ABLE MARINE ENERGY PARK (MATERIAL CHANGE 2 – TR030006)

UPDATED ENVIRONMENTAL STATEMENT

CHAPTER 12: COMMERCIAL AND RECREATIONAL FISHERIES

Able Marine Energy Park, Killingholme, North Lincolnshire

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BASIS OF REPORT

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12.1.0 Introduction

Development Consent Order Context

12.1.1 The Able Marine Energy Park Development Consent Order (the DCO) for the site, approved a harbour development with the associated land development, to serve the renewable energy sector. Under the DCO, the harbour comprises a quay of 1,279m frontage, of which 1,200m is solid quay and 79m is a specialist berth formed by the reclamation of intertidal and subtidal land within the Humber Estuary.

The associated development that was consented through the DCO includes:

- Dredging and land reclamation;
- The provision of onshore facilities for the manufacture, assembly and storage of wind turbines and related items;
- Works to Rosper Road, the A160 and the A180; and
- Surface water disposal arrangements.

12.1.2 An assessment of the impacts of the development on commercial fishing was included in Chapter 12 of the Environmental Statement (ES) that formed part of the DCO application in 2011 (the original ES).[1]

Relevant Findings of the 2012 Examination

12.1.3 Commercial fisheries were not a significant issue in the original ES application with Paragraph 12.3.12 of the original ES noting that:

'Overall, current fishing effort is much diminished from historical levels or has shifted to more profitable fisheries in the North Sea. The number of vessels conducting commercial fishing is small and the few vessels still fishing commercially take up alternative fisheries in different areas and seasons to maximize catch rates and profits. Therefore, the potential for direct impacts of the reclamation on commercial fisheries as a whole is considered to be relatively low', (paragraph 12.3.12).

12.1.4 The Examining Authority's recommendation report to the Secretary of State following the DCO examination held in 2012 contained no mention of commercial fisheries. However, aspects of commercial fisheries were identified to be addressed in the Planning Inspectorate's Scoping Opinion (Appendix UES5-2) in relation to the proposed material amendment[2] as considered within this Updated ES (UES).

[1] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR030001/TR030001-000317-12%20-%20Commercial%20Fisheries.pdf

[2] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR030006/TR030006-000036-TR030006%20%E2%80%93%20Scoping%20Opinion.pdf

Consideration of Material Amendment

12.1.5 The Applicant submitted a Scoping Report to the Planning Inspectorate (PINS) on behalf of the Secretary of State for the Material Amendment application on 29 January 2021. On 10 March 2021, a Scoping Opinion was adopted by PINS and confirmed that the application for a material amendment:

"should include updated baseline information to demonstrate that there has been no material change in the importance of the location for commercial fisheries and if there has, the updated ES should assess any new or different significant effects."; and

"[should assess] the effects of habitat loss or modification, and potential alterations to the hydrodynamic regime on commercial fisheries."

12.1.6 The full details of the proposed material amendment is described in Chapter 4: Description of Changes to Development of this UES, but on the basis of the Scoping Opinion (further details in Section 12.2 below) and the updated environmental work carried out in relation to the material amendment application, the following issues will need to be addressed in the context of their potential impacts on commercial fishing and where appropriate, mitigation measures reviewed and revised.

12.1.7 Change in quay layout leading to:

- alteration to the fish and shellfish assemblage;
- alteration to potential commercial resource exploitation;
- restriction to access of fish and shellfish resources for commercial and recreational fisheries.

12.1.8 Changes to dredge disposal leading to:

- alteration to the fish and shellfish assemblage;
- alteration to potential commercial resource exploitation.

Purpose and Structure of Chapter

12.1.9 A considerable volume of reports was produced for the DCO application in 2011 and a signposting document detailing the Applicant's Environmental Information produced for the DCO application is available[3].

12.1.10 This Chapter reports on any change in the findings of the original ES in respect of commercial fisheries pursuant either to the material amendment or consequential to any natural changes since the original environmental impact assessment was undertaken. Aspects addressed include:

- Fish Community in the Vicinity of the AMEP Development;
- Commercial and Recreational Fishing Activity; and

[3] Signposting Document for the Applicant's Environmental Information (TR030001-001645-120924)

- Based on the updated characterisation of the above baseline conditions, any changes to expected potential impacts arising from the material amendment compared to the original assessment, the effectiveness of existing mitigation measures and any different residual impacts if and when they occur.

12.2.0 Methodology

Changes in Legislation, Guidance and Planning Policy

12.2.1 Although some aspects of UK legislation have altered with the UK's withdrawal from the EU, the majority remain as identified in the original ES.

12.2.2 Much of the various nature conservation designations within the Humber Estuary and the relevant environmental legislation are covered in an earlier chapter of this UES (Chapter 10) and will not be repeated here in detail, but largely relate to The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. As described in the original ES, fisheries regulation is enacted in the form of national law and Byelaws and their enforcement in the Humber Estuary comes into the remit of The Marine Management Organisation (MMO), North Eastern Inshore Fisheries and Conservation Authority (NEIFCA) covering the Holderness coast and Humber Estuary, the Eastern Inshore Fisheries and Conservation Authority (EIFCA) covering the Lincolnshire coast and the Environment Agency.

Overview of Relevant Legislation

12.2.3 Relevant legislation, guidance and planning policy was set out in detail in section 2 of Chapter 12 of the original ES. For ease of reference, the key legislation is also summarised in this section, together with changes since the DCO application was made. UK marine fisheries are regulated by (not exclusively): the Sea Fish (Conservation) Act 1967 (as amended); the Sea Fisheries (Shellfish) Act 1967; the Sea Fisheries Act 1968 (as amended) ; the Marine and Coastal Access Act 2009 (as amended); Fisheries Act 2020; the EC Shellfish Waters Directive (2006/113/EC) incorporated into the Water Framework Directive is also of relevance, being designed to protect the integrity of shellfish fisheries by means of designating waters for quality protection.

12.2.4 There is also relevant legislation concerning the salmon and freshwater fisheries and local byelaws administered by the Environment Agency (e.g. the Yorkshire byelaw area) e.g. for rod and line fishing for salmon, trout, coarse fish, eels, smelt and lamprey and which includes a close season for salmon (1st November to 5th April), sea trout (1st November to 2nd April) and all non-migratory trout in rivers, streams, drains and canals, and for brown trout in all waters other than enclosed stillwaters from 1st October to 24th March. This is not a definitive list of all relevant byelaws, but an indication of requirements particularly in tributaries.

12.2.5 The UK Marine Policy Statement (HM Govt. 2011) identifies port development as a national need, but also highlights that such development can have both benefits and disbenefits to fishing activities.

UK Fisheries Act

12.2.6 The Fisheries Act 2020 (the Act) replaces provisions under EU law and will provide the legislative framework for future fisheries management in the UK. The Act has eight objectives:

- Sustainability
- Precautionary
- Ecosystem

- Scientific Evidence
- Bycatch
- Equal Access
- National Benefit
- Climate Change

12.2.7 The UK's national fisheries policy authorities are tasked with meeting these objectives through a Joint Fisheries Statement (JFS) and will cover aspects of policy including quota allocation, fisheries management plans and actions to maintain or restore stock to a level capable of producing a sustainable yield. The JFS has not yet been published.

12.2.8 The Act requires any British fishing vessel to be licensed apart from in a few specific circumstances and foreign fishing vessels can only enter UK waters if fishing with a relevant licence or under a recognised international agreement.

12.2.9 Quota is broken down into quantity of fish caught by British vessels and maximum days at sea for British vessels.

12.2.10 There are also a number of measures specific to England including the potential for a charging scheme for unauthorised catches and financial assistance provided for initiatives to promote environmental conservation, restoration and development of fisheries activities.

Water Framework Directive

12.2.11 The Water Framework Directive (the WFD) is designed to protect the ecological health of the water body, and as a result, the shellfish growing within it. Technical advice from the UK technical advisory group for the implementation of the Water Framework Directive, and the European Commission, indicate that the physical and chemical parameters set down within the WFD for protecting water quality are equivalent or better than the requirements which were set in the Shellfish Waters Directive. These measures are currently enacted by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.

Other Measures

12.2.12 In addition to the Act, a number of conservation designations relate to the Humber estuary, these centred around the Conservation of Habitats and Species Regulations 2017 (as amended) in 2019 to make them operable from 1 January 2021.

12.2.13 The changes cover England and Wales including their inshore waters up to 12 nautical miles and details are not provided here (they are provided in Chapter 10) but have relevance in protecting habitats and species within the Humber Estuary Special Area of Conservation (SAC), including some fishes of commercial and recreational importance.

12.2.14 The Eels Regulations 2009 give powers to the regulators e.g. the Environment Agency and Natural Resources Wales, to implement recovery measures in all freshwater and estuarine waters in England and Wales, to achieve 40 per cent escapement of adult eels relative to escapement levels under pristine conditions.

12.2.15 The regulations include measures to reduce fishing pressures, improve access and habitat quality and reduce the impact of entrainment; provide for screening at water intakes and outfalls; and ease passage at obstructions to migration.

Guidance

12.2.16 The JFS will inform the fisheries policy authorities how to make use of fisheries management plans (FMPs) in achieving the fisheries objectives and will include a series of measures and guidance.

Policy

12.2.17 The UK Marine Policy Statement (the MPS) is the framework for preparing Marine Plans and taking decisions affecting the marine environment. It will contribute to the achievement of sustainable development in the United Kingdom marine area. It has been prepared and adopted by virtue of section 44 of the Marine and Coastal Access Act 2009. The aim of the MPS has been to:

- Promote sustainable economic development;
- Enable the UK's move towards a low-carbon economy, in order to mitigate the causes of climate change and ocean acidification and adapt to their effects;
- Ensure a sustainable marine environment which promotes healthy, functioning marine ecosystems and protects marine habitats, species and our heritage assets; and
- Contribute to the societal benefits of the marine area, including the sustainable use of marine resources to address local social and economic issues.

12.2.18 The Guidance to the UK Marine Policy Statement from 1 January 2020 document[4] explains how references to EU law in the MPS should be interpreted from 1 January 2021 following the UK's withdrawal from the EU.

Scoping Opinion

12.2.19 As explained in paragraph 12.1.5 above, Scoping Report was submitted to the Planning Inspectorate by the Applicant (the Scoping Report) in January 2021. This addressed the material amendment and associated potential impacts including components requiring additional characterisation and assessment. In response, the Scoping Opinion in March 2021 identified, in addition to the initial Scoped-in components as described in the Scoping Report, the following additional matters in relation to commercial fisheries as shown in. Table 12-1.

[4] https://www.gov.uk/government/publications/uk-marine-policy-statement/guidance-to-the-uk-marine-policy-statement-from-1-january-2021

Table 12-1: Scoping Opinion

Page & Paragraph No. of Scoping Report	Summary of Scoping Report	Comments from Scoping Opinion	Outcome	Reference within UES
Page 49, Table 7	The original ES reported impacts on commercial fisheries to be of minor to negligible significance (original ES Table 12.2), primarily due to low fishing effort in the area. This situation has not changed since the original ES was published. The amendments to the proposed design will not give rise to any new or different impacts on commercial fisheries. Any potential effects relating to indirect impacts on nursery habitat and fish stocks, and changes in the hydrodynamic regime, are discussed and scoped out in relation to any potential aquatic ecology impacts arising from the proposed amendments relative to Chapter 10 (Aquatic Ecology) of the original ES. This topic is therefore scoped out from this ES.	The original assessment of impact to commercial fisheries was produced a substantial time ago in 2010. The updated ES should include updated baseline information to demonstrate that there has been no material change in the importance of the location for commercial fisheries and if there has, the updated ES should assess any new of different significant effects.	The below have now been assessed and included in the Environmental Statement: Updated baseline information on the fish assemblage of the Humber Estuary and in particular, in the vicinity of the AMEP development site (quay, dredging and dredge disposal locations). Updated baseline information on commercial and recreational fishing activity in the Humber Estuary, and in particular, in the vicinity of the AMEP development site (quay, dredging and dredge disposal locations)	Section 12.3 Par. 12.3.9 *et seq* and Section 10.3 Par. 10.3.111 *et seq* Section 12.3 Par. 12.3.9 *et seq*
	As above	Habitat changes, and disturbance to fish and fish eggs/larvae from habitat loss and disturbance is to be	The ecology of the fishes in the vicinity of the development has been described in this Chapter of the ES	Section 12.3 Par. 12.3.9 *et seq* and Section

Page & Paragraph No. of Scoping Report	Summary of Scoping Report	Comments from Scoping Opinion	Outcome	Reference within UES
		scoped into the updated ES, and that there may be associated indirect impacts on habitats from capital dredging. It is considered that as there would be a change in the quantum of habitat directly lost to the works, that the effects of habitat loss or modification, and potential alterations to the hydrodynamic regime on commercial fisheries should be assessed in the updated ES.	(Chapter 12) and in greater detail in the Aquatic Ecology Chapter (Chapter 10) including: • *Disturbance to fish and fish eggs/larvae from habitat loss and disturbance* • *Indirect changes to habitats from project-induced changes in hydrodynamic and morphodynamic regimes* The implications of any changes to the fish assemblage for Commercial Fisheries is addressed in Chapter 12. • *Direct effects* • *Indirect effects*	10.3 Par. 10.3.111 *et seq* Par. 10.4.60 *et seq* Par. 10.4.17 *et seq* Section 12.4 Par. 12.4.8 *et seq* Par. 12.4.13 *et seq*

Additional Consultation

12.2.20 Consultation has been undertaken with relevant bodies, only where pertinent to the proposed material changes.

12.2.21 This consultation has been through meetings with the Marine Management Organisation, the Environment Agency (EA) and Natural England (NE). On the recommendation of the MMO, the Preliminary Environmental Information Report (PEIR) Chapter on Commercial & Recreational Fishing was also submitted for consultation and comment to other stakeholders these being:

- North Eastern Inshore Fisheries and Conservation Authority (NEIFCA)
- National Federation of Fishermen's Organisations (NFFO)

- Holderness Fishing Industry Group (HFIG)
- Fishermen's Mission

12.2.22 Responses have been received from the MMO, EA and NE and where appropriate, comments have been acted on and included in this UES Chapter (Table 12-2).

Table 12-2: PEIR Consultation Responses

Organisation	PEIR Comments	Outcome	Reference within this UES Chapter
MMO	The area in which activities will be undertaken is used as a transit route by a large number of vessels, including commercial fishing vessels. The most relevant UK ports in the vicinity of the AMEP development are Grimsby, Hull, Withernsea and Hornsea. As correctly identified in the PIER, a commercial fishery exists within the Humber Estuary itself and is largely conducted by under 10m fishing vessels. The sum of fish landed in 2020 (live weight) from ICES rectangles 36E9 and 36F0 was 3,251 tonnes, and the sum of value was £9,590,292.56. The key target species fished were crab, brown crab lobster, scallop, herring, nephrops, whelk, thornback ray, turbot, sole, witch, brill, bass, cod, hake, halibut, whiting, and gurnard.	Included in text	12.3.34
MMO	It is recognised that the proposed activities may cause disruption of access to the marine environment for other users of the sea, and as such, there may be possible impact to navigation. It is noted in Chapter 14 (Commercial and Recreational Navigation) that further assessment of individual hazards to navigation will be undertaken as part of the updated Navigational Risk Assessment.	Addressed elsewhere in UES	N/A
MMO	The MMO recommend the following stakeholders are contacted to discuss the Application: • North Eastern Inshore Fisheries Conservation Authority (NEIFCA) neifca@eastriding.gov.uk; • Fisherman's Mission; • Holderness Fishing Industry Group (HFIG) admin@hfig.org.uk; and • • National Federation of Fisherman's Organisation (NFFO) nffo@nffo.org.uk.	Stakeholders provided with PEIR Chapter by email and given the opportunity to comment.	10.2.21
NE	No specific comments regarding Chapter 12		

Organisation	PEIR Comments	Outcome	Reference within this UES Chapter
EA	No specific comments regarding Chapter 12	N/A	N/A

Assessment Methodology

12.2.23 For the most part, the revised baseline description, impact assessment coverage and approach follows that undertaken in the original ES. However, when assessing the proposed material changes, additional information has been collected, collated and assessed using the standard methodology outlined below.

Study Area

12.2.24 In accordance with the Scoping Report, the study area has been defined to characterise and address both the directly affected / influenced areas around the proposed development footprint, and dredge disposal sites, together with a wider area of the Humber estuary where commercial and recreational fishing activities could be potentially affected indirectly by the proposed material amendments. Effectively, this addresses the same spatial extent as the original ES.

Sensitivity Criteria

12.2.25 Sensitivity criteria for the receptors assessed within this Chapter remain the same as in the original ES Chapter 12 (paragraph 12.3.9 *et seq*)[5] based around direct effects on the target fish stocks and indirect effects mediated by ecological processes originating from impacts to non-target life stages, food resources, food webs and habitats.

Magnitude of Change (Impact)

12.2.26 Impact severity is assessed by considering both the magnitude of the impacts and the duration. This approach is the same as that adopted in the original ES (original ES Chapter 12, paragraph 12.3.11).

Significance of Effect

12.2.27 Potential impacts are evaluated according to the likelihood of occurrence as a direct consequence of the development, in accordance with the approach described in paragraph 12.3.11 *et seq* of the original ES Chapter 12.

Effects Not Requiring Further Assessment

12.2.28 Based on the Scoping Report, and following Scoping Opinion and additional consultation (see Tables 12-1 and 12-2), the general approach for the UES follows that covered in the original ES. All effects considered in the original ES have therefore been considered in the UES.

[5] Able Marine Energy Park Environmental Statement. Chapter 12, Commercial Fisheries.

12.3.0 Changes in Baseline Conditions

12.3.1 This Section describes the status of current commercial fisheries and recreational angling in the Humber, and in particular, in the environs of the proposed AMEP development. It updates the baseline information provided in the original ES and addresses the potential impacts of the material changes to the proposed development in the light of any alterations in baseline conditions and construction techniques and extent.

12.3.2 As this Chapter addresses commercial fishing and recreational angling, it does not address all aspects of the fish communities in the Humber, but rather focuses on components of importance for commercial and recreational use. However further information on the wider fish assemblage ecology of the estuary is described and assessed in Chapter 10 (Aquatic Ecology) of this UES.

12.3.3 This Section is not intended to reproduce all components of the Commercial Fisheries Chapter from the original ES (Section 12.5), but rather to provide a brief summary of key aspects of the topic, and where applicable, update these in line with any substantive changes that have occurred since the original ES documents were produced. This Section assesses changes to expected potential impacts between the original assessment and proposed material amendments, mitigation measures and residual impacts if and when they occur.

DCO Baseline

Overview of the Humber Estuary fish fauna

12.3.4 The original ES records that the Humber supports a fish assemblage characteristic of a southern North Sea macro-tidal estuary, with 86 species having been recorded.

Overview of commercial and recreational target species & fishing activity

12.3.5 Commercial species, or those with recreational angling relevance, that are routinely recorded in the Humber include whiting (*Merlangius merlangus*), sprat (*Sprattus sprattus*), common (or Dover) sole (*Solea solea*) and flounder (*Platichthys flesus*). Less common but still relevant are cod (*Gadus morhua*), saithe (*Pollachius virens*), pollack (*Pollachius pollachius*), dab (*Limanda limanda*), plaice (*Pleuronectes platessa*) and eel (*Anguilla anguilla*).

12.3.6 Shellfish populations are also typical of the estuary typology with commercial interest focusing on: large decapod crustaceans (brown shrimp, *Crangon* sp.; lobster, *Homarus gammarus*; and brown crab, *Cancer pagurus*), bivalve molluscs (cockles, *Cerastoderma edule*; mussels, *Mytilus* sp.) and whelk (*Buccinum undatum*).

12.3.7 The Humber Estuary is an important spawning and nursery ground for some commercially important species, including common sole, lemon sole (*Microstomus kitt*), herring (*Clupea harengus*), flounder, plaice and sprat. The location of the proposed reclamation area covers a highly turbid tidal environment characterized by intertidal mudflats and shallow subtidal zones recognized as having important nursery value.

DCO Future Baseline

12.3.8 No specific alterations to the future commercial fisheries baseline components were anticipated in the original ES Chapter (Commercial Fisheries).

Current Baseline

12.3.9 Since the DCO application was made, additional evidence regarding fish fauna in the Humber Estuary in general, and for the proposed AMEP site, has become available. The baseline for fish fauna has been updated in detail in the Aquatic Ecology (Chapter 10, paragraph 10.3.11 *et seq*) of this UES, but is also summarised below as this has relevance for commercial and recreational fisheries exploitation.

Overview of fish fauna

12.3.10 A review of the fish population data in 2013 has updated the information on fish populations and communities dependent on the Humber Estuary and the fisheries in the Humber river basins (EA, 2013). The review collated, harmonised and analysed fish data and information available for the period 2000-2012 from a range of sources for the Humber Estuary.

12.3.11 The updated review confirmed the overall existing knowledge of the fish fauna in the Humber Estuary, while also providing additional understanding of the distribution of the different fish species in the system and its catchment.

12.3.12 The review considered the spatial distribution of fish species across different areas of the estuary, including the intertidal/shallow subtidal areas along the south bank of the lower estuary as well as the deeper subtidal areas of the lower estuary where the dredge disposal sites (HU080, HU081 and HU082) are situated (Chapter 10, Figure 10-14).

12.3.13 Table 12-3 lists the species of fish recorded from the Humber Estuary (Environment Agency, 2013).

Fish Fauna at the AMEP Site (Research Survey Results)

12.3.14 Additional fish surveys have been undertaken in the summer and winter of 2013 to characterise the fish fauna at the AMEP site and intertidal and subtidal areas nearby (PMSL, 2014a & 2014b) (Technical Appendices UES10-6 & UES10-7). These surveys recorded the following fish communities from the use of various gears.

Beam Trawl

12.3.15 The fish abundance was dominated by flatfish such as the sole and flounder. Most of the individuals of both species were year class 0+ and 1+, which highlights the role of the area (typical mudflat) as a flatfish nursery. Flatfish species are a commercially targeted group in the outer estuary and adjacent coasts.

12.3.16 In autumn, gadoids such as cod and whiting also occurred frequently in the beam trawl catches, albeit with few individuals. The former species was mainly found at the AMEP site and adjacent mudflat, while the latter was only recorded at the control sites. These species are commercially targeted when in the marine environment, and are the target of recreational angling on both banks of the outer estuary during the autumn and winter.

12.3.17 Invertebrates, mainly crustaceans, were also abundant in the intertidal beam trawl catches. These were mainly represented by the brown shrimp, a common species in the mudflats of the Humber Estuary and potentially a commercially targeted species in the outer estuary and adjacent coastlines.

12.3.18 The surveys also recorded abundant mysid shrimps such as Neomysis integer, together with juvenile

brown shrimp, which are prey for juvenile flatfishes in the estuary and thus supporting the nursery function of these estuarine habitats for flatfish.

12.3.19 No migratory fish were recorded from the beam trawl catches from the AMEP area, the only specimen (one eel) having been found on the mudflat at the control site further upstream.

Seine Netting

12.3.20 The capture of commercially important fish in the seine nets was generally sparse but with herring found in highest numbers, and with juvenile flatfish (Pleuronectidae sp. indet.) also present. There were no migratory fish occurring in the intertidal seine net catches.

Otter Trawls

12.3.21 Although 18 species were recorded in the subtidal otter trawl catches, most of them were found occasionally and in low numbers, and are not of commercial focus. Sprat (and gobies (*Pomatoschistus* spp.)) dominated the fish assemblage. Other commercial species found in moderate abundance were whiting and cod.

12.3.22 Individuals were present as young of the year (0+ year class), and occasionally as 1+ year class (e.g. herring), thus supporting the nursery function of the Humber Estuary. Brown shrimp were abundant from the samples.

Table 12-3: Fish taxa present in the Humber Estuary (Environment Agency, 2013)

Ecological guild	Family	Latin Name updated	species common name	Ecological guild	Family	Latin Name updated	species common name
Diadromous (D)	Clupeidae	Alosa alosa	Allis shad	Marine stragglers (MS)	Ammodytidae	Hyperoplus immaculatus	Greater sandeel
		Alosa fallax	Twaite shad			Hyperoplus lanceolatus	Great sandeel
		Alosa sp.	Shad sp.		Bothidae	Arnoglossus imperialis	Imperial scaldfish
	Gasterosteidae	Gasterosteus aculeatus	3-spined stickleback		Callionymidae	Callionymus lyra	Dragonet
	Mugilidae	Liza ramada	thinlip grey mullet		Cottidae	Taurulus bubalis	Long-spined sea scorpion
	Osmeridae	Osmerus eperlanus	Smelt		Gadidae	Pollachius virens	Coley / Saithe / Coalfish
	Petromyzontidae	Lampetra fluviatilis	River lamprey			Trisopterus minutus	Poor cod
		Petromyzon marinus	Sea lamprey			Melanogrammus aeglefinus	Haddock
		Petromyzontidae	Lamprey sp.		Gobiidae	Crystallogobius linearis	Crystal goby
	Salmonidae	Salmo salar	Atlantic salmon			Pomatoschistus lozanoi	Lozano's goby
		Salmo trutta	Brown / sea trout		Liparidae	Liparis montagui	Montagu's seasnail
	Anguillidae	Anguilla anguilla	European eel			Liparis sp.	Seasnail sp.
Marine migrants (MM)	Atherinidae	Atherina presbyter	Sand smelt		Lotidae	Gaidropsarus mediterraneus	Shore rockling
	Clupeidae	Clupea harengus	Atlantic herring		Mullidae	Mullus surmuletus	Striped red mullet
		Clupeidae	Clupeid sp. (larvae)		Pleuronectidae	Glyptocephalus cynoglossus	Witch flounder
		Sprattus sprattus	Sprat			Microstomus kitt	Lemon Sole
	Cyclopteridae	Cyclopterus lumpus	Lumpsucker		Scombridae	Scomber scombrus	Mackerel
	Gadidae	Gadus morhua	Atlantic cod		Scophthalmidae	Scophthalmus rhombus	Brill
		Merlangius merlangus	Whiting		Scyliorhinidae	Scyliorhinus sp.	Spotted dogfish
		Pollachius pollachius	Pollack		Soleidae	Buglossidium luteum	Solenette
		Trisopterus luscus	Pouting / Bib		Syngnathidae	Entelurus aequoreus	Snake pipefish
	Lotidae	Ciliata mustela	5-bearded rockling		Trachinidae	Echiichthys vipera	Lesser weever
	Moronidae	Dicentrarchus labrax	Sea bass		Triglidae	Chelidonichthys cuculus	Red gurnard
	Mugilidae	Chelon labrosus	Thick lipped grey mullet	Freshwater species (F)	Cobitidae	Cobitis taenia	Spined loach
		Liza aurata	Golden grey mullet		Cyprinidae	Abramis brama	Common bream
	Pleuronectidae	Limanda limanda	Dab			Alburnus alburnus	Common bleak
		Platichthys flesus	Flounder			Blicca bjoerkna	Silver bream
		Pleuronectes platessa	Plaice			Carassius auratus	Goldfish
	Scophthalmidae	Scophthalmus maximus	Turbot			Rutilus rutilus	Roach
	Soleidae	Solea solea	Dover sole			Scardinius erythrophthalmus	Rudd
	Triglidae	Chelidonichthys lucernus	Tub gurnard			Squalius cephalus	Chub
		Eutrigla gurnardus	Grey gurnard			Tinca tinca	Tench
Estuarine residents (ES)	Agonidae	Agonus cataphractus	Hooknose / Pogge			Gobio gobio	Gudgeon
	Ammodytidae	Ammodytes tobianus	Lesser sandeel			Leuciscus cephalus	Chub
		Ammodytidae	Sandeel sp.			Leuciscus leuciscus	Dace
	Cottidae	Myoxocephalus scorpius	Shorthorn sculpin			Rutilus rutilus x Abramis brama	Roach x Common bream hybrid
	Gadidae	Raniceps raninus	Tadpole-fish			Rutilus rutilus x Alburnus alburnus	Roach x Common bleak hybrid
	Gobiidae	Aphia minuta	Transparent goby			Scardinius erythrophthalmus x Abramis brama	Rudd x Common bream hybrid
		Pomatoschistus microps	Common goby		Esocidae	Esox lucius	Pike
		Pomatoschistus minutus	Sand goby		Gasterosteidae	Pungitius pungitius	10-spined stickleback
		Pomatoschistus sp.	Gobies		Percidae	Perca fluviatilis	Perch
	Liparidae	Liparis liparis	Sea-snail			Gymnocephalus cernuus	Ruffe
	Pholidae	Pholis gunnellus	Rock gunnel				
	Syngnathidae	Syngnathus acus	Greater pipefish				
		Syngnathus rostellatus	Lesser (Nillsons) pipefish				
		Syngnathidae	Pipefish				
	Zoarcidae	Zoarces viviparus	Viviparous blenny				

Fyke Netting

12.3.23 The fyke net catches from the intertidal mudflat at the AMEP site were dominated by the commercially targeted flounder. These were mostly young fish (born in the year or the year before), thus supporting previous data suggesting the role of the area (typical mudflat) as a nursery for the species. Other fish species that were frequent in the catches were whiting, sole, with also cod being present.

12.3.24 The migratory eel was not recorded on the mudflats around the site, but within some of the terrestrial drainage ditches on and adjacent to the AMEP site.

12.3.25 The surveys therefore in combination recorded a fish assemblage which included a number of commercially targeted species, with a large component of juvenile individuals indicating the value of the estuary as a nursery area for individuals which in adult stages would be targeted in more fully marine inshore environments. The high abundance in the catches of small epibenthic crustaceans such as brown shrimp and mysid shrimps confirm the availability of important food resources for the fish using the intertidal and subtidal estuarine habitats, as well as potentially with some commercial exploitation potential.

Commercial & Recreational Fishing Activity

12.3.26 The Humber deep sea fishing ports (Hull and Grimsby) retain an active fishing fleet, with 10 vessels over 10m with category A licences with Hull as their home port and 6 vessels registered at Grimsby, together with 5 Category C vessels holding shellfish licences. This level of registration can be compared to 28 vessels registered at the Humber ports in 2014 (the furthest back data available from the MMO)[6].

12.3.27 However, when fishing vessel capacity is compared, the 2021 capacity is 24,213 for 21 vessels, compared to a total capacity of 10,651 for the 28 vessels from 2014 (fishing vessel capacity is measured in terms of vessel capacity units (length x breadth in metres plus 45 per cent of the engine power in kilowatts)).

12.3.28 Some of the Category A vessels also maintain multiple external waters licences e.g. Norwegian Waters, Spitzbergen & Bear Island and Greenland licences, and with the Kirkella and Farnella also holding deep water licences (MMO, 2021a). Although home port registered on the Humber estuary, not all vessels will routinely fish from Humber ports.

12.3.29 In addition to the larger open sea vessels a local commercial fishery is still conducted in the Humber Estuary and adjacent open coasts and these are conducted by small vessels largely under 10m, most operating from the ports of Grimsby and Hull, but also from small tributaries e.g. Hedon Haven, Stone Creek and potentially small beach launched boats on the coastal parts, with Brown Crab targeted.

12.3.30 The fleet of small vessels largely operates in the outer estuary and along the adjacent coastal waters but also includes commercially operated sea angling charter vessels which mostly use the outer estuary and approaches. The outer estuary and Lincolnshire coast is also targeted on a seasonal basis by vessels from other ports for brown shrimp during the autumn.

12.3.31 The Environment Agency Review of Fish Population Data in the Humber (Environment Agency, 2013)

[6] MMO register of 10m and over, January 2014 & March 2021 (online accessed March 2021).

provides a useful summary of not just aspects of the estuarine fish community, but also an indication of aspects of the commercial fisheries. This report includes a description of fishing activity around the lower estuary following Walmsley and Pawson (2007), although suggests little change in effort since that report was produced.

12.3.32 The Environment Agency (2013) report also notes '*a few small beach-launched vessels target lobster, brown (edible) crabs and whelk in the outer estuary on the north bank during summer and early autumn. However, in 2010 this fishery employed only five boats and 11 men from the home ports in the outer and middle estuary (Spurn Point, Cleethorpes, Grimsby and Hull), with a fishing effort of 3,750 hauled pots*'.

12.3.33 The report provides an indication of the relatively low importance of the Humber region International Council for the Exploration of the Sea (ICES) Rectangle 36E9 compared to adjacent fisheries along the coast to the north and south for the decade 2002-2011 (Figure 12-1).

12.3.34 The sum of fish landed in 2020 (live weight) from ICES rectangles 36E9 and 36F0 was 3,251 tonnes, and the sum of value was £9,590,292.56. The key target species fished were crab, brown crab lobster, scallop, herring, nephrops, whelk, thornback ray, turbot, sole, witch, brill, bass, cod, hake, halibut, whiting, and gurnard (MMO, 2021b). However, it is important to note that the landing data from these ICES rectangles include species caught outwith the Humber Estuary.

12.3.35 The North Eastern Inshore Fisheries and Conservation Authority (NEIFCA) apply a series of byelaws which control the minimum landing size for some species and limits the number of fish and shellfish which can be landed, as well as restricting some fisheries.

12.3.36 Fishing methods have included a range of gears including beam and otter trawls, as well as fixed gill nets and long lines for fish. The trawling has been restricted to lower middle and outer estuary to the mouth on the south shore, downstream from around East Halton as well as along the adjacent coastlines, with cod and other Gadoids targeted.

12.3.37 Fixed gear is also used on the intertidal zone and subtidal fringes of the middle and outer estuary including pots, gill nets and long lines with sole targeted, as well as cod during the winter.

12.3.38 Recreational angling activities in the Humber Estuary are conducted by both shore and boat anglers throughout the year, and target species such as common sole, sea bass (*Dicentrarchus labrax*), cod, ling (*Molva molva*), whiting, salmon and sea trout.

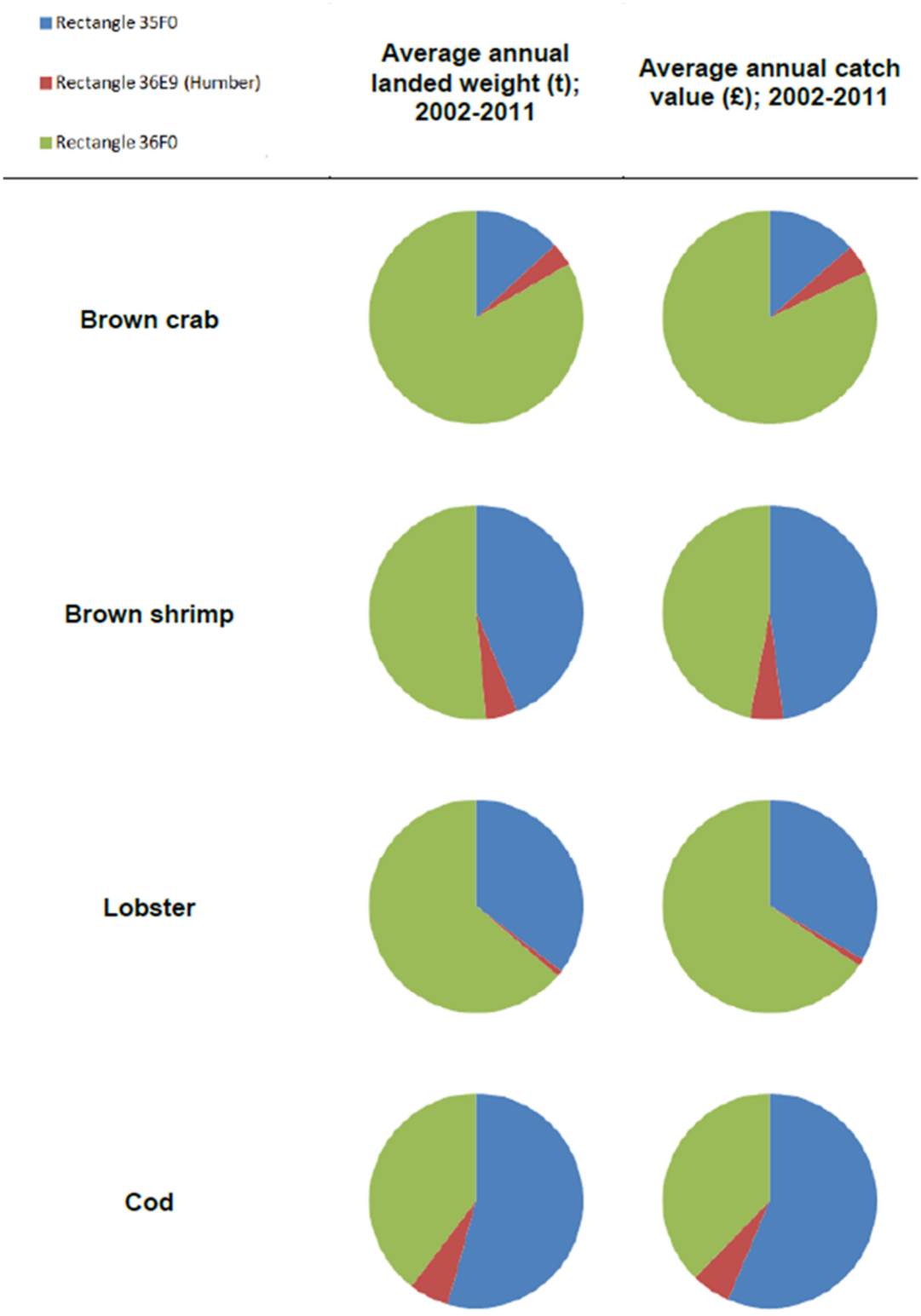
12.3.39 There is also a beach fishery along the coast. The Environment Agency regulate the beach net fishery for sea trout although with only small numbers of fisherfolk involved in the activity. For example, there were 8 commercial fishermen operating T and J nets along the Holderness coast in 2020. Although not currently permitted, there is a potential for the shore-netting of sea bass to be re-introduced.

12.3.40 Cod and other Gadoids are also taken from both banks of the middle to outer estuary by recreational anglers, with the south bank down-stream from East Halton Skitter to Grimsby usually featuring the greatest number of rods during the autumn and winter.

12.3.41 It should be noted that whilst individual catches are usually low, the recreational angling component of the fishery, from both vessel and shore casting involves a relatively large number of people (compared to the commercial fisheries employment activity in the estuary), and accounts for a substantial component of the catch of some target species.

12.3.42 Bait collection on intertidal sections of the Humber coast is also carried out, with potential impacts to the intertidal ecology, and with byelaw controls in some locations.

Figure 12-1: Relative Importance and Value of the main Humber Fisheries Compared against Neighbouring Reporting Areas (Environment Agency, 2013)



Changes in Baseline

12.3.43 Considering these sources of variability in the sampling data, and in the context of the wider knowledge of fish assemblages (see UES Chapter 10: Aquatic Ecology paragraph 10.3.111 et seq) it has been concluded that there have been no significant changes in the baseline for commercially exploited fish around the AMEP site.

12.3.44 The fish fauna in the area reflects a typical assemblage of intertidal and subtidal areas of this part of the estuary, and of the role of these habitats in supporting young stages of estuarine and marine migrant fish which have commercial value at later life stages in marine areas.

12.3.45 It should be noted that following the assessment set out in the original ES and the subsequent provisions incorporated into the Deemed Marine Licence (DML) (Schedule 8 of the DCO), the issue of potential underwater noise and vibration generated during the works was addressed through timing constraints to the works, thus avoiding sensitivity periods for receptors.

12.3.46 In particular, the requirements to adequately address and mitigate any construction issues to fish was provided in the Environment Agency Written Response 10015552[7]where, writing on behalf of all three Defra Agencies a series of piling Conditions were identified and are now incorporated into the extant AMEP DCO.

12.3.47 The conditions followed a precautionary approach, and there is considered no requirement to further amend this mitigation as a result of the change on the quay alignment (Section 4.2 of this UES) given construction activities generating potential impacts will remain largely the same and with no substantive alteration to the assemblage characteristics or functional attributes of the fish community receptors around the development having occurred from the original ES baseline for the DCO.

12.3.48 It is not considered that any substantive changes have occurred to the commercial and recreational fishing effort undertaken from and around the Humber Estuary since the original ES.

12.3.49 Although it is noted that post Brexit, future changes to legislation and markets may influence fishing activity on the Humber, at this present time it is considered that there have not been any substantive changes to the commercial and recreational fishing effort undertaken from and around the Humber Estuary since those reported in the original ES.

[7] Environment Agency Written Response 10015552

12.4.0 Assessment of Effects

Additional Construction Phase Effects

12.4.1 The potential impacts on commercial fisheries during the construction phase of the AMEP quay as a result of the proposed material amendment to the AMEP DCO are as follows and can occur both directly or indirectly:

- Change in quay layout leading to:
  - alteration to the fish and shellfish assemblage;
  - alteration to potential commercial resource exploitation;
  - restriction to access of fish and shellfish resources for commercial and recreational fisheries.
- Changes to dredge disposal leading to:
  - alteration to the fish and shellfish assemblage;
  - alteration to potential commercial resource exploitation.

12.4.2 These general potential impacts to commercial fisheries can occur through a number of effects pathways e.g.:

- **Quay Construction**:
  - Loss of habitat (intertidal and subtidal) and benthic communities from land take required for the quay;
  - Creation of new hard substrata habitat;
  - Habitat disturbance from water quality changes in the vicinity of outfalls;
  - Indirect changes to habitats from project-induced changes in hydrodynamic and morphodynamic regimes (scoped in only if there is noticeable change to the hydrodynamic and morphodynamic regimes then indirect changes to habitats will be scoped out of the ES); and
  - Changes to aquatic environment in adjacent water bodies.
- **Dredging:**
  - 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**:
  - Loss of subtidal habitat and benthic communities from dredge spoil disposal;
  - Habitat and benthic community 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.

12.4.3 The potential for new, significant or materially different impacts arising as a consequence of the proposed material amendment on the current baseline commercial and recreational fisheries data have been considered as per the Scoping Opinion (Planning Inspectorate 2021) (see

12.4.4).

Impacts to Commercial and Recreational Fisheries

Changes in Impact Prediction – New Effects

12.4.5 Importantly, these effects (detailed in the text below) are substantially similar in nature to those considered in the original ES, and therefore no new effects have been identified.

Changes in Impact Prediction – New Receptors

12.4.6 The baseline for commercial and recreational fisheries has shown that there are no materially different receptors for this ecological component in the aquatic environment at and surrounding the AMEP site.

Changes in Impact Prediction – Characterisation of Effects

12.4.7 As the fish receptors have not changed since the original ES, the sensitivities relevant to this assessment remain the same as identified before. Therefore, any possible change in the significance of the effects of the proposed AMEP development could only be due to a significant change in the magnitude of the impacts on the fish fauna.

12.4.8 Possible changes in the magnitude of impacts and the resulting significance of the effects on fish fauna are considered below, in relation to direct impacts (i.e. due to underwater noise) and indirect impacts (i.e. due to loss and/or disturbance of habitat) on fish.

Changes in Direct Impacts

12.4.9 No significant changes to the direct impacts to the commercial and recreational fisheries have been identified resulting from the material amendment to the proposed development. This conclusion has been derived based on the following:

- The boundary extent of the facility will not change from that described in the original ES, and access to the shore frontage and existing banks within the facility will be restricted. No fishing activity would be expected to be undertaken along the subtidal part of the frontage immediately adjacent to the quay during construction. No public access will be possible along the banks within the facility boundary during construction.

- Increased sediment loadings from alluvium dredging activity will for the large part be within natural variations in bed loads (HRW 2021a, Technical Appendix UES8-1) except potentially on short duration occasions of overflowing.

- Predicted increases in suspended sediment concentration at the Killingholme Power Station B intake from back-hoe dredging of the glacial till are to a maximum of 70mg/l (near bed) and for trailing suction hopper dredging (TSHD) of the alluvium, an increase in suspended sediment concentrations at the southern intake of up to 45 mg/l (near bed) for a period of around a three weeks (ibid).

- The proposed dredging of sand/gravel by TSHD will cause increases in suspended sediment concentrations at the southern intake of Killingholme Power Station of up to 450mg/l (near bed) for a period of up to a week. Whilst this may represent a significant increase in the

background levels of suspended sediment concentration it is noted that this increase will occur for a limited period of time.

- For capital dredging with a cutter suction dredger (CSD) it was predicted that peak increases in concentrations exceeding 200mg/l would be restricted to the area immediately around the dredger and barge loading. Away from the dredger, the sediment concentrations were predicted to be lower than for the TSHD (sand and gravel) but to extend further. Deposition of fine sediments with the CSD was concentrated along the shallow margins of the estuary.

- Disposal of material by barges from the cutter suction dredging was simulated for a spring neap cycle alternating releases between disposal sites HU081 and HU082. Peak increases in suspended sediment concentration were predicted to exceed 500mg/l over several km up and downstream of the disposal sites. However, these peak increases will be short lived and remain relatively small compared to the background variability of suspended sediment concentrations in the Humber Estuary.

- Except for the dredging location itself, all of the predicted increases in suspended sediment concentration caused by the dredging activity are small compared with the natural variation in suspended sediment concentrations which has been measured to be up to 3,300mg/l on spring tides.

- Infill into other nearby berths arising from the capital works is predicted to be relatively insignificant when compared to annual maintenance dredge requirements and the natural variation in those quantities, remaining the case even if overflowing is utilised during the dredging of alluvium.

12.4.10 As such, HRW (2021a) conclude that overall, the proposed dredging will not cause any significant impact to the sediment transport in the Humber Estuary although temporary and significant rises in background concentrations may potentially occur if overfilling occurs and during the dredging of sand/gravel over the course of a week (or less).

12.4.11 Even in these worst case scenarios, elevated suspended sediment levels would be restricted to the immediate vicinity of the dredge activity would remain within natural variation levels e.g. spring tides, with fishes using the Humber Estuary tolerant of the relatively high sediment loadings present.

12.4.12 There would therefore be an expectation of either no effect or avoidance, with no barrier to movement created across the estuary from the sediment plume.

12.4.13 On this basis, there is no substantive alteration to any potential impacts to the commercial and recreational fisheries to those identified in the original ES (Section 12.6, Tables 12.1 Construction Impacts; Table 12.2 Operational Impacts).

Changes in Indirect Impacts

12.4.14 No substantive changes to the indirect impacts to the commercial and recreational fisheries have been identified resulting from the material amendment to the proposed development. This conclusion has been derived based on the following:

12.4.15 As identified in the original ES, the quay construction will lead to a permanent loss of intertidal and shallow subtidal habitat. The material amendment will entail a small reduction in loss of this area (see paragraph 10.4.66 of UES Chapter 10). There will also be dredging undertaken with increased

volumes disposed to licensed disposal grounds in the estuary, with some small scale alteration to the associated sediment plume. The volume of capital dredged material will be approximately 1,970,000m^3, with the arisings consisting of alluvium and soft clays, glacial till and silty & gravelly sands. There will also be some alteration to the hydrodynamics in and around both the revised quay and the disposal grounds.

12.4.16 These alterations from the original ES have the potential to influence the fish community in the area of the development and disposal sites. However, given the absence of any measurable alteration to the fish community structure in the vicinity of the development and disposal grounds (see original ES Chapter 10, paragraphs 10.3.11 *et seq*), then it is concluded that there would be no measurable alteration to the identified impacts to commercial and recreational fisheries provided in the original ES.

12.4.17 Power station cooling water abstraction has the potential to entrain fish, whilst the effluent discharged usually has both a temperature loading and a biocide legacy level, both reducing in concentration with dilution by the receiving waters.

12.4.18 The temperature tolerances of fish indicate survival within heated effluents and the upper lethal temperatures of salmonids are 24-32°C and 32-40°C for non-salmonids (Poxton and Allouse, 1982). However, synergistic effects due to the presence of other stressors will reduce these limits. Of greatest importance however, is the combined stress induced by high temperatures and low dissolved oxygen concentrations (Pomfret et al., 1991).

12.4.19 Langford (1990) reported cases where power-plant related fish mortalities or avoidance have been attributable to anti-fouling treatment (principally chlorine) rather than temperature and indicated that chlorine concentrations of 0.11mg/l caused increased mortalities among entrained bass (*Morone* spp.) in the USA. Numbers of fish in a discharge are known to decrease during periods of chlorination and residual chlorine concentrations of >0.35mg/l produce an avoidance reaction.

12.4.20 Whilst the effects of the adjacent Uniper (formerly E.ON) cooling water abstraction and discharge were addressed in the original AMEP ES, and would also have been addressed in detail in the planning application for the power station's construction and operation, modification to hydrodynamics from the AMEP quay in this area has the *potential* to modify environmental conditions, and potentially reduce dispersion and dilution with increases in temperature and TRO loadings in the CW immediately around the outfall, with a concomitant potential to affect fish utilisation and even entrainment.

12.4.21 However, modelling of the hydrodynamics around the quay (HRW, 2021b, Technical Appendix UES9-5) have shown no significant alteration to the Uniper thermal plume, indicating no change in the water quality conditions around the Uniper outfall, and thus no potential change to the conditions for fish (either avoidance, impingement or mortality).

12.4.22 The potential for increased sediment suspension from the dredging activity has also been identified as a potential indirect impact to the fish community through changes to prey availability e.g. benthic organisms. However, as noted above, increased suspended sediment concentrations from the dredging activity are expected to be within natural fluctuations in loads recorded form the Humber estuary, as well as being restricted in terms of effect to close around the works.

12.4.23 The invertebrate community of the middle estuary is adapted to the physical rigors of the environment including erosion, deposition and high suspended sediment load, and as such would be able to withstand these increased deposition rates in the vicinity of the works, e.g. assessed by

HRW (2021a) at being up to <1mm of sediment at the outfall c. 100m from the development on a spring tide and <0.5mm on a neap tide.

12.4.24 On this basis, indirect effects to the commercial and recreational fisheries are not expected to change significantly compared to that ascribed in the original ES (Chapter 12, Table 12.1).

Additional Operational Phase Effects

12.4.25 No changes to potential operational impacts relevant to the commercial and recreational fisheries components have been identified, and therefore there are no differences in the operational effects on the fish community and thus commercial and recreational fishing, from those reported in the original ES (Chapter 12, Table 12.2).

Additional Cumulative Effects

12.4.26 No substantive deleterious cumulative impacts have been identified from multiple developments in the Zone of Impact (ZoI) from those addressed in the original ES e.g. dredge disposal is ongoing from ports activity in the Humber, power station cooling water abstraction and discharge.

12.4.27 Based on the assessment of impacts from the material amendment, and plans and projects in the ZoI, it has been concluded that there are no additional significant cumulative effects arising from the development.

Consideration of DCO

12.4.28 As described above, baseline commercial and recreational fisheries conditions are not considered to have significantly changed from the original ES, with commercial activity at a very low level compared to adjacent ICES triangles.

12.4.29 Furthermore, the material amendment is not considered to generate any significant or measurable new impacts to the existing commercial and recreational fisheries potential, although with some small potential alterations e.g. potentially increased vessel traffic.

12.4.30 Whilst the quay will restrict public access onto the flood bank, this access has not changed from the DCO design and, in any case, the extensive fringing intertidal marsh at this location means the reach is not readily used for recreational fishing when compared to upstream and downstream reaches.

12.5.0 Requirement for Additional Mitigation

12.5.1 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, or materially different impacts, and as such, no additional mitigation is considered necessary.

DCO Mitigation

12.5.2 On the basis of the above, it is considered that the mitigation measures identified within the made DCO remain suitable and fit for purpose without requirement for modification. These include (but are not limited to):

- piling restrictions included in the AMEP DCO (DML) (Schedule 8, paragraphs 37 *et seq*)
- the provision of compensatory habitat at Cherry Cobb Sands as provided for within the extant DCO. These compensatory habitats provide function for fishes, including nursery areas for commercially exploitable species.

Alternate or Additional Mitigation

12.5.3 There are no changes in the effects on the commercial and recreational fisheries compared to those identified in the original ES. Therefore no alternate or additional mitigation is required for impacts to the commercial and recreational fisheries compared to that provided as a condition of the extant DCO and ML.

12.6.0 Residual Effects

12.6.1 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.

Construction Phase

12.6.2 Following consideration of mitigation, residual effects relating to commercial and recreational fisheries during the construction phase are identified within the original ES.

12.6.3 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).

Operational Phase

12.6.4 Following consideration of mitigation, residual effects relating to noise during the operational phase are identified within the original ES.

12.6.5 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).

Consideration of DCO

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.

12.7.0 Other Environmental Issues

12.7.1 This Section seeks to detail any considerations and environmental effects which have been identified with regard to the range of topics which have been introduced into EIA requirements through the EIA Regulations 2017. Where there are no such considerations or environmental effects, this is also specified below for clarity.

12.7.2 Refer to Chapter 25 for a summary of the 'Other Environmental Issues' identified across all of the technical assessments undertaken and the Chapters prepared as part of the UES.

Other Environmental Issues of Relevance

Infrastructure

12.7.3 The proposed material amendment will not raise any impacts upon infrastructure with regard to the consideration of commercial and recreational fisheries beyond those considered within the original ES.

Waste

12.7.4 The proposed material amendment will not raise any impacts upon waste with regard to the consideration of commercial and recreational fisheries beyond those considered within the original ES.

Population and Human Health

12.7.5 The proposed material amendment will not raise any impacts upon population and human health with regard to the consideration of commercial and recreational fisheries beyond those considered within the original ES.

Climate and Carbon Balance

12.7.6 The proposed material amendment will not raise any impacts upon climate and carbon balance with regard to the consideration of commercial and recreational fisheries beyond those considered within the original ES.

Risks of Major Accidents and/or Disasters

12.7.7 The proposed material amendment will not result in any risks of major accidents and/or disasters with regard to the consideration of commercial and recreational fisheries beyond those considered within the original ES.

Summary

12.7.8 No other environmental issues of relevance to commercial and recreational fisheries have been identified.

12.8.0 Summary of Effects

12.8.1 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.

12.8.2 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.

12.8.3 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.

12.9.0 Conclusions

12.9.1 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.

12.9.2 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.

12.9.3 No significant changes have been identified outwith those described in the original ES and the Examining Authority's Recommendation Report (2013).

12.9.4 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.

12.9.5 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.

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