



**Able Humber Ports Ltd
Marine Energy Park
Proposal to build a quay and associated development
on the south bank of the River Humber**

Planning Inspectorate Reference: TR030001

**Answers to the Examining Authority's 2nd round questions
provided by
The Environment Agency
Unique Reference Number: 10015552**

7 September 2012

The following answers are provided by the Environment Agency (EA) in response to the Examining Authority's second written questions.

For Natural England, Marine Management Organisation and the Environment Agency

In the SoCG between your organisations and the applicant a number of issues remain unresolved because you have not been able to fully consider additional information supplied by the applicant.

Q68. What is your position now on the additional information?

Q69. To what extent does it address the issues raised in your Relevant Representations or Written Representations on the potential impacts on European sites?

1.0 The EA has continued to work with the applicant through this examination process to reach agreement where possible on our outstanding issues. We have managed to reach agreement with the applicant on many issues with the proviso that the legal agreement that has been drafted by the EA can be agreed with the applicant.

2.0 Hydrodynamic and Sedimentary Regime

2.1 With regard to the EA's comments in the SoCG and in paragraphs 4.0-4.24 of our comments on response (by the Applicant) to our Relevant Representations (submission of 3 August 2012), we have continued to engage with the applicant on the outstanding issues. We are currently awaiting delivery of a summary document which will address all the outstanding issues with regard to Chapter 8 and all its associated Annexes and Explanatory Notes. Until we are in receipt of this document we are unable to confirm that all the issues are resolved.

2.2 However, the EA is now satisfied that the issues raised in paragraphs 4.25-4.31 (submission of 3 August 2012) are now resolved through the inclusion of the long-term habitat loss tables submitted in the SoCG for the shadow Habitats Regulation Assessment (sHRA) on 24 August 2012. In addition, in paragraph 4.26 the EA raised the issue of comparison of the hypsometry characteristics in order to give a more accurate insight in to the development of the compensation site. The applicant has taken account of our concerns regarding the development of the compensation site and has submitted further design details for the site in August, which incorporates a Regulated Tidal Exchange scheme. The EA understands that this design is still being further refined and we will reserve comment until the final design is presented. However, we are encouraged by the proportion of mudflat still present after 10 years, shown in the current model outputs.

2.3 With regard to the choice of site the EA would reiterate that it neither supports nor objects to the use of Cherry Cobb Sands, but we would

like this issue to be a material consideration in the Secretary of State's decision making process. Our position remains as set out in our response provided to Question 68 of the first round of Examining Authority's questions and as outlined in paragraphs 4.104-4.111 in our Written Representations.

2.4 The EA can confirm that it is satisfied with the immediate habitat loss (EX11.23) as presented in the Tables within the sHRA SoCG, which include the -7.7 ha functional loss of the sub-tidal berthing pocket. However, the EA is still unclear as to whether or not the in-combination assessment, as presented in the sHRA SoCG, has fully considered all issues. The EA had anticipated that any potential effects from the Marine Energy Park (MEP) alone presented in Table 3.1 (in the sHRA SoCG), which were screened out for Likely Significant Effect (LSE) alone, would then be assessed in-combination with other projects. This would ensure that the in-combination or cumulative effects arising from the residual risk of the MEP did not have a LSE in-combination.

2.5 With regards to the E.ON and Centrica intakes and outfalls, the preference for the EA, from a hydrodynamic perspective, would be for the outfalls to be re-located. The modelling work undertaken to demonstrate the effects when they are re-located is satisfactory. The EA does still have some outstanding issues regarding the intakes and outfalls should they remain in-situ. These are highlighted in paragraphs 4.16-4.20 of our submission of 3 August 2012. We are awaiting the receipt of the additional Chapter 8 summary document, which we understand will address these issues if they have to remain in-situ. We will be able to provide further advice to the Examining Authority on receipt of the new summary document.

3.0 **Water Framework Directive assessment**

3.1 The EA is awaiting receipt of an amended assessment to update EX8.12 Water Framework Directive (WFD - project wide) from the Applicant. We have discussed the WFD issues with the Applicant's consultant and we are expecting to receive a revised version in the near future. Our position remains as set out in our Written Representations, paragraph 4.43 (submission of 29 June 2012). Please also see comments in 5.14 below.

4.0 **Cumulative and In-Combination Effect**

4.1 With regard to the in-combination and cumulative impacts Explanatory Note EX44.1, the EA has now fully reviewed this and found it to cover a comprehensive range of plans and projects that could act in-combination with the MEP. The EA's comments presented in paragraphs 10.1-10.3 (submission of 3 August 2012) still remain valid. The EA has found it difficult to follow the Applicant's arguments and conclusions, given the absence of cross-referencing and the qualitative

nature of the screening process. The EA would like to illustrate the point with the following example:

(Extracts from EX44.1)

Sub-tidal areas, maintained dredged areas (SDC, ports) Gas pipelines near Halton Middle

4.2.6 Impacts on follow regimes due to bathymetric and topographic changes may lead to changes in estuary sedimentation patterns and morphology that could affect maintenance dredging requirements, or further expose subsurface pipelines

Table 4.3 Cumulative impacts due to development

Sub-tidal areas, maintained dredged areas (SDC, ports) Gas pipelines near Halton Middle

*No impacts/ minor beneficial impact for sub-surface gas pipelines
The cumulative change to current speeds in the Middle Estuary is negligible and this means that the potential impact on bed morphology here is also negligible. In general, in the sub-tidal area, the in combination cumulative impacts at the disposal sites are no greater than those due to the SDC deepening and AMEP full disposal individual impacts.*

The small reduction in current speeds due to the HRBT contribution may be of beneficial impact to the gas pipelines, potentially increasing bed stability and reducing the currently observed erosion here.

4.2 As the above is not referenced or any changes quantified, the EA is unable to understand the thought process that changes a potential to further expose sub-surface pipelines to a potential change to bed stabilisation. To assist the reader, the Applicant needs to present, as a minimum, referenced evidence used to formulate their arguments. The EA needs to understand the magnitude and spatial and temporal distribution of the change in current speeds in this instance.

4.3 There are a number of statements that we would not agree with. However, we advise that effort should be focussed on a number of specific issues where we believe that additional work is required:

- Capital and maintenance dredging and dredge disposal - EX10.4 refers to dredging and states “*Loss of the current benthic community as a result of habitat loss will be a permanent effect. It was assessed in the ES, along with the footprint effects of the quay as being significant and is also assessed as significant in its own right*”. There is no mitigation assessed for this impact in EX10.4 and the EA advises that the predicted impacts from the MEP on changes to biotope and species distribution need to be considered in-combination with other projects. This aspect also needs to be covered in the revised WFD assessment (see our comments in paragraphs 3.1). The EA also has concerns about the disposal of inerodible material alone and in-combination with other dredge disposals of this type of material, but has been working with the

Applicant to resolve this issue (see comments in paragraphs 5.0-5.17).

- Hydrodynamic and morphological change – it is unclear whether an adequate assessment has been made of all projects that may result in hydrodynamic and/or morphological change. This should include dredging and disposal, as well as existing managed realignment sites, quay construction and the tidal stream generators (it is unclear from the revised EX44.1 whether the tidal stream generation bid under DECC MEAD funding for the Humber is included) and should provide further clarity on how these have been assessed.

5.0 Dredging and Disposal (incorporating detailed comments on EX8.7 Modelling of Final Quay Design)

- 5.1 Following close working with the Applicant, a revised explanatory note has been produced by the applicant to further explain the dredge and disposal volumes for AMEP in combination with other plans and projects (this is attached at Appendix A). This explanatory note has assisted us in providing the following response.
- 5.2 The Applicant has modelled the scenario of full disposal for the MEP to sea. However, they now intend to use approximately half of this material for beneficial use on land and will not now undertake full disposal at sea. In addition, the applicant has not adequately assessed the total volumes of other licensees' that have already been granted permissions or are in the planning system. It is possible to use the MEP full disposal at sea option as a proxy for the worst case in-combination assessment for potential impacts arising from disposal at sea, should all projects and plans currently in the planning system, including the MEP, proceed. The EA's comments on EX8.7 need to be understood in this context.
- 5.3 The Executive Summary of EX8.7 provides a view in terms of the long-term impact of the MEP on the estuary dynamics and morphology. The EA has provided further evidence in its response of 3 August 2012 in paragraphs 4.25-4.27 and Appendix E in terms of long-term morphological response of the estuary to the MEP. The Applicant has now agreed to provide compensation for this impact, and subject to this compensation meeting the requirements of Natural England (NE) as suitable compensation, the EA is able to withdraw its objection on this matter. The EA accept the argument in EX8.7 regarding the quantum of change as a consequence of the MEP, when compared to the change resulting from sea-level rise, which is small. This does not negate the Applicant from accepting their responsibility to compensate for the impacts of their development. The EA's concerns relate to its responsibility to compensate for climate change related losses of intertidal habitat, as a result of sea level rise. If the EA is unsuccessful in delivering suitable managed realignment sites in the appropriate parts

of the estuary, to compensate for this coastal squeeze, it will be unable to fulfil its flood risk management role by continuing to build new and improve and maintain existing flood defences in the estuary. This may ultimately result in places like Hull, Grimsby and Immingham being placed at an increased risk of flooding.

- 5.4 The identification and delivery of suitable managed realignment sites in the estuary is already extremely challenging and complex. For any development to exacerbate the rates of habitat loss, no matter how small, without being required to secure suitable compensation for themselves, could seriously jeopardise our ability to meet these responsibilities as well as adding to both the cost and complexity of what needs to be delivered; a cost which would have to be met by the public purse not the Applicant. The EA is pleased that the Applicant now accepts that the development will have a long-term impact on the SAC, and hence triggers the need for the impact to be assessed via the HRA.
- 5.5 EX8.7, Table 2-1 contains a factual error. The lifetime of the Humber Shoreline Management Plan is not until 2033, but covers to 2105. The full title of the document is The Humber Estuary Coastal Authorities Group Shoreline Management Plan 2 (HECAG SMP2) and this defers to the Humber Flood Risk Management Strategy in terms of delivery for those policy units where there is overlap, for Epoch 1.
- 5.6 Paragraph 3.3.1 Impacts: Waves. The EA is satisfied with the conclusions of the additional impacts of the waves and potential effects, subject to the signing of the legal agreement with the Applicant, with regard to EA flood defences and monitoring requirements. This is to safeguard the future protection in this area, should any uncertainties within the modelling materialise.
- 5.7 Paragraph 3.3.3 Short-term sedimentary regime. The EA is satisfied with the findings of this section subject to the Applicant agreeing to the monitoring requirements defined in the draft legal agreement (currently with the Applicant for consideration) and the agreement to appropriate protective provisions within the DCO. This will ensure that the more significant impacts of a larger quay are safeguarded against.
- 5.8 Section 3.4 Discussion of Results. The EA's comments on the long-term morphological response of the estuary are provided in paragraphs 5.3-5.4 above.
- 5.9 The EA's response to the potential impact on its defences south of the MEP has been subject to significant discussion with the Applicant and is defined in the draft legal agreement between the Applicant and the EA.
- 5.10 The discussion provided within EX8.7 as to the difference between the mud-modelling undertaken by HR Wallingford and that presented by

JBA is helpful. It would be sensible if, in discussing the differences in results, the impacts of flocculation within the estuary and potential changes to the patterns and rates of deposition within the adjacent berths could be considered.

- 5.11 JBA's reference in Table 3.2 to a rubble structure slope as providing suitable mitigation would benefit from re-definition. The EA expects significantly more than a rubble slope to be provided, and requires an indication of the specification of the size, shape, and density of the material to be used. The EA is satisfied that its requirements will be met, as long as the draft legal agreement can be finalised and signed prior to the granting of any DCO.
- 5.12 Chapter 4. These comments are provided subject to the proviso outlined in paragraph 5.2 above. The assumptions applied in the CMS-Flow Model used to model sediment transport from the disposal sites means that the degree of uncertainty increases closer to the intertidal areas. As a consequence, the EA will require monitoring of the disposal grounds and intertidal area as the mudflats in this area provide an important element of depth-limiting wave energy and providing an additional buffer to the EA flood defences. Should the intertidal area around Hawkin's Point be subject to erosion or changes, which could consequently have adverse impacts on our flood defences, we may require remedial works.
- 5.13 Full disposal at sea (which equates to a full in-combination assessment) indicates a change in wave height of +/-2% over a 4 km stretch of coast line. The change in the depth-induced wave breaking has the potential to have impacts on our assets over time. In addition, Section 4.4.1 indicates that over time there maybe morphological change in the intertidal area with a potentially more energetic zone to the east of Hawkin's Point. This area is already subject to twice yearly asset inspections triggering restoring of moved stone and replacement as inspection results dictate, providing erosion protection works by the EA to maintain the integrity of our flood defences in this area. Anything that further exacerbates our maintenance responsibilities in this area would require additional contributions to the costs of this work. Paragraph 5.5.2 indicates that the in-combination assessment with disposal in HU081 could further exacerbate the changes at Hawkin's Point.
- 5.14 Paragraph 4.4.2 Hydrodynamics. The change in cross sectional area is presented within this section, indicating a change in baseflow of approx 5% from baseline affecting an area of 2 Mn m². The EA would have anticipated seeing a consideration of the hydromorphological changes predicted within EX8.7 on the mitigation measures not currently in place for the Humber Lower water body. The activities undertaken should not jeopardise the achievement of good ecological potential (GEP). We would therefore have expected a discussion of the future ecological impact of these changes in EX8.12. As section

4.4 of EX8.7 clearly indicates potential impacts on the intertidal area, we would expect an analysis of the impact of this on “*preserve and where possible enhance ecological value of marginal aquatic habitat, banks and riparian zone*” and “*removal of hard bank reinforcement/revetment, or replacement with soft engineering solution*”. From the evidence presented to date, it is not possible to determine the likely impact on the EA defences in the area affected (Figures 4.4-4.10, Figure 5.6-5.8, EX 8.7), and hence the potential need for additional hard bank reinforcement. This point is further illustrated in Table 4.2, where there is no indication of the potential impact on our flood defences from the change in wave energy.

- 5.15 The EA will be requiring the applicant to monitor and report on these impacts and undertake Standard of Protection assessment, subject to certain conditions as defined in the monitoring requirements of the draft legal agreement.
- 5.16 Table 4.2. This report refers to an area of 2% of the Outer Humber area being affected by changes in flow speeds of up to 5%. It is difficult for the EA to provide a view on this as the report does not define what area the Outer Humber consists of. We would need the applicant to clarify if this is the outer north area of the estuary that the EA and NE work in order to manage coastal squeeze losses (as shown in Appendix B). The EA requires clarification on this matter before being able to offer a formal response as to the significance of the changes of approximately 5% in flow speeds.
- 5.17 Section 5.4.2 of EX8.7 explains in greater detail the potential uncertainties and differences in model outputs from the work presented within both the MEP Environmental Statement (ES) and other development’s ESs. This is a further justification for the EA’s monitoring requirements in the draft legal agreement to be agreed and signed prior to any DCO being granted. The EA needs to safeguard the population around the Humber estuary and to prevent increased flood risks as a consequence of the development. The model uncertainty limits are reported to be +/- 10 mm for water level outputs. Monitoring is the most effective manner to safeguard the EA’s interests.

6.0 **Piling noise impacts on migratory fish**

- 6.1 We can confirm that the applicant has now agreed to include our requested mitigation in respect of the protection of salmon from percussive piling. A summary of these requirements was included in the sHRA SoCG, relating to the protection of lamprey and birds. Although the EA was not able to participate in this SoCG, we can confirm that these mitigation measures are also relevant for the protection of migrating salmon. The issue of potential compensation for residual risk to salmon, as outlined in our submission of 3 August 2012, paragraphs 3.13-16, remains unresolved.

7.0 Cherry Cobb Sands site winnings

- 7.1 The EA has received information from the applicant to confirm that the site winnings at Cherry Cobb Sands will be appropriate for use within the new defence embankment with an appropriate lime additive. This issue is now resolved.

APPENDIX A

ABLE'S NOTE ON CAPITAL DREDGING

AMEP: EXPLANATORY NOTE ON VOLUMES OF CAPITAL AND MAINTENANCE
DREDGING FOR IN-COMBINATION PROJECTS

1. On 23 November 2011, the Marine Management Organisation (MMO) wrote to ABLE confirming that 954 350 m³ of glacial till could be deposited at sites HU081, HU082 and HU083.
2. On 2 April 2012, the MMO submitted Relevant Representations (RRs) to the Planning Inspectorate in relation to AMEP. Paragraphs 7.13 to 7.18 of the RR addressed the issue of the cumulative and in-combination assessment with respect to dredging works. MMO's RR included the information tabulated below:

Table 1: The proposed disposal quantities of known projects disposing to disposal sites HU080, HU081, HU082 and HU083

Application	HU081, 82 & 83; Sunk dredge channel A,B & C (m ³)	HU080; Humber 1A Middle shoal (m ³)
Able Marine Energy Park	954,350	981,150
Green Port Hull	135,850	
Hull Riverside Bulk Terminal	548,000	
Immingham Oil Terminal Approach Channel	375,000	1,597,000
Grimsby Ro-Ro	45,000	115,000
TOTAL	2,058,200	2,693,150

3. The RR also noted that AMEP should dispose of all its non-erodible deposits at HU082 (paragraph 7.16).
4. On 4 April 2012, ABLE sought advice from the MMO regarding the specific fate of the dredge arising's for Green Port Hull (GPH), Hull Riverside Bulk Terminal (HRBT), Immingham Outer Terminal Approach (IOTA) and Grimsby Ro-Ro (GRR). In response the MMO provided the advice summarized in Table 2 below.

Application	tonnes			
	HU081	HU082	HU083	HU080
AMEP		2 099 750		
GPH	169 100	169 100		
HRBT	To be deposited at any reasonable location			
IOTA	139 850	139 850		
GRR	49 500	49 500		
Total (t)	358 450	2 458 200		
Total (m³)	160 000	1 117 363		

**Table 2 : Disposal Sites advised by MMO on 27-4-12
(based on 1m³ = 2.2 tonnes)**

5. The ES for HRBT records that 548 000 m³ of capital dredge material will be glacial in origin and propose to deposit that material at HU081 and HU082

AMEP: EXPLANATORY NOTE ON VOLUMES OF CAPITAL AND MAINTENANCE
DREDGING FOR IN-COMBINATION PROJECTS

but the ES does not state the volumes to be deposited in each (ES paragraph 9.151). The impact of the disposal of glacial clays is reported in paragraphs 9.248 and 9.249 of the ES, reproduced below, although these paragraphs also note that material might also be disposed of at HU083.

9.248 The majority of the capital dredged material from the HRBT site (glacial clay and gravel) is proposed to be deposited to the north of SDC at the sites referred to as SDC A, B and C (predominantly A and B). Individual barge deposits will need to be targeted based on detailed bathymetric survey to avoid unacceptable mounding. The material to be deposited is likely to be the same as deposited from the IOH at the same sites, therefore the bed character will be the same as presently exists. Monitoring for the IOH project showed the material to be stable at the site. No impacts from dispersal of the deposited sediment are expected.

9.249 The maximum height of the deposit on the seabed will be controlled so as not to change the hydrodynamic flow controls in the area. With the practices given above and in the main text, the effects of the deposit are assessed as localised to the area of disposal and of minor significance locally, and no significance to the Estuary as a whole.

6. No assessment of the HRBT dredge disposal in-combination with IOTA, Grimsby Ro-Ro or GPH is reported in Chapter 19 of the ES.
7. In the Statement of Common Ground on the ES, ABLE confirmed that they had identified a beneficial use for approximately half of the glacial till that would be dredged from the berthing pocket and approaches. Up to 1.1 million tonnes is to be disposed of to land (500 000 m³). This leaves approximately 454 350m³ to be disposed of to sea.
8. Based on further information provided during discussions with MMO on 5 September 2012 the disposal detailed in Table 3 is a credible scenario.

	tonnes			
Application	HU081	HU082	HU083	HU080
AMEP		999 570		
GPH	169 100		169 100	
HRBT*	602 800	602 800		
IOTA**	228 150	288 150		
GRR	49 500	49 500		
Total (t)	961 250	1 940 200		
Total (m ³)	436 931	881 909	169 100	

*Application submitted in 2010 but not determined. A 50:50 split between HU081 and HU082 is credible at this stage based on the ES for the Project.

**Total disposal amount stated in the IOTA ES.

**Table 3 : Disposal Sites – Likely scenario
(based on 1m³ = 2.2 tonnes in-situ)**

9. In order to provide a 'worst case' scenario for the impact of the dredge disposal of inerodible deposits, the in-combination assessment of the dredge disposal undertaken by ABLE for AMEP, and reported in EX8.7,

AMEP: EXPLANATORY NOTE ON VOLUMES OF CAPITAL AND MAINTENANCE
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allowed for the disposal of the all dredge arisingsas detailed in Table 4 below.

10. Comparison of Tables 3 and 4 demonstrates that the credible disposal strategy for all projects combined (including the yet to be consented HRBT) detailed in Table 3 results in lower disposal volume at each site than has been assessed and therefore the ABLE assessment represents a worst case.

Application	tonnes			
	HU081	HU082	HU083	HU080
		2 099 750		
GPH	338 200	0		
HRBT	1 205 600	0		
IOTA	279 700	0		
GRR	99 000			
Total (t)	1 921 900	2 099 750		
Total (m ³)	873 590	954 430		

**Table 4 : Disposal Sites - Assessed Scenario
(based on 1m³ = 2.2 tonnes in-situ)**

11. Alternative credible disposal strategies exist and could be assessed although there would be no need for this if the assssed impacts are deemed acceptable to the Regulators.

APPENDIX B

HUMBER AREAS

