
- 28.2.91 The mitigation measures identified in the original ES would remain in place for the proposed material amendment. Consultation with Highways England during the consultation on Scoping and with North Lincolnshire Council has confirmed that all the major highway works necessary to mitigate the original development are complete and they are satisfied the proposed material amendment will not impact on the highways networks.
- 28.2.92 On this basis, there are no significant changes since the original ES and this topic has been scoped out of the UES.

Noise and Vibration

- 28.2.93 Chapter 16 of the original ES has been reviewed in the context of the proposed material amendment, to determine whether the proposals, and subsequent changes in policy, guidance and baseline conditions have the potential to lead to changes in the findings as described within the original ES.
- 28.2.94 Following this review, no changes have been identified that would alter the assessment of effects as described within the original ES.

Residual Effects

- 28.2.95 Following consideration of mitigation, residual effects relating to noise and vibration during the construction phase are identified within the original ES.
- 28.2.96 Given that the proposed material amendment will not alter the findings of the original ES, the residual noise impacts for the construction phase remain as 'minor' to 'negligible', with a level of effect of 'not significant' (Table 16.15 to Table 16.8 of the original ES).
- 28.2.97 As Receptors S1 and S2 are no longer in residential use and will not return to residential use, construction vibration levels are assessed as 'negligible' with a level of effect of 'not significant'.
- 28.2.98 Following consideration of mitigation, residual effects relating to noise during the operational phase are identified within the original ES.
- 28.2.99 Given that the proposed material amendment will not alter the findings of the original ES, the predicted noise levels typical operations will remain below the threshold values, and therefore no residual effects for the operational phase are predicted (paragraph 16.8.3 of the original ES).
- 28.2.100 Following this review, it is considered that there are not any changes to the assessment of residual effects identified within the original ES. On this basis, the findings of the original ES are considered to be appropriate and robust when considering the proposed material amendment.

Technical Conclusion

- 28.2.101 This UES has identified that the proposed material amendment, and changes in policy, guidance and baseline conditions that have occurred since the original DCO application, will not alter the findings presented within the original ES. On this basis, it is not necessary to undertake further technical assessments in support of the proposed material amendment.
- 28.2.102 It is therefore concluded that Chapter 16: Noise and Vibration of the original ES remains valid and that the proposed material amendment is entirely appropriate in the context of the extant DCO.

Air Quality

- 28.2.103 An air quality assessment was undertaken to assess potential impacts and effects of both the construction and operational phases of the AMEP. Full details of the assessment can be found in the original ES (Chapter 17).
- 28.2.104 It is assumed that construction and operational activities would be undertaken in line with recognised industry good practice.

Residual Effects

- 28.2.105 Construction phase effects would be considered as short-term and temporary in nature. With the correct implementation of appropriate dust mitigation measures, residual effects would be rendered 'not significant'.
- 28.2.106 There are not considered to be any significant residual effects associated with the operational phase.
- 28.2.107 There are no changes to the residual effects identified within the original ES of the DCO.
- 28.2.108 The original ES mentioned that the possible AQMA declaration in Killingholme could have altered this conclusion. However, no AQMA was declared and there has been noted improvements in pollutant concentrations in Killingholme. Therefore, the conclusions of the original ES stand and remain precautionary in terms of the assessment of receptor sensitivity and subsequent magnitude of change predicted.

Technical Conclusion

- 28.2.109 The Air Quality Chapter of the original ES which supported the DCO Application, included detailed qualitative and quantitative air quality assessments to assess the construction and operational phases of the AMEP.
- 28.2.110 The assessment considered several pollutants and several emissions sources, across a range of human and ecological receptors existing within the study area.
- 28.2.111 This Chapter of the UES has considered the predicted effects of the original ES, and the current and future baseline, in the context of the material amendment and whether the material amendment and current baseline will materially alter the conclusions of the original Air Quality Chapter to the ES. This includes a notional 100 per cent increase in emission from all non-road sources.
- 28.2.112 It has been concluded that the original ES conclusions, which predicted all effects as 'not significant'

remain valid. Furthermore, the assessment of even a notional 100 per cent increase in emissions from all non-road sources still concludes a 'not significant' effect at all relevant receptors. The material amendment is therefore not considered to result in any new/different effects or effects of a greater magnitude than were previously assessed.

Marine Archaeology

- 28.2.113 The construction phase impacts altered by the change in quay design and dredging from the original ES are:
- Amended dredging operations in the Berthing Pocket.
- 28.2.114 The overall footprint of the quay is largely unchanged and as there is no alteration to the depths of the dredging in the in the Berthing Pocket, Approach Channel and Turning Area these changes do not induce additional effects on the marine Historic Environment compared to those assessed in the original ES.
- 28.2.115 Operational phase impacts associated with marine Historic Environment will be unchanged from those considered in the DCO application.
- 28.2.116 There will be no additional cumulative effects associated with the marine Historic Environment.
- 28.2.117 Given the permanence of the effect upon marine Historic Environment receptors, there were no residual effects identified in the original ES with regard to the construction phase or the operational phase. Following this review, it is concluded that there are no changes to the Residual Effects previously identified as part of the DCO.
- 28.2.118 The proposed material amendments will not alter the effects as identified within the original ES.

Residual Effects

- 28.2.119 Given the permanence of the effect upon marine Historic Environment receptors, there were no residual effects identified in the original ES with regard to the construction phase (Section 18.8 of original ES).
- 28.2.120 Following this review, it is concluded that there are no changes to the Residual Effects previously identified within the original ES for the DCO.

Technical Conclusion

- 28.2.121 The impact of the material change on the historic environment are negligible. The risks to the marine Historic Environment can be adequately mitigated through the mitigation measures set out in the 2012 WSI (Wessex Archaeology 2012a).
- 28.2.122 The proposed material amendments will make no difference to the potential effects and no additional mitigation measures will be required to those set out in the 2012 WSI (Wessex Archaeology 2012a).

Light

- 28.2.123 There are no predicted changes to the lighting impacts as part of the Lighting Assessment that was

submitted with the original ES.

- 28.2.124 There are no changes proposed to the lighting levels on site, which are intended to allow for safe working. The precise arrangements for the external lighting are considered to be reserved matters which require submission of their written details and the subsequent approval by the local planning authority, following their consultation with the Highways Authority and Natural England, in accordance with Schedule 11, paragraph 24 of the DCO.
- 28.2.125 The conclusions associated with the Lighting Assessment undertaken as part of the original ES remain valid. The DCO baseline is still considered representative of the current baseline situation, despite new development including lighting. The area is still classified as Environmental Zone E4, “high district brightness” and the proposed material amendment will not raise additional effects beyond those already assessed within the original ES.
- 28.2.126 On this basis, there are no significant changes since the original ES and this topic has been scoped out of the UES.

Landscape and Visual

- 28.2.127 The change proposed would result in very limited changes to the composition of available views towards the quay line. There would be no significant change to the level and type of visual effect on walkers along the footpath than that which was assessed in the original ES. There would also be no additional visual effects that would result from the proposed material amendment.
- 28.2.128 The proposed material change would also result in limited changes to the views available to walkers along the proposed footpath diversion.
- 28.2.129 There would be no change to the level and type of effect assessed in the original ES on the landscape resource.
- 28.2.130 On this basis, there are no significant changes since the original ES and this topic has been scoped out of the UES.

Socio-Economic

- 28.2.131 The proposed changes to the DCO with regard to socio-economic effects are confined to impacts on recreational routes that form part of the Public Rights of Way network and the proposed route of the England Coast Path, a National Trail. Whilst Public Rights of Way in this area have only local importance, the England Coast Path is of national importance and therefore is considered a receptor of high sensitivity.
- 28.2.132 The presence of the England Coast Path in this location did not form part of the baseline in the original ES. Progress with opening the route around England as a whole, including defining the proposed route in this location, has altered the baseline and this is taken into account in this UES.
- 28.2.133 The proposed amendment to the agreed diversion route around the Quay is required to avoid construction of a new bridge crossing of the Killingholme Branch line. The proposed new route would, by means of a 440m diversion, relocate the path onto a closed section of the railway line where there is an existing agricultural crossing. The proposed addition to the length of the route is considered to be offset by the benefit to users of removing the proposed footbridge, especially for users such as ambulant disabled users for whom using a bridge would be at best inconvenient or

potentially prohibitive. The proposed changes are therefore not assessed to have a significant effect on users of the England Coast Path.

- 28.2.134 As the proposed changes are negligible in the context of the route of the England Coast Path through North Lincolnshire, they are not assessed to have a significant effect on the tourism economy. It is therefore concluded that the diversion of the England Coast Path is not material to the socio-economic assessment.

Residual Effects

- 28.2.135 As no significant effects have been identified as a result of the proposed changes, there are no additional residual effects and no changes to the residual effects identified in Chapter 21 of the original ES.

Technical Conclusion

- 28.2.136 The assessment contained within this UES has taken into account the change to baseline within the defined study area, as well as the proposed amendment to the scheme, and has concluded that the proposed diversion to Footpath 50 would result in a negligible to minor effect, which is not significant.
- 28.2.137 Furthermore, as no adverse significant effects have been identified and suitable mitigation is already contained within the made DCO, there is no change to the residual effects previously identified in the original ES.

Aviation

- 28.2.138 While there have been significant recent updates to the regulations and guidance notes related to aviation safeguarding and the lighting of structures deemed to be “obstacles” by the regulations, none of these has involved a change to the assessment parameters affecting the potential impacts of such obstacles, e.g. calculation of the Obstacle Limiting Surface (OLS) at an aerodrome, relevant to the previous DCO application.
- 28.2.139 Similarly, no new developments have taken place at Humberside Airport operations with respect to the airport’s OLS, e.g. no new runways, etc.
- 28.2.140 The key material change to the amended proposal is the potential for quay-side cranes at the AMEP site to reach a maximum potential height above ground of 200m.
- 28.2.141 In the DCO application, the previously assumed maximum crane height was 165m.
- 28.2.142 The effect of the above amendment is that Humberside Airport’s OLS (specifically its Outer Horizontal Surface) may be penetrated by the newly proposed cranes.
- 28.2.143 This breach has increased the risk level (in the absence of mitigation) to surrounding aviation activities (refer Section 22.5.0 of Chapter 22: Aviation).
- 28.2.144 Accordingly, additional mitigation recommendations have been triggered and further notification/consultation with relevant stakeholders (CAA and Humberside Airport) is now warranted.

- 28.2.145 Subject to the implementation of mitigation measures detailed in Chapter 22 (Aviation) of this UES, the residual impact associated with the newly proposed quay-side cranes is modest and manageable given the additional mitigation recommendations contained herein.

Residual Effects

- 28.2.146 Following consideration of the additional mitigation identified within Chapter 22 (Aviation) of this UES, the residual effects relating to aviation safeguarding during the construction phase are as follows:

- With the provision of the aviation warning light mitigation measures made in this report the hazard to aviation presented by construction of the newly proposed cranes will be mitigated to a level which is manageable and in line with those presented at other airports and aerodromes in the UK.

- 28.2.147 Following consideration of both the DCO mitigation and additional mitigation, the residual effects relating to aviation safeguarding during the operational phase are as follows:

- since birds will likely be displaced to locations further away from Humberside Airport, it is judged that the bird strike hazard will not change from its current (baseline) condition and may in fact improve given that the avian-compensation site are further away from the airport.
- With the provision of the aviation warning light mitigation measures made in this report the hazard to aviation presented by the newly proposed cranes will be mitigated to a level which is manageable and in line with those presented at other airports and aerodromes in the UK.

- 28.2.148 It is concluded that, although changes have been noted in relation to the Residual Effects previously identified in the original ES Chapter on Aviation Safeguarding (and reflected in the DCO), the residual change in risk level associated with the newly proposed quay-side cranes is modest and manageable given the additional mitigation recommendations contained herein.

Technical Conclusion

- 28.2.149 A review has been undertaken of aviation safeguarding requirements in relation to the amended AMEP proposal with respect to mitigation requirements associated with the newly proposed 200 m tall quay-side cranes.

- 28.2.150 The option to deploy taller cranes has necessitated undertaking a further Aviation Safeguarding Assessment as contained within this chapter. This assessment has identified that the proposed craneage will exceed the Humberside Airport OHS surface by over 30 m (refer Section 22.4.0). This has been assessed as a significant effect on the risk level associated with the craneage if not mitigated.

- 28.2.151 Subject to the implementation of the recommended notification, consultation and lighting mitigation recommendations, the proposed additional craneage height will be manageable from an aviation safeguarding point of view and the residual effect, following implementation of this mitigation would result in a low residual effect which is not significant.

- 28.2.152 With the exception of the newly proposed quay cranes at the site, no significant changes have been proposed in relation to key building heights and other structure elements (including lighting poles) relevant to the assessment of aviation safeguarding and marking/lighting of obstacles.

- 28.2.153 Accordingly, other amendments to the proposed design will not therefore give rise to any new or different impacts on aviation safeguarding.

Waste

- 28.2.154 As part of the Scoping Opinion adopted by PINS, it was indicated that no matters relating to waste were proposed to be 'scoped out' of this UES. The purpose of this approach was for the UES to include consideration of clay arisings and the reasons for the chosen options for disposal.
- 28.2.155 However, these matters are adequately dealt with as part of other Chapters of the UES (principally Chapter 4: Description of Changes to Development, and Chapter 8: Hydrodynamics and Sedimentary Regime). On this basis, it has not been considered necessary to undertake a further update of the Waste chapter within this UES and this topic has been 'scoped out'.
- 28.2.156 Qualitative considerations indicate that the proposed material amendment would, on balance, reduce the quantum of construction waste arising from the project. There are no changes to the operational wastes detailed within the original ES that are anticipated due to the proposed material amendment.
- 28.2.157 Any changes to the construction waste arisings are likely to be minimal, and therefore the original ES is considered to suitably assess the effects of waste.
- 28.2.158 The mitigation measures provided within the original ES would remain in place for the proposed material amendment. This would ensure that the residual impacts of the terrestrial waste from the development are of no significance.

Health

- 28.2.159 It is determined that the proposed material change would not affect the findings of the Health Assessment set out within Chapter 24 of the original ES³. The Health Assessment as set out in the original ES identified potential residual adverse health effects arising from operational traffic. It is confirmed that the proposed material changes will not affect operational traffic, and therefore there is no requirement to provide an updated Health Assessment in this regard.
- 28.2.160 The DCO baseline in respect of Health profiled the human population of North Lincolnshire and Northeast Lincolnshire with regard its socio-economic characteristics including ethnicity, social and demographic structure, and relative deprivation. Whilst the detailed socio-economic baseline is expected to have evolved over the period since 2012, it is not expected that there would be any significant change to the baseline issues described in the original ES that would be relevant in respect of the proposed material changes.
- 28.2.161 The potential impacts identified by the Health Assessment were assessed in relation to specified sensitive receptors and took into account both embedded measures and bespoke mitigation. As the proposed material changes would have similar impacts and adopt similar mitigation measures it is considered none of the proposed material changes would affect the findings of the Health Assessment as set out in the original ES.

³<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR030001/TR030001-000329-24%20-%20Health.pdf>

28.2.162 On this basis, there are no significant changes since the original ES and this topic has been scoped out of the UES.

28.3.0 Closure

- 28.3.1 The proposed material amendment has been assessed for additional and/or alterations to the environment effects contained within the original ES for the DCO. This has been undertaken through the preparation of this UES and the associated technical assessments contained or referenced herein. This UES therefore represents an addendum to the original ES.
- 28.3.2 In accordance with the EIA Regulations, consideration has been given to assessing additional potential effects during both the construction and operational phases of the development, whilst effects have been analysed in terms of residual and cumulative; temporary and permanent (short and long term); and beneficial, negligible and adverse.
- 28.3.3 It is acknowledged that the proposed development, as assessed within the original ES, will result in a number of adverse effects, some of which are considered 'significant' from an impact perspective. However, through the undertaking of this UES, it has been assessed that there will be no additional, or change to, the significant effects identified within the original ES.
- 28.3.4 On this basis, the conclusion is reached that the proposed material amendment (Material Change 2) is appropriate in the context of the DCO and that there are adequate mitigation measures available to ensure that the proposed development could proceed, as amended, without giving rise to unacceptable environmental effects, even in combination with the other committed developments identified.
- 28.3.5 The mitigation measures identified within the original ES and DCO, along with any alternate or additional mitigation and monitoring identified herein, would ensure to minimise any adverse residual effects on the existing environment or local amenity.
- 28.3.6 On this basis, there should be no foreseeable reason why the proposed material amendment (Material Change 2) would be considered inappropriate or unacceptable from an environmental impact perspective.

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