KEEPING BRITAIN TRADING

IMMINGHAM EASTERN RO-RO TERMINAL

Environmental Statement: Volume 1
Chapter 20: Cumulative and In-combination Effects
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Immingham Eastern Ro-Ro Terminal

Environmental Statement: Volume 1
Chapter 20: Cumulative and In-combination Effects

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20.1 Introduction

20.1.1 If the Immingham Eastern Ro-Ro Terminal (IERRT) is approved, construction and operation of the project may be undertaken at the same time as a number of other plans, projects, and ongoing activities. These other plans, projects and ongoing activities may have the potential to result in additional or modified impacts on the same receptors as those identified for this proposed development, resulting in a cumulative and/or in-combination impact.

20.1.2 Associated British Ports (ABP), as the applicant, is required, under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (Infrastructure Planning (EIA) Regulations) to assess any other plans, projects, and activities, including any impacts that do not directly overlap spatially but may indirectly result in a cumulative and/or in-combination impact in light of the proposed development. It should be noted that this exercise also informs the assessment of in-combination impacts as required by the Habitats Regulations.

20.1.3 The Infrastructure Planning (EIA) Regulations specifically reference 'cumulative' effects, while the Habitats Regulations refer to 'in-combination' effects. In practice, however, this is interpreted as referring to both cumulative and in-combination effects because the assessments, whether for Environmental Impact Assessment (EIA) or for a Habitats Regulations Assessment (HRA), need to take into account the combined influence of all of the environmental pressures acting upon the relevant receptors in assessing the significance of environmental effects.

20.1.4 On this basis, the principal difference between the cumulative assessment for EIA and the in-combination assessment for HRA is the range of receptors included in the assessment. For the purposes of the EIA, the range of features to be assessed needs to cover both environmental receptors (including protected interest features) and other human activities and interests that might be affected. The HRA on the other hand, focuses solely on the relevant interest features potentially affected within the internationally designated sites that have been screened into the assessment.

20.1.5 This chapter presents the assessment of the cumulative and in-combination effects of the proposed IERRT project. The key elements of the proposed development are shown on Figure 1.2 and Figure 1.3 in Volume 2 of this Environment Statement (ES) (Application Document Reference number 8.3). This chapter has been prepared by ABPmer and Adams Hendry Consulting Ltd with input from AECOM Ltd, Wessex Archaeology, David Tucker Associates (DTA), and Kent Energies UK Ltd.

20.1.6 Section 20.2 below presents the implications of legislation, policy, and guidance in relation to cumulative and in-combination effects, and Section 20.3 details the consultation which has taken place. The assessment methodology that has been followed is set out in Section 20.4, and Sections 20.5 and 20.6 presents the outcomes of the assessment.

20.1.7 The individual EIA topic assessments (Chapters 7 to 19 to this ES) have informed the outcomes of the cumulative and in-combination assessment. Table 20.4 contains the long list and short list of other plans, projects, and activities that have been considered in the cumulative/in-combination assessment.

20.2 Implications of policy legislation and guidance

20.2.1 This section of the chapter sets out key aspects and implications of policy and guidance that are relevant to the assessment of cumulative and in-combination effects. It builds upon the overarching chapter covering the Legislation, Policy and Consenting Framework (Chapter 5 of this ES).

Legislation

EIA Regulations

20.2.2 The Infrastructure Planning (EIA) Regulations 2017 (as amended) transposed the EU Directive 2014/52/EU (the EIA Directive) into English law.

20.2.3 Regulation 5(2)(e) of the EIA Regulations highlights that an EIA shall identify, describe, and assess in an appropriate manner the direct and indirect significant effects of the proposed development on "*the interaction between the factors referred to in points (a) to (d)*" of Regulation 5(2), namely:

> *(a) "population and human health;*
> *(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
> *(c) land, soil, water, air and climate;*
> *(d) material assets, cultural heritage and the landscape; ..."*

20.2.4 Regulation 14(2)(f) of the EIA Regulations indicates that, amongst other things, an environmental statement should include:

> *"any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected."*

20.2.5 Schedule 4 paragraph (5)(e) of the EIA Regulations states that an ES should include a description of the likely significant effects of the proposed development on the environment resulting from:

"the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular importance likely to be affected or the use of natural resources; ..."

The Habitats Regulations

20.2.6 The Conservation of Habitats and Species Regulations 2017 (as amended)[1], known as the "Habitats Regulations", transposed the Habitats Directive (Directive 92/43/EEC) and the Birds Directive (2009/147/EC) into English law.

20.2.7 Where a development project is located close to, or within, a European/Ramsar site, the Habitats Regulations apply. Regulation 63 of the Habitats Regulations requires the competent authority to determine whether the proposed works have the potential for a likely significant effect (LSE) on the interest features and/or supporting habitat of a European/Ramsar site either alone or in-combination with other plans, projects, and activities and, if so, to undertake an Appropriate Assessment (AA) of the implications of the proposals in light of the site's conservation objectives.

20.2.8 A HRA has been undertaken for the IERRT project given the overlap of the proposed development with the Humber Estuary Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site (see Application Document Reference number 9.6). The outcomes of the cumulative and in-combination assessment presented in this chapter have informed the HRA.

National policy

National Policy Statement for Ports (NPSfP)

20.2.9 The National Policy Statement for Ports (NPSfP) provides the framework for decisions on proposals for new port developments (Department for Transport (DfT), 2012). Section 4.2 of the policy states that a proposal for port infrastructure needs to consider the benefits, including the contribution that the scheme would make to the national, regional, or more local need for the infrastructure, against anticipated adverse impacts, including cumulative impacts.

20.2.10 In terms of pollution control and other environmental regulatory regimes, Section 4.11 of the NPSfP advises that decision-making should involve consultation with relevant statutory bodies to ensure that in the case of potentially polluting development, the effects of existing sources of pollution in and around the site are not such that the cumulative effects of pollution when the proposed development is added would make that development unacceptable, particularly in relation to statutory environmental quality limits. In addition, Section 5.6 of the NPSfP relating to water quality and resources

[1] Following the UK leaving the EU, these have been modified by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

notes that cumulative effects should be described in the ES. These considerations have been assessed in the Water and Sediment Quality chapter (Chapter 8) and Ground Conditions, including Land Quality chapter (Chapter 12) of this ES and have informed this cumulative and in-combination assessment.

20.2.11 In terms of human health, Section 4.16 the NPSfP states that health impacts may affect people simultaneously, so there is a need to consider the cumulative impact on health. The effect of the proposed development on human health has been considered in this ES, namely in the Air Quality chapter (Chapter 13), Airborne Noise and Vibration chapter (Chapter 14), and the Land Use Planning chapter (Chapter 18). These assessments have informed the cumulative and in-combination assessment.

20.2.12 The NPSfP advises that where a socio-economic assessment has been included in the ES, this assessment should consider all relevant socio-economic impacts, including cumulative effects. These have been considered in the Socio-economic chapter (Chapter 15) of this ES and has informed the cumulative and in-combination assessment.

UK Marine Policy Statement (MPS)

20.2.13 The Marine Policy Statement (MPS) is the framework for preparing marine plans and taking decisions affecting the marine environment. The MPS also sets out the general environmental, social, and economic considerations that need to be taken into account in marine planning and provides guidance on the pressures and impacts that decision makers need to consider when planning for and permitting development in the UK marine areas.

20.2.14 In terms of considering cumulative effects in the preparation of marine plans, Paragraph 2.3.1.6 of the MPS states that "*They* [Marine Plans] *should identify how the potential impacts of activities will be managed, including cumulative effects. Close working across plan boundaries will enable the marine plan authority to take account of the cumulative effects of activities at plan boundaries. The consideration of cumulative effects alongside other evidence may enable limits or targets for the area to be determined in the Marine Plan, if it is appropriate to do so."*

20.2.15 In terms of decision making, paragraph 2.3.2.1 states that "*When considering potential benefits and adverse effects, decision makers should also take into account any multiple and cumulative impacts of proposals, in the light of other projects and activities.*" In terms of port development, paragraph 3.4.11 advises that "*When decision makers are advising on or determining an application for an order granting development consent in relation to ports, or when marine plan authorities are developing Marine Plans, they should take into account the contribution that the development would make to the national, regional or more local need for the infrastructure, against expected adverse effects including cumulative impacts."*

East Inshore and East Offshore Marine Plans

20.2.16 The East Inshore and East Offshore Marine Plans, which are collectively referred to as 'the East Marine Plans', were formally adopted on 2 April 2014 (Department for Environment, Food and Rural Affairs (Defra), 2014). The East Inshore Marine Plan area covers 6,000 km² of sea, from mean high water springs (MHWS) out to the 12 nautical mile limit from Flamborough Head in the north to Felixstowe in the south. The East Offshore Marine Plan covers 49,000 km² of area from the 12 nautical mile limit to the border with The Netherlands, Belgium, and France.

20.2.17 There is one policy within the East Marine Plans specifically related to cumulative effects:

- Policy ECO1 – Cumulative impacts affecting the ecosystem of the East marine plans and adjacent areas (marine, terrestrial) should be addressed in decision-making and plan implementation.

20.2.18 A policy conformance assessment has been produced as part of the Development Consent Order (DCO) application (Application Document Reference number 5.1) which provides a review of the proposed development against this policy. The assessment of this policy has been informed by the cumulative and in-combination effects assessment.

Guidance

Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects

20.2.19 In its Advice Note 17 (Planning Inspectorate (PINS), 2019), PINS highlights that there is a range of public sector and industry-led guidance available on cumulative effects assessment and no single agreed industry standard method. Consequently, it is recognised that the approach taken to such assessments within applications for development consent varies.

20.2.20 In respect of cumulative effects assessment, AN17 sets out a "*staged process that applicants may wish to adopt in CEA (Cumulative Effects Assessment) for NSIPs*". A staged approach along the lines set out in AN17 has been taken in respect of the IERRT project, as explained further in Section 20.4 of this chapter.

20.2.21 PINS Advice Notes do not give any specific guidance on assessing potential impacts acting on the same receptor. However, Advice Note 9 (Rochdale Envelope) (PINS, 2018) explains that the interactions between different aspect / topic assessments should be taken into account.

20.3 Consultation

20.3.1 Consultation has been undertaken with relevant bodies in light of the comments received as part of the formal scoping process with a view to identifying whether there are any likely cumulative/in-combination effects arising or likely to arise as a result of the construction and operation of this Project. Comments have been requested from consultees through the statutory consultation on the methodology and preliminary short list of other proposed developments set out in the Preliminary Environmental Information report (PEIR).

20.3.2 The consultation that has been undertaken, along with the outcome of such consultation and how it has influenced the cumulative/in-combination effects assessment is provided in Table 20.1. All comments relating to the cumulative and in-combination effects assessment that have been submitted during statutory consultation and any subsequent ongoing consultation has been taken into account in the preparation of this ES chapter on cumulative/in-combination effects.

Table 20.1. Summary of consultation to date

Consultee	Reference, Date	Summary of Response	How Comments Have Been Addressed in this Chapter
PINS	Scoping Opinion, October 2021 Paragraph 3.3.4	The Applicant should clearly state which developments will be assumed to be under construction or operational as part of the future baseline.	The status of each development considered in this cumulative and in-combination effects ES chapter is described in Table 20.4.
PINS	Paragraph 3.3.5	The Applicant is referred to the advice in Section 3.1 of the Inspectorate's Advice Note 17 on using the zone of influence of the Proposed Development to identify other developments which could lead to cumulative environmental effects (rather than a distance of 2 km, as stated in the Scoping Report).	The area of search to identify other developments has been based on the zone of influence of each assessment topic and expert professional judgement as presented in the individual EIA topic assessment chapters (see Section 20.4).
Marine management Organisation (MMO)	Scoping Opinion, October 2021 Appendix 2 MMO response	The MMO is content with the proposal for cumulative impacts and in-combinations impacts in the Scoping Report and has no further projects to add at this time.	N/A
Natural England	Scoping Opinion, October 2021 Appendix 2 Natural England response	It will be important for any assessment to consider the potential cumulative effects of this proposal, including all supporting infrastructure, with other similar proposals and a thorough assessment of the 'in combination' effects of the proposed development with any existing developments and current applications.	Proposals at scoping stage have been considered in the assessment, referred to as Tier 2 development (see Section 20.4).

Consultee	Reference, Date	Summary of Response	How Comments Have Been Addressed in this Chapter
		Natural England advises that the cumulative impact assessment should include other proposals currently at Scoping stage.	
Natural England	Scoping Opinion, October 2021 Appendix 2 Natural England response	The following types of projects should be included in such an assessment, (subject to available information):existing completed projects; approved but uncompleted projects; ongoing activities; plans or projects for which an application has been made and which are under consideration by the consenting authorities; and plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.	These types of plans, projects and activities are considered in the assessment (see Section 20.4).
Environment Agency	PEIR response, February 2022	We welcome the Humber Stallingborough Phase 3 Project being included in Table 20.4 [of the PEIR] as scoped into the inter-projects effects assessment. Works are due to commence on the Stallingborough Phase 3 Project in 2023. We therefore seek to work with you to ensure that in-combination effects of the two projects can be minimised.	Noted.
Marine Management Organisation	PEIR response, February 2022	The effects from piling, dredging and disposal on fish receptors have been scoped out for inclusion in the intra-project effects assessment (Table 20.5). At this stage, when	Intra-project effects relate to the assessment of impacts resulting from the proposed development alone. This involves identifying

Consultee	Reference, Date	Summary of Response	How Comments Have Been Addressed in this Chapter
		the exact timing of the proposed piling and dredging works in relation with works undertaken by nearby developments is unknown, these effects should be scoped in and further discussed within the ES.	the impact pathways from the individual EIA topic assessments (Chapters 7 to 19) that may have residual adverse impacts. Impacts on nature conservation and marine ecology (including fish receptors) are considered in the inter-projects effects assessment set out in Table 20.5.
Marine Management Organisation	PEIR response, February 2022	No assessment of the cumulative or inter-related impacts have been provided in relation to coastal processes. Instead, Chapter 20 states that assessment will be undertaken (20.4.5), with no discussion of the method used to combine the various data and impacts. This is a risk as it means that these assessments will not have been commented on until a late stage.	The assessment, provided in Table 20.5, has been undertaken to an appropriate level of detail having regard to the type and extent of information available. Professional judgement has been used to determine the potential for significant cumulative effects.
Natural England	PEIR response, February 2022	Natural England broadly agrees with the selection criterion. When assessing the effects on designated sites, Natural England recommends that the search radius be measured from the nearest point on the designated site to the proposal being assessed, or the nearest area of sensitive habitat, if known. This would likely identify those proposals which are likely to affect overlapping geographic extents within the designated site in question.	This has been undertaken.

Consultee	Reference, Date	Summary of Response	How Comments Have Been Addressed in this Chapter
Natural England	PEIR response, February 2022	Natural England's guidance accepts the use of the significance threshold of 1000 Annual Average Daily Traffic (or the levels of emissions being <1 per cent of the critical level/ load), however, this does not exclude the requirement for an assessment of the potential impacts in combination with other plans or projects. Therefore, Natural England recommends that the ES and HRA consider whether there is likelihood of the operational traffic acting in combination with other plans or projects.	The air quality assessment (chapter 13 of this ES) is inherently cumulative as it includes a consideration of modelled traffic data growth for future traffic flows, accounting for 'committed developments' (see paragraph 20.5.7 of this chapter).
North Lincolnshire Council	PEIR response, February 2022	Having reviewed Chapter 20 [of the PEIR] it is considered that the list of committed developments appears generally up to date. However, it should be noted that an application for the Viking CCS Pipeline is expected to be submitted to the Planning Inspectorate in Q4 of 2023.	The Viking CCS Pipeline has been added to the short list identified in Table 20.4.
North Lincolnshire Council	PEIR response, February 2022	It may be worthwhile checking with the Humber Nature Partnership to see if their In Combination Database for the Humber Estuary flags any additional developments that have not been identified via other means.	The Humber Nature Partnership's In Combination Database has been consulted. All relevant developments are captured in Table 20.4 and assessed in the cumulative and in-combination effects assessment and in the HRA (Application Document Reference number 9.6).

Consultee	Reference, Date	Summary of Response	How Comments Have Been Addressed in this Chapter
C.RO	PEIR response, February 2022	The PEIR suggests only cumulative projects that give rise to significant effects have been shortlisted. This is a deficient approach to assessing cumulative impacts: the incremental impact of numerous applications could result in a significant cumulative effect. For example, C.RO is bringing forward additional and enhanced capacity under both planning consents and permitted development rights and would appropriately be listed in the short list given that they could be expected to have a cumulative impact on the immediate highway network and European designated sites.	The PEIR stated, as does the ES, that the long list of developments identified at Stage 1 has been filtered to produce a short list which includes only those other developments considered to potentially give rise to significant cumulative effects. This was achieved using a set of criteria based on Advice Note 17 (i.e., temporal and spatial overlap, and shared potential source-pathway-receptor linkages). Advice Note 17 also states that whilst applicants should make a genuine attempt to assess the effects arising from multiple, individually non-significant effects, the assessment should be proportionate and should not be any longer than is necessary to identify and assess any likely significant cumulative effects.
Environment Agency	Consultation meeting, 20 May 2022	A general IERRT project update was provided and a discussion on issues raised during statutory consultation was had. Information on the Environment Agency's Humber Stallingborough Phase 3 Project was also shared.	Information on the Environment Agency's Humber Stallingborough Phase 3 Project has been incorporated into the short list for the inter-project

Consultee	Reference, Date	Summary of Response	How Comments Have Been Addressed in this Chapter
			effects assessment in this ES (Section 20.5).
MMO (PI 10)	Supplementary Statutory Consultation – 28 Oct – 27 Nov 2022	Previous advice noted that the PEIR states only that 'assessments will be undertaken', with no discussion of the method used to combine the various data and impacts. The SCR does not provide any such assessments, which therefore remain a major gap in the data provision and should be addressed.	The methodology employed to assess cumulative impacts is provided in Section 20.4 of this chapter of the ES. The assessment, provided in Table 20.5, has been undertaken to an appropriate level of detail having regard to the type and extent of information available.
DFDS (PI 15)	Supplementary Statutory Consultation – 28 Oct – 27 Nov 2022	ABP is proposing another DCO, for the Immingham Green Energy Terminal. The cumulative impacts of these two projects should be assessed in the environmental statement.	Immingham Green Energy Terminal is included on the short list of projects assessed in Section 20.5 of this ES chapter.
MMO and Cefas	MMO/Cefas letter, 1 December 2022	Assessment of concurrent dredging and piling activities required during construction in the inter-related and cumulative impacts assessment.	An assessment of intra-project cumulative and in-combination effects is provided in Section 20.6 of this chapter. This includes consideration of the effects of concurrent dredging and piling activities on fish.

20.4 Assessment methodology

20.4.1 The cumulative (and in-combination) assessment considers the effects of the IERRT project alongside those arising from other plans, projects, and ongoing activities. Cumulative impacts result from the combined impacts of multiple developments or from the combined effect of individual impacts (e.g., where different project elements in different locations have a cumulative impact on a particular feature). The impacts resulting from a single scheme may not be significant on their own but when combined with impacts resulting from other schemes, these could change the level of significance and potentially become significant.

20.4.2 The assessment of cumulative and/or in-combination effects of the proposed development alone, which are referred to as intra-project effects, involves identifying the impact pathways from the individual EIA topic assessments (Chapters 7 to 19 of this ES) that may have residual adverse impacts and considering whether and to what degree they might have the potential to act on the same receptor.

20.4.3 The assessment of cumulative and/or in-combination effects of the proposed development with other plans, projects, and ongoing activities, which are referred to as inter-project effects, involves identifying and assessing any potential overlap or interaction of effects arising from other plans, projects and activities with the effects arising from the IERRT project on the receptors/topics considered in this ES.

20.4.4 The methodology followed in the assessment is set out below. Inter-project effects and intra-project effects are considered separately.

Inter-project effects

20.4.5 In accordance with PINS Advice Note 17, a staged approach to the inter-project effects assessment has been undertaken for the proposed development. The stages consist of:

- Stage 1 – establish a long list of other developments[2];
- Stage 2 – establish a short list of developments from the Stage 1 long list;
- Stage 3 – gather information on the short list of developments; and
- Stage 4 – undertake an assessment of the cumulative effects of the short list developments with the IERRT project.

20.4.6 Stage 1 and Stage 2 of the assessment have been iterative and updated a number of times so that the ES reflects the latest position of relevant other development proposed within the vicinity of the IERRT project at the time of the DCO application submission. Comments received during consultation have also been taken into account as part of the assessment process.

[2] 'Development' in this context includes other plans, projects, and ongoing activities.

Stage 1 – Establishing a Long List of Developments

20.4.7 Stage 1 of the inter-project effects assessment process comprises the identification of a long list of other developments proposed in the vicinity of the proposed the IERRT project.

20.4.8 The first step in establishing such a long list was to identify the different types of development to investigate. A comprehensive approach was taken whereby types of development considered included development:

- Being taken forward under the Town and Country Planning regime – with a distinction being made between 'major' development, as defined by the appropriate planning legislation, and 'non-major' development;
- Being taken forward under the Nationally Significant Infrastructure Project (NSIP) regime; and
- Being taken forward under the Marine Licence regime.

20.4.9 In addition, and in response to consultation feedback from Natural England as part of the scoping process, consideration was given to any plans and/or ongoing activities that have the potential to overlap or interact with the proposed development.

20.4.10 Applications for householder development, minor alternations to non-residential properties, and applications for advertisement consent have been scoped out of the process, as there is considered to be limited potential for these development types to give rise to significant cumulative effects with the IERRT project, due to their very minor scale. Any such developments of these types currently taking place are also considered likely to be completed prior to the construction of the proposed development.

20.4.11 The second step in establishing a long list was then to consider what developments to include in the list having regard to the certainty of that development taking place, which has implications for the level of detail likely to be available about the development in question.

20.4.12 Advice Note 17 provides criteria that may be used to indicate the certainty that can be applied to each 'other existing development and/or approved development'. The criteria are assigned in tiers which descend from Tier 1 (most certain) to Tier 3 (least certain) which can be assigned to each development as follows:

- Tier 1 development:
- Under construction;
- Permitted application(s), but not yet implemented; and
- Submitted application(s) but not yet determined.
- Tier 2 development:
- Projects on the PINS Programme of Projects where a scoping report has been submitted.
- Tier 3 development:

- Projects on the PINS Programme of Projects where a scoping report has not been submitted;
- Identified in the relevant Development Plan (and emerging Development Plans – with appropriate weight being given as they move closer to adoption) recognising that there will be limited information available on the relevant proposals; and
- Identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

20.4.13 This guidance has been used to guide the types of development identified on the long list.

20.4.14 Rejected applications, which are not the subject of appeals or are outside the timeframe for bringing an appeal, and withdrawn applications have been scoped out of the process. This is because the implementation of these planning applications is not considered to be reasonably foreseeable, as they are not approved or extant applications.

20.4.15 Allocated sites within relevant development plans which are not yet subject to planning or marine licence applications, and projects identified in other plans and programmes which set the framework for future development – namely Tier 3 types of developments other than those on the PINS Programme of Projects – have been scoped out of the process. This is because the details of any development that may come forward as a result of these plans are unknown. It is also expected that future developers bringing forward projects identified in these plans would carry out their own assessment of cumulative effects.

20.4.16 The third step in establishing a long list of developments consisted of defining the area of search. These areas of search have been identified taking into account the different Zones of Influence (ZoI) for each relevant environmental topic assessment considered within the various chapters of the ES. For each environmental topic, the ZoI corresponds with the study area described in the respective ES chapter. The ZoI for each assessment topic is included in Table 20.2.

Table 20.2. Overview of Zones of Influence

Environmental Topic	Approximate Zone of Influence (from proposed development site)
Physical processes	The Humber Estuary covering approximately 20 km to the west and 15 km to the east of the proposed development, from the mouth to up-estuary of the Hull Bend.
Water and sediment quality	
Nature conservation and marine ecology	
Commercial and recreational navigation	Section of the Humber Estuary from the Humber Sea Terminal in the north to Burcom Shoal in the south.

Environmental Topic	Approximate Zone of Influence (from proposed development site)
Coastal protection, flood defence and drainage	3 km upstream and 9 km downstream from the proposed development, covering flood area 24 in the Humber Estuary Strategy.
Ground conditions, including land quality	1 km from the proposed development.
Air quality	350 m for sensitive receptors from construction site activity and/or within 50 m of a public road used by construction vehicles that is within 500 m of a site access point. Relating to traffic and transport impacts, the study area encompasses the main routes from the Port to the A160 and A180 and includes consideration of the A15 (Humber Crossing) of the M180 and sections of the M18, M1 and M62.
Airborne noise and vibration	300 m for noise sensitive receptors (NSRs) from proposed development site for construction noise. 1 km from proposed development site for operational noise. Relating to traffic and transport impacts, the study area encompasses the main routes from the Port to the A160 and A180 and includes consideration of the A15 (Humber Crossing) and M180.
Cultural heritage and marine archaeology	Proposed development site to encompass all direct impacts from construction and dredging. 500 m from proposed development site to encompass potential indirect impacts from construction and dredging. 5 km buffer zone beyond the area of the proposed development in order to include harbour setting.
Socio-economic	Approximately 20 km from the proposed development site to accommodate the Wider Impact Area.
Traffic and transport	The study area encompasses the main routes from the Port to the A160 and A180 and includes consideration of the A15 (Humber Crossing) and M180.
Land use planning	Health and Safety Executive (HSE) Outer Zone used for land use planning.
Climate change	Direct emissions and the proposed development's resilience to climate change are considered within the boundary of the proposed development. Indirect emissions associated with the scheme can occur on a global scale i.e., scope 3 greenhouse gas (GHG) emissions from international shipping.

20.4.17 Following a review of the ZoI for each topic, and consideration of the scale and nature of the proposed development and the findings of the assessments undertaken in the ES, the areas of search for the inter-project effects assessment were identified for each development type (Table 20.3).

20.4.18 Based on the expert professional judgement of the project team, the identified areas of search are considered to be suitably wide to ensure that other developments which could result in potentially significant cumulative effects with the proposed development are identified.

20.4.19 Any other developments that consultees suggested should be included in the inter-project effects assessment during the statutory consultation process have been considered on a case-by-case basis. This included those outside the areas of search, but which fall within a wider ZoI for a specific topic or topics.

20.4.20 Developments to be included in the long list have been identified and are shown in Table 20.4. These were collated from a review of the extant application records held online by relevant local planning authorities, information available on PINS' NSIP Programme of Projects and applications for marine licence activities/development on the MMO's online marine licence register. As set out in PINS Advice Note 17, an assessment cut-off date needs to be set to be able to finalise and submit an application. The cut-off date for identifying other developments included on the long list and short list was 8 December 2022. However, it is recognised that where new 'other existing development and/or approved development' comes forward following the stated assessment cut-off date, or further information on an already identified development becomes available, the Examining Authority may request additional information during the examination in relation to effects arising from such development.

Table 20.3. Types of other proposed development and areas of search

Other Development Type	Status of Development	Equivalent Tier Given in Advice Note 17	Area of Search
Major development (as defined under the Development Management Procedure (England) Order 2015) (as amended)) / Local Development Orders (as set out within the Town and Country Planning Act 1990 (as amended))	Projects that are under construction	Tier 1	5 km
	Permitted application(s) not yet implemented	Tier 1	
	Submitted application(s) not yet determined	Tier 1	
	All refusals subject to appeal procedures not yet determined	Not specifically included in AN17 but considered to be equivalent to Tier 1	

Other Development Type	Status of Development	Equivalent Tier Given in Advice Note 17	Area of Search
Non-major development	Projects that are under construction	Tier 1	1 km
	Permitted application(s) not yet implemented	Tier 1	
	Submitted application(s) not yet determined	Tier 1	
	All refusals subject to appeal procedures not yet determined	Not specifically included in AN17 but considered to be equivalent to Tier 1	
Nationally Significant Infrastructure Projects / Projects on the PINS Programme of Projects	Projects on the PINS Programme of Projects that are under construction	Tier 1	10 km
	Projects with development consent not yet implemented	Tier 1	
	Submitted application(s) undergoing the development consent process but not yet consented	Tier 1	
	All refusals subject to judicial review not yet determined	Not specifically included in AN17 but considered to be equivalent to Tier 1	
	Projects on the Programme of Projects where a scoping report has been submitted	Tier 2	
	Projects on the Programme of Projects where a scoping report has not been submitted	Tier 3	
Marine licence activities/development	Projects on the MMO marine licence register that are being undertaken/constructed	Not specifically included in AN17 but considered to be equivalent to Tier 1	5 km
	Permitted application(s) not yet implemented	Not specifically included in AN17 but considered to be equivalent to Tier 1	

Other Development Type	Status of Development	Equivalent Tier Given in Advice Note 17	Area of Search
	Submitted applications not yet determined	Not specifically included in AN17 but considered to be equivalent to Tier 1	
	All refusals subject to appeal procedures not yet determined	Not specifically included in AN17 but considered to be equivalent to Tier 1	
Projects identified in development plans and other plans and programmes	Projects identified in the relevant development plan (and emerging development plans)	Tier 3	N/A – Scoped out
	Projects identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward	Tier 3	

Stage 2 – Establishing a short list of developments for the assessment

20.4.21 The long list of developments identified at Stage 1 (see Table 20.4) has then been filtered to produce a short list which includes only those other developments considered to potentially give rise to significant cumulative effects. This was achieved using a set of criteria which include a consideration of the factors outlined in Advice Note 17 (PINS, 2019).

20.4.22 The criteria used to determine whether to include or exclude other existing development and/or approved development are as follows:

- **Criterion 1 – Temporal scope**: the development is not completed or operational, and the construction or operation of the development would be likely to take place within the same time period as the programmed construction or operation of the proposed development.
- **Criterion 2 – Location, scale, and nature of the development**: the development is either within 500 m of the proposed development or is identified as 'EIA development' under the Marine Works (EIA) Regulations 2007 (as amended), Town and Country Planning (EIA)

Regulations 2017 (as amended) or the Infrastructure Planning (EIA) Regulations 2017 (as amended).

- **Criterion 3 – Source-pathway-receptor linkages**: it is considered that, for any one or more environmental topics/aspects, a significant cumulative effect could occur due to potential source-pathway-receptor linkages shared between the development and the proposed development.

20.4.23 The temporal scope used to establish the short list comprises the suggested construction and operation timescales of the IERRT project. As described in Chapter 3, it is envisaged that construction works will start in early 2024 and will have been largely completed and operational by mid-2025. Under the alternative sequenced construction scenario, works are anticipated to be complete by late 2026.

20.4.24 In order to ensure an appropriate and proportionate assessment, only those projects which met all of the above criteria were included in the short list, unless professional judgement suggested otherwise.

20.4.25 Table 20.4 sets out which developments have been filtered out and which are included within the short list and taken forward for assessment.

Stage 3 – Gather information on the short list developments

20.4.26 Stage 3 of the assessment involves gathering as far as is possible detailed information on the short-listed developments in order to then undertake the assessment. This information includes the following:

- Proposed design and location information;
- Proposed programme of construction, operation, and decommissioning;
- Relevant environmental assessment information (if available) and any other relevant information to understand the environmental impacts of the proposed development and the potential for significant cumulative effects; and
- Any other publicly available information deemed to be relevant.

Stage 4 – Undertake the assessment

20.4.27 This stage involves undertaking the cumulative/in-combination effects assessment of the short-listed developments and the proposed development. The assessment has been undertaken to an appropriate level of detail having regard to the type and extent of information available. Professional judgement has been used to determine the potential for significant cumulative effects.

20.4.28 The inter-project effects assessment is presented in Section 20.5.

Intra-project effects

20.4.29 The assessment of intra-project effects involves the consideration of where two or more different types of effect arising from the IERRT project could interact and whether this interaction could result in a significant combined effect upon environmental receptors or resources.

20.4.30 The assessment of cumulative and/or in-combination effects of the proposed development alone (i.e., intra-project effects) involves reviewing the assessment of impact pathways from the individual EIA topic assessments (Chapters 7 to 19). For each receptor, the impact pathways with residual adverse impacts from across all topic chapters have been identified and the potential cumulative/in-combination effects assessed (i.e., considering whether and to what degree they might have the potential to act on the same receptor).

20.4.31 The receptors scoped into the assessment and the residual effects predicted to be experienced by them are set out in Table 20.6. This provides a clear overview of the different residual effects identified for each receptor and facilitates the assessment of intra-project effects.

20.4.32 Using the information from the topic assessments, a qualitative assessment has been undertaken by the project team using professional judgement, considering the interaction of the different residual effects on a given receptor and whether this interaction could give rise to a significant intra-project effect.

20.4.33 The overall level of significance of the potential combined effect on the receptor has been identified based on professional judgement informed by the level of significance of the relevant residual effects reported in the topic assessments. The outcome of this assessment, including any significant cumulative/in-combination effects predicted and any proposed mitigation, is presented in Section 0.

20.5 Inter-project effects assessment

Stage 1 and 2 – Long list and short list

20.5.1 The long list of developments and activities that have been identified (Stage 1 of the process) is provided in Table 20.4.

20.5.2 Table 20.4 also identifies the developments and activities that have been shortlisted (Stage 2 of the process) along with a justification for this position. The developments which have been shortlisted and are scoped into the inter-project effects assessment are identified in the final column of Table 20.4.

Table 20.4. Projects, developments and activities scoped into inter-project effects assessment (long list and short list)

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
Major Developments and Marine Licence Activities/Developments (within 5 km)							
1.	Marine Management Organisation Disposal of dredged material: MLA/2014/00431/3	Maintenance dredge disposal - Grimsby & Immingham and Sunk Dredged Channel Maintenance of access channels, berth pockets, approaches to port areas and enclosed docks to remove recently accreted sediment. Disposal of maintenance dredged material at Humber 1A (HU080), Humber 3A (HU060), and Humber 2 (HU090).	Approx. 0.1 km	Application submitted 9/9/2014 Approved on 18/12/2014 Variation request 1 submitted 24/05/2017 and approved 08/06/2017 Variation request 2 submitted 12/11/2021 and approved 07/12/2021 Variation request 3 submitted 07/11/2022	Various (depending on dredge and disposal site)	Tier 1: projects on the MMO marine licence register that are being undertaken	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
				and approved 23/11/2022 Variation request 4 submitted 05/12/2022			
2.	Marine Management Organisation Construction of new works: MLA/2020/00520	Humber International Terminal berth 2: adaptation for car carriers	Approx. 2.5 km	Application submitted 16/11/2020 approved on 26/10/2022	1 ha	Tier 1: projects on the MMO marine licence register that are being undertaken	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).
3.	Marine Management Organisation Other works MLA/2019/00111 and MLA/2019/00112	Outstrays to Skeffling Managed Realignment Scheme (OtSMRS) comprising the implementation of a managed realignment scheme on the north bank of the Humber Estuary	Approx.10 km	Application submitted 14/03/2019 Approved on 11/12/2020	250 ha	Tier 1: Projects on the MMO marine licence register that are being undertaken/constructed	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).
4.	North East Lincolnshire Council	Erect 80 megawatt battery energy facility and associated external	Approx. 1.2 km	Application validated 10/08/2021	1.44 ha	Tier 1: Projects that are under construction	**No** – the project does not meet the following

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
	Full application: DM/0762/21/FUL	works at Land Off Netherlands Way		Approved on 06/01/2022			short list criteria (Section 20.4): Criterion 2 – Location, scale and nature of the development Criterion 3 – Source pathway receptor linkages
5.	North East Lincolnshire Council Application: DM/1057/20/SCR	Request for EIA Screening opinion - Proposed new Border Control Post at Land Off Queens Road	Approx. 0.1 km	Application validated 7/12/2020 Decision (EIA not required) 28/01/2021	2.3 ha	Tier 1: Projects that are under construction To be completed under permitted development rights	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 1 – Temporal scope (completed in 2021)
6.	North East Lincolnshire Council Full application: DM/0320/22/FUL	Erection of warehouse (B8 use) and canopy – East Trans Trondheim Way Stallingborough North East Lincolnshire DN41 8FD	Approx. 1.2 km	Application validated 25/05/2022 Approved 24/08/2022	4.6 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 2 – Location, scale

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
							and nature of the development Criterion 3 – Source pathway receptor linkages
7.	North East Lincolnshire Council Reserved Matters application: DM/0111/22/REM	Reserved Matters applications following DM/0105/18/FUL to erect two storey training centre with service yard to include installation of solar panels, parking, boundary treatments and associated works with access, appearance, landscaping, layout and scale to be considered (Amended Plans received 29th March 2022 to revise drainage, hardstanding and external areas) – Land North of Farady Way Immingham North East	Approx. 1.7 km	Application validated 22/02/2022 Approved 22/09/2022	2.9 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 2 – Location, scale and nature of the development Criterion 3 – Source pathway receptor linkages

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
8.	North East Lincolnshire Council Full application: DM/0250/22/FUL	Erect 20 dwellings with access road and associated works – Land at Station Road	Approx. 3.2 km	Application validated 28/03/2022	0.58 ha	Tier 1: Submitted application(s) not yet determined	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 2 – Location, scale and nature of the development Criterion 3 – Source pathway receptor linkages
9.	North Lincolnshire Council Application: PA/SCO/2017/3[3]	Scoping opinion for VPI-Immingham Energy Park 'A' Power Station – Land North of VPI Power Station, Rosper Road, South Killingholme, DN40 3DZ	Approx. 1.5 km	Application validated 20/12/2017	4.9 ha	Tier 2: Projects where a scoping report has been submitted	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).
10.	North Lincolnshire Council Application: PA/SCR/2019/7	EIA Screening request for a proposed new transit/storage shed – Humber International Terminal, Humber	Approx. 1.6 km	Application validated 21/08/2019	1.5 ha	Tier 1: Submitted application(s) not yet determined	**No** – the project does not meet the following short list criteria (Section 20.4):

[3] The VPI Immingham Energy Park is an NSIP and has been carried through to the short list as ID.59.

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
		Road, South Killingholme, DN40 3LX					Criterion 2 – Location, scale and nature of the development Criterion 3 – Source pathway receptor linkages
11.	North Lincolnshire Council Full Application: PA/2022/1223	Hybrid application comprising full planning permission for the construction of a hardstanding area for external level storage with landscaping, drainage, access and associated works, and outline planning permission to erect 26,096 m² floor space for industrial/storage and distribution, (Use Class B2/Use Class B8) including ancillary offices (Use Class E) with appearance, landscaping, layout and scale reserved for	Approx. 2.4 km	Application validated 18/08/2022	9.06 ha	Tier 1: Submitted application(s) not yet determined	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 2 – Location, scale and nature of the development Criterion 3 – Source pathway receptor linkages

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
		subsequent consideration - land adjacent Westgate Entrance, Port of Immingham, Immingham. DN40 3DX					
12.	North Lincolnshire Council Full Application: PA/2022/1861	Planning permission to erect portal framed commercial units for general light industrial, storage and distribution - Poplar Farm, Ulceby Road, South Killingholme, DN40 3JB	Approx. 4.9 km	Application validated 13/10/2022	1.14 ha	Tier 1: Submitted application(s) not yet determined	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 2 – Location, scale and nature of the development Criterion 3 – Source pathway receptor linkages
13.	North Lincolnshire Council: PA/2021/1344	Variation of conditions for an application to erect new vehicle maintenance workshop and office building, including demolition works. Manby Road, South Killingholme.	Approx. 1.7 km	Application validated: 23/07/21	1.85 ha (however proposed floorspace is only around 700 sqm).	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 1 - Temporal scope (project required

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
		Original application PA/2019/923.					to start by July 2022) Criterion 2 – Location, scale and nature of the development Criterion 3 – Source pathway receptor linkages
14.	North Lincolnshire Council: PA/2021/1525	Planning permission to erect a monopole manufacturing facility. Land at Able Marine Energy Park south of Station Road.	Approx. 2.6 km	Application validated: 25/08/21 Decision made: 08/08/22 - Approved with EIA	25 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
15.	North Lincolnshire Council: PA/SCR/2022/6 PA/SCO/2022/7	Application for a screening [and scoping] opinion on the application proposing the construction of 33 kv substation, installation of ground drainage, regrading of land with general fill	Approx. 2.2 km	Application validated: 16/05/22 Decision made: 03/08/22 - Env. Statement	27.3 ha	Tier 2: Projects where a scoping report has been submitted	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
		and raising site levels as well as other access works. Station Road, South Killingholme.		required and scoping opinion issued			
16.	North Lincolnshire Council: PA/SCO/2022/12	EIA scoping opinion request for the Humber Hub Blue Project – Proposed hydrogen production facility (HPF). Power station at North Killingholme.	Approx. 4.7 km	Validated: 22/11/22 Decision made: Pending	Unknown but assumption made it is a major project.	Tier 2: Projects where a scoping report has been submitted	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
17.	North Lincolnshire Council: PA/2020/1483	Full planning permission to construct an additional vehicle storage area and additional infrastructure to include an access bridge. Clough Lane, Killingholme	Approx. 5 km	Validated: 21/09/20 Decision made: 18/11/21	28.76 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
18.	North East Lincolnshire Council Full application: DM/0874/22/FUL DM/1065/20/FUL	Erection of detached storage building - Global Shipping Kiln Lane Stallingborough North East Lincolnshire (original application	Approx. 2.8 km	Application validated 14/10/2022	0.46 ha	Tier 1: Submitted application(s) not yet determined	**No** – the project does not meet the following short list criteria (Section 20.4):

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
		decision made: 14/10/21 - Approved with conditions)					Criterion 2 – Location, scale and nature of the development Criterion 3 – Source pathway receptor linkages
19.	North East Lincolnshire Council: DM/0442/21/REM	Reserved matters application attached to DC/323/12/WOL which is a development up to 18 ha ha, Europarc development. Reserved matters include construction of an office on site boundary over 4 ha. Land at Europarc, Healing.	Approx. 4.9 km	Validated: 12/05/21 Decision made: 26/08/21 - Approved with conditions	4.89 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
20.	North East Lincolnshire Council: DM/0340/22/REM	Reserved matters application attached to DC/323/12/WOL (Europarc development) 18 ha site. Three industrial units proposed creating over 55,000sqm	Approx. 5 km	Validated: 18/05/22 Decision made: 07/11/22 - Approved with conditions	Not specified over 1 ha.	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
		floorspace. Land at Europarc, Healing.					
21.	North East Lincolnshire Council: DM/0664/19/FUL	Development of a sustainable transport fuels facility: Two discharge of conditions applications in 2022. Land at Hobson Way, Stallingborough.	Approx. 2.2 km	Validated: 09/08/19 Decision made: 12/06/20 - Approved conditions and signing of S106.	35.9 ha	Tier 1: Permitted application not yet implemented	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).
22.	North East Lincolnshire Council: DM/0708/22/FUL	Link road between Haiths building and New England Seafoods. Europarc development, Genesis Way, Healing.	Approx. 4.8 km	Validated: 08/08/22 Decision made: Pending	17,650sqm	Tier 1: Submitted application not yet determined	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
23.	North East Lincolnshire Council: DM/1200/21/CND	Discharge of conditions application attached to the development for construction of an office unit. Land at Mawbridge Drain Energy, Park Way,	Approx. 4.2 km	Validated: 08/12/21 Decision made: 15/07/22 - Conditions	2.15 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4):

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
		Grimsby. Original application reference: DM/0667/20/FUL.		complied with			Criterion 3 – Source pathway receptor linkages
24.	North East Lincolnshire Council: DM/0273/21/FUL[4] See links with National Infrastructure Planning South Humber Bank Energy Centre project.	Variation of conditions application attached to the construction of an energy from waste facility up to 49.9 Mwe capacity. Land rear of power station, Hobson Way, Stallingborough. – with discharge of conditions applications. Original planning application reference is DM/1070/18/FUL.	Approx. 1.2 km	Validated: 15/03/21 Decision made: 06/08/21 - Approved with conditions	24.7 ha	Tier 1: Permitted application not yet implemented	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).
25.	North East Lincolnshire Council: DM/0241/22/FUL	Variation of conditions application attached to erection of 9 dwellings, including demolition of current outbuildings. 4	Approx. 3.2 km	Validated: 28/08/20 Decision made:	1.01 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4):

[4] Full planning permission for an energy from waste (EfW) power station at the Site was granted by North East Lincolnshire Council (NELC) under the Town and Country Planning Act 1990 on the 12th of April 2019 (Ref. 'DM/1070/18/FUL'). The Consented Development has a gross electrical capacity of 49.9 MW. The Applicant has since been assessing opportunities to improve the efficiency of the Consented Development and now proposes an energy from waste power station with a gross electrical capacity of up to 95 MW. The Proposed Development now falls within the definition of a 'nationally significant infrastructure project' under Sections 14(1)(a) and 15(2) of the Planning Act 2008 as a 'generating station exceeding 50 MW'. The project is therefore carried through to the short list under ID.58 which assesses the worst case scenario of the larger development coming forward.

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
		Church Lane, Stallingborough. Original planning application reference: DM/0684/20/FUL.		05/03/21 - Approved with conditions			Criterion 2 – Location, scale and nature of the development Criterion 3 – Source pathway receptor linkages
26.	North East Lincolnshire Council: DM/1211/21/FUL	Erection of 8 dwellings. Buddleia Close, Healing.	Approx. 4.3 km	Validated: 05/10/22 Decision made: 27/05/22 - Approved with conditions	5,390sqm (over 0.5 ha limit for major dev)	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
27.	North East Lincolnshire Council: DM/0182/21/CND	Discharge of conditions application attached to the outline application for 250 dwellings. Includes other reserved matters applications. Land at Stallingborough Road, Healing. Original Planning application reference: DM/0378/15/OUT.	Approx. 3.8 km	Validated: 23/02/21 Decision made: 03/12/21 - Conditions complied with.	20.35 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
28.	North East Lincolnshire Council: DM/0603/22/FUL	Variation of conditions application attached to construction of an energy park comprising PV solar panels together with energy battery storage. Land at Mauxhall Farm, Immingham Road, Stallingborough. Discharge of conditions reference: DM/0351/22/CND Original planning application reference: DM/1145/19/FUL.	Approx. 1.1 km	Validated: 25/07/22 Decision made: 06/12/22	47.2 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
29.	North East Lincolnshire Council: DM/0971/22/CND	Discharge of conditions application attached to proposal for the erection of 118 dwellings. Land at Station Road, Habrough. Original planning application reference: DM/0950/15/OUT.	Approx. 4.5 km	Validated: 27/10/22 Decision made: Pending	5.45 ha	Tier 1: Submitted application not yet determined	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
30.	North East Lincolnshire Council: DM/0589/22/CND	Discharge of conditions application attached to an application for 145 dwellings. Land off Habrough Fields and Pilgrims Way, Immingham. Original planning application reference: DM/1175/17/FUL.	Approx. 2.2 km	Validated: 29/06/22 Decision made: 18/08/22 - Conditions complied with	5.47 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
31.	North East Lincolnshire Council: DM/1005/22/FUL	Erection of 9 dwellings, bungalows including access and landscaping. Land off Habrough Road, Immingham.	Approx. 2.3 km	Validated: 22/11/22 Decision made: Pending	1.7 ha	Tier 1: Submitted application not yet determined	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
32.	North East Lincolnshire Council: DM/0113/21/REM	Reserved matters application additional to outline application for 8 dwellings. Willows Farm, Stallingborough Road, Immingham. Original planning application reference: DM/0167/17/OUT.	Approx. 2.5 km	Validated: 21/12/21 Decision made: 11/03/22 - Approved with conditions	0.66 ha (over 0.5 ha limit for major dev for dwellings)	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
33.	North East Lincolnshire Council: DM/0320/22/FUL	Erection of a warehouse (B8 use) and canopy.	Approx. 1.1 km	Validated: 25/05/22 Decision made: 24/08/22 - Approved with conditions	4.6 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
34.	North East Lincolnshire Council: DM/1058/20/CND	Discharge of conditions application attached to DM/1016/17/FUL for the erection of a small-scale Electricity Battery Storage Plant. Land west of Netherlands Way, Stallingborough.	Approx. 900 m	Validated: 08/12/20 Decision Made: Pending	1,825 sqm	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
35.	North East Lincolnshire Council: DM/0102/22/CND	Discharge of conditions application attached to DM/0026/18/FUL to erect an energy recovery facility (ERF) with an export capacity of up to 49.5 mw and a stack up to 90 m high. Land south of Queens	Approx. 177 m	Validated: 09/02/22 Decision made: Pending	5.97 ha	Tier 1: Submitted application not yet determined	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
		Road, North Beck Energy Centre.					
Non-major Development (within 1 km)							
36.	North East Lincolnshire Council Full application: DM/0207/22/FUL	Erection of 14 bay single storey modular office building with link to rear of existing building at Fabricom, Manby Road, By Pass, Immingham	Approx. 0.3 km	Application validated 18/03/2022	0.24 ha	Tier 1: Submitted application not yet determined	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
37.	North East Lincolnshire Council Full application: DM/1158/21/FUL	Erect 5 mW battery energy storage site with associated external works on land at Trondheim Way, Stallingborough	Approx. 1.1 km	Application validated 07/03/2022 Approved on 05/04/2022	0.46 ha	Tier 1: Projects that are under construction	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 2 – Location, scale and nature of the development Criterion 3 – Source pathway receptor linkages
38.	North East Lincolnshire Council Full	Demolish existing welfare modular building and erect 5 bay welfare modular	Approx. 0.2 km	Application validated 16/02/2022	345 sqm	Tier 1: Projects that are under construction	**No** – the project does not meet the following

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
	application: DM/0100/22/FUL	building and associated works at Engie Fabricom UK Ltd, Middleplatt Road, Immingham		Approved on 10/11/2022			short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
39.	North East Lincolnshire Council Full application: DM/0025/22/FUL	Erect industrial unit with flexibility on use (Class B2, B8 and E) and number of internal units at land on Beels Rd, Stallingborough	Approx. 1.4 km	Application validated 18/01/2022 Approved on 07/10/2022	0.2 ha	Tier 1: Projects that are under construction	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 2 – Location, scale and nature of the development Criterion 3 – Source pathway receptor linkages
40.	North East Lincolnshire Council Application: DM/0657/21/DEM	Prior notification to demolish the Former DFDS Warehouse 11	Approx. 0.6 km	Application validated 5/07/2021 Approved on 03/08/2021	0.9 ha	Tier 1: Projects that are under construction/ completed	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 1 – Temporal scope

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
							(completed in 2021)
41.	North East Lincolnshire Council Application: DM/0723/21/DEM	Prior notification to demolish steel portal framed transit shed	Approx. 0.6 km	Application validated 20/07/2021 Approved on 16/12/2021	0.7 ha	Tier 1: Projects that are under construction/ completed	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 1 – Temporal scope (due to be completed in early 2022)
42.	North East Lincolnshire Council Full application: DM/0469/21/FUL	Construction of two single storey units (Use Class B2, B8, E(C)(iii) and E(g) plus Sui Generis trade counter) with associated works including parking and service area, lighting columns, perimeter fencing and landscaping at Land At Hall Park Road	Approx. 0.5 km	Application validated 24/05/2021 Approved on 04/04/2022	0.73 ha	Tier 1: Projects that are under construction	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
43.	North East Lincolnshire Council	Installation of wash down facility to include new drainage,	Approx. 0.35 km	Application validated 24/05/2021	0.11 ha	Tier 1: Projects that	**No** – the project does not meet the following

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
	Full application: DM/0111/21/FUL	underground tanks, above ground tanks with 1 m high bunded wall enclosure, installation of 2.4 m high track and trace ANPR (automatic number plate recognition) system and siting of modular building for staff welfare at Immingham Lorry Park Pelham Road		Approved 16/04/2021		are under construction	short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
44.	North East Lincolnshire Council Full application: DM/0294/21/FUL	New access road from the existing public highway at Immingham Lorry Park Pelham Road	Approx. 0.25 km	Application validated 18/03/2021 Approved 18/06/2021	0.0012 ha	Tier 1: Projects that are under construction	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).
45.	North Lincolnshire Council Full application: PA/2022/1400	Planning permission to demolish existing office building and replace with office building and new secure vehicle compound – DVSA Enforcement Site, Manby Road,	Approx. 1.5 km	Application validated 29/07/2022 Approved 08/11/2022	0.51 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 2 – Location, scale and nature of the development

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
		Immingham Humberside DN40 3DX					Criterion 3 – Source pathway receptor linkages
46.	North East Lincolnshire Council: DM/0265/22/FUL	Erection of a storage unit off Middleplatt Road, Immingham.	Approx. 0.3 km	Validated: 26/05/22 Decision made: 29/07/22 - Approved with conditions	150sqm	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 1 – Temporal scope (work already started in March 2022 and is likely to have been completed)
47.	North East Lincolnshire Council: DM/0309/22/FUL	Single storey front extension and installation of 128 solar panels to roof on an office building. Kings Road, Immingham.	Approx. 0.4 km	Validated: 14/04/22 Decision made: 05/08/22 - Approved with conditions	7,117sqm	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
48.	North East Lincolnshire	Installation of an automated prescription machine at the Roxton	Approx. 0.85 km	Validated: 24/03/22	1,236sqm	Tier 1: Permitted application not	**No** – the project does not meet the following

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
	Council: DM/0234/22/FUL	Practice Pilgrim Primary Care Centre, Pelham Road, Immingham.		Decision made: 12/07/22 - Approved with conditions		yet implemented	short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
49.	North East Lincolnshire Council: DM/0637/21/FUL DM/0862/22/FUL	Change of use from summer house to a dog grooming salon. 95 Woodlands Avenue, Immingham and Removal of Condition 1 (Limited Period) pursuant to DM/0637/21/FUL to make use permanent | 95 Woodlands Avenue Immingham North East Lincolnshire DN40 2JG	Approx. 1 km	Validated: 28/06/21 Decision made: 15/10/21 - Approved for limited period (1yr)	0.01 ha	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
50.	North East Lincolnshire Council: DM/0356/22/FUL	Construction of industrial unit for a workshop. West of Netherlands Way, Stallingborough.	Approx. 0.8 km	Validated: 03/05/22 Decision made: 24/08/22 - Approved	227sqm	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
				with conditions			
51.	North East Lincolnshire Council: DM/1056/20/FUL	Erection of 2x 24 m Biomass Flues. Netherlands Way, Stallingborough.	Approx. 0.84 km	Validated: 05/01/21 Decision made: 26/03/21 - Approved with conditions	0.64 ha	Tier 1: Permitted application not yet implemented	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).
52.	North East Lincolnshire Council: DM/0353/22/FUL	Internal alterations to existing unit and creation of another unit. Includes discharge of conditions. Unit 5, Prince Edward Drive, Immingham.	Approx. 50 m	Validated: 18/05/22 Decision made: 15/07/22 - Approved with conditions	1,001sqm	Tier 1: Permitted application not yet implemented	**No** – the project does not meet the following short list criteria (Section 20.4): Criterion 3 – Source pathway receptor linkages
Nationally Significant Infrastructure Projects (within 10 km)							
53.	National Infrastructure Planning Able Marine Energy Park DCO as consented and	Development of a new quay and associated development at Killingholme in North Lincolnshire, on the	Approx. 2.8 km	Application for material change 2 to DCO submitted 25/06/2021	268 ha	Tier 1: Submitted application undergoing the development	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
	Material Change 1 and Material Change 2	south bank of the Humber Estuary.		Material Change 2 was granted on 16/07/2022		consent application process but not yet consented and Projects with development consent not yet implemented	
54.	National Infrastructure Planning Able Marine Energy Park (Cherry Cobb Sands)	Regulated Tidal Exchange & Managed Realignment scheme on the north bank of the Humber Estuary near Cherry Cobb Sands to compensate for the development of a new quay and associated development at Killingholme in North Lincolnshire, on the south bank of the Humber Estuary.	Approx. 3.5 km	Application for material change 2 to DCO submitted 25/06/2021 Granted on 16/07/2022	196.1 ha	Tier 1: Projects with development consent not yet implemented	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
55.	National Infrastructure Planning Humber Low Carbon Pipelines	Construction of carbon dioxide (to facilitate carbon capture, utilisation and storage) and hydrogen transportation pipelines between Drax in North Yorkshire and Easington in East Riding of Yorkshire, connecting various emitters and generators in the Humber.	Current proposal within 10 km	Application expected to be submitted to PINS Q3 2022.	Approximately 120 km	Tier 2: Projects on the Programme of Projects where a scoping report has been submitted	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).
56.	National Infrastructure Planning Viking CCS Pipeline	Onshore underground pipeline from the point of receipt of dense phase CO_2 at Immingham, through its transportation to facilities at Theddlethorpe Gas Terminal, and transportation from Theddlethorpe Gas Terminal through the existing Lincolnshire Offshore Gas	Current proposal within 4 km	Application expected to be submitted to PINS Q1 2023.	53 km	Tier 2: Projects on the Programme of Projects where a scoping report has been submitted	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
		Gathering System pipeline to Mean Low Water Spring (MLWS).					
57.	National Infrastructure Planning Immingham Green Energy Terminal	Project to deliver the marine infrastructure to support the future transportation of liquid bulks associated with the energy sector that would support the transition to net zero. The works involve the construction of a jetty with two berths and topside infrastructure to facilitate import and storage of ammonia, the creation of green hydrogen and the onward transport of green hydrogen to other parts of the UK.	Approx. 0.1 km	Application expected to be submitted to PINS Q1 2023.	103 ha	Tier 2: Projects on the Programme of Projects where a scoping report has been submitted	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).
58.	National Infrastructure Planning	The construction and operation of an energy from waste plant of up to 95 megawatts gross capacity and	3.8 km	DCO consent granted 10/11/21. Application	23 ha	Tier 1: Projects with development consent not	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
	South Humber Bank Energy Centre	associated development including an electrical connection, landscaping and access.		for Corrections Order granted 5/4/22.		yet implemented	
59.	National Infrastructure Planning VPI Immingham B OCGT	The construction and operation of a new Open Cycle Gas Turbine ('OCGT') Power Station of up to 299 megawatts ('MW') gross output and associated development including gas and electrical connections.	Approx. 5 km	Application for non-material change to DCO submitted 14/10/2022	3 ha	Tier 1: Projects with development consent not yet implemented	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).
60.	National Infrastructure Planning North Killingholme Power Project	The proposal is for a new thermal generating station that will operate either as a Combined Cycle Gas Turbine (CCGT) plant or as an Integrated Gasification Combined Cycle (IGCC) plant, with a	Approx. 8 km	An Amendment Order was issued on 17/09/21.	108.2 ha (principal project area)	Tier 1: Projects with development consent not yet implemented	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
		total electrical output of up to 470 mWe					
Other known projects							
61.	Environment Agency Humber Stallingborough Phase 3 Project	Upgrading of flood defences on south bank of the Humber Estuary between Immingham and Grimsby	Approx. 2 km	Not yet submitted	Unknown	Tier 3: Projects identified in other plans and programmes (as appropriate) which set the framework for future development consents/ approvals, where such development is reasonably likely to come forward	**Yes** – the project meets short list criteria detailed for Stage 2 (Section 20.4).
62.	Onshore wind turbines at the Port of Immingham	Two onshore wind turbines within the Port of Immingham estate	Unknown	Not yet submitted	Unknown	Tier 3: Projects identified in other plans	**No** – this project has been scoped out of the process as the details of the

ID	Application/ project/ activity reference	Description and location	Distance from IERRT project	Application date and approval (where relevant)	Approx. size of project	Status of application/ project/ activity	Scoped into short list?
						and programmes (as appropriate) which set the framework for future development consents/ approvals, where such development is reasonably likely to come forward	development that may come forward as a result of these plans are unknown (see Section 20.4).

Stage 3 – Information gathering

20.5.3 Information on each of the other existing development and/or approved development and activities shortlisted at Stage 2 is presented in Table 20.5 under 'Application/Project Details'. This information has been gathered from a variety of sources including the website of the relevant local planning authority, the Planning Inspectorate's website and through direct liaison with other stakeholders including other statutory bodies and relevant applicants/developers.

20.5.4 Information on some proposals is limited where it is at an early stage of planning, and such gaps are acknowledged within the description of project details.

20.5.5 Figure 20.1 to this ES shows the location of projects and activities that are scoped into the cumulative and in-combination assessment.

Stage 4 – Assessment

20.5.6 The assessment of the inter-project effects of the IERRT project with the other existing development and/or approved development identified in Stages 1-3 of the process is provided in Table 20.5.

20.5.7 It should be noted that the assessment provided in the Traffic and Transport chapter (Chapter 17 of this ES) is inherently a cumulative assessment. This is because it incorporates modelled traffic data growth for future traffic flows, accounting for 'committed developments' that would add traffic to the affected road network (ARN). This assessment is considered comprehensive and includes a worst case within the defined assessment parameters. Therefore, no additional cumulative assessment of changes in traffic as a result of the IERRT project and other existing or approved development is required within this chapter. Further information is provided in Chapter 17 of this ES.

20.5.8 The above is also the case for vehicular emissions considered in the Air Quality chapter (Chapter 13 of this ES), and road traffic noise associated with vehicle movements assessed in the Noise and Vibration chapter (Chapter 14 of this ES).

20.5.9 The GHG assessment presented in Chapter 19 Climate Change is also inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.

Table 20.5. Review of other projects, developments and activities on the short list

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
1.	**Maintenance dredge disposal at Grimsby, Immingham and Sunk Dredged Channel** **Licencing authority:** Marine Management Organisation **Licence holder:** Associated British Ports **Full application:** MLA/2014/00431 **Application variations:** MLA/2014/00431/1 MLA/2014/00431/2 MLA/2014/00431/3 **Description and location of the project:** Maintenance of access channels, berth pockets, approaches to port areas and enclosed docks at the Port of Immingham, Port of Grimsby and the Sunk Dredged Channel to remove recently accreted sediment and allow continued port access within the Humber Estuary. Dredging is undertaken by trailing suction hopper dredger (TSHD) and grab hopper dredger (GHD). All dredged sediment is deposited in licensed disposal sites within the estuary (HU080, U060, HU090). Variation 1 added a licence condition requiring the submission of OSPAR returns, and Variation 2 added clarification to the Project description and enlarged the dredge area for the Port of Grimsby. **Application date and approval (where relevant):** Initial application submitted 09/09/2014 and approved 18/12/2014. Variation 1 submitted 24/05/2017 and approved 08/06/2017. Variation 2 submitted 12/11/2021 and approved 07/12/2021. Variation 3 submitted 07/11/2022 and approved 23/11/2022. Variation 4 submitted 05/12/2022. **Approx. size of the project:** Various, depending on dredge and disposal site. **Construction, operation and decommissioning timescales:** Dredge campaigns occur throughout the year and vary in length from days to weeks depending on the area and amount to be dredged. At Grimsby, dredging is typically achieved by a GHD for about 13 days a year in total, but these days are distributed fairly evenly over approximately six months of the year. TSHD is undertaken for approximately 17 days over the year, principally in a spring and autumn campaign of five days each with the remaining days used as required. A	Approx. 0.1 km	Tier 1: projects on the MMO marine licence register that are being undertaken	Physical processes	Yes	In relation to physical processes, there is the potential for cumulative effects with respect to increased suspended sediment concentrations as a result of maintenance dredging and disposal of material from Grimsby, Immingham, and Sunk Dredged Channel. The assessment of the potential future maintenance dredging requirements for the IERRT indicates an increase of 3-6% on the existing average annual maintenance dredge (between 2004 and 2020) rate across the existing Immingham berths (or a 2-4% increase on the average annual disposal volume at the HU060 site since 2004). In-combination effects from dredge or disposal plumes from adjacent sites will only exist for a short period of time (a matter of hours) when activities are taking place concurrently. Once the next peak tide (ebb or flood) has dispersed the plume across the wider study area, the increased suspended sediment concentrations (SSC) values are unlikely to be distinguishable from the existing background concentrations. It is also considered likely that the availability of dredging plant (servicing the ports and approaches across the wider Humber, including Goole, Hull and Grimsby) will mean the potential for dredging to be taking place at adjacent locations and at the same time is limited.	Negligible exposure to change	None	Negligible exposure to change
				Water and sediment quality	Yes	In relation to water and sediment quality, there is the potential for cumulative effects with respect to increased suspended sediment concentrations and changes to dissolved oxygen and chemical water quality as a result of maintenance dredging and disposal of material from Grimsby, Immingham, and Sunk Dredged Channel. The redistribution of sediment-bound contaminants may also act in-combination. In-combination effects from dredge or disposal plumes from adjacent sites will only exist for a short period of time (a matter of hours) when activities are taking place concurrently. Once the next peak tide (ebb or flood) has dispersed the plume across the wider study area, the increased SSC values are unlikely to be distinguishable from the existing background concentrations. It is also considered likely that the availability of dredging plant (servicing the ports and approaches across the wider Humber, including Goole, Hull and Grimsby) will mean the potential for dredging to be taking place at adjacent locations and at the same time is limited.	Insignificant to minor adverse	None	Insignificant to minor adverse
				Nature conservation and marine ecology	Yes	There is the potential for cumulative effects with respect to the following pathways in relation to marine ecology: • Change to marine habitats; • Water quality; and • Underwater noise. **Change to marine habitats:** The habitats in the area are already subject to considerable seabed disturbance as a result of the existing maintenance dredging regime. The variations proposed to this existing maintenance dredge licence will not change the volumes of material to be dredged from the Port of Immingham area. The marine habitats and species occurring in the area are also considered to be commonly occurring and of low conservation value. Changes during dredging as a result of the IERRT project were assessed as insignificant to minor and in-combination with this maintenance dredging project will result in only a small increase in the potential maintenance dredge commitment for the Immingham area and disposal sites.	Minor adverse	None	Minor adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
	plough (bed-leveller) works for around 20 days a year. At Immingham, a TSHD and GHD operate at Immingham for approximately 28 and 30 days per year in total respectively, working Immingham Dock, the entrances and the waterfront berths. A plough (bed-leveller) works for about 34 days per year, pulling material out to be reached by the TSHD, and smoothing off the dock bottom after the GHD. This is normally programmed to be fairly evenly spread throughout the year by arranging a dredging presence in the Grimsby and Immingham area every 3 to 4 weeks, for periods of up to a week at a time. The Marine Licence will expire on 31/12/2025 at which time another Marine Licence application will be submitted.					**Water quality:** The effects of increased suspended sediment concentrations and water quality impacts associated with the remobilisation of sediment bound contaminants as part of the IERRT project were assessed as insignificant. Changes in suspended sediments and water quality resulting from maintenance dredging required as part of MLA/2014/00431 will also be localised, temporary and of a low magnitude. **Underwater noise:** Underwater noise generated during piling and dredging required as part of the IERRT project along with underwater noise from maintenance dredging/disposal required as part of MLA/2014/00431 have the potential to result in cumulative effects on fish receptors in the Humber Estuary. However, dredging for both projects is only expected to cause behavioural reactions in a relatively localised area in the vicinity of the dredger. Appropriate mitigation measures will be secured through the DCO/Construction Environmental Management Plan (CEMP) and will be followed during construction of the IERRT project and therefore cumulative noise effects are considered to be minor. It is assumed that both projects will be subject to controls by the statutory bodies to avoid the potential for any adverse cumulative effects on marine ecology receptors. Appropriate mitigation measures will be secured through the DCO/CEMP and will be followed during construction of the IERRT project and therefore cumulative effects are considered to be at worst **minor** and not significant.			
				Commercial and recreational navigation	Yes	Vessel movements are managed by vessel traffic services (VTS). During maintenance dredging vessels movements will be deconflicted to ensure that during the dredge and the disposal of the dredge material that the risks to navigational safety are as low as reasonably practicable. This cumulative effect is commonly observed under current processes on the Humber.	Insignificant	None	Insignificant
				Coastal protection, flood risk and drainage	Yes	In relation to coastal protection, flood risk and drainage, there is the potential for cumulative effects with respect to changes in the erosion/ accretion of the foreshore which in turn can impact the integrity of the flood defences as a result of maintenance dredging and disposal of material from Grimsby, Immingham, and Sunk Dredged Channel. As summarised in relation to physical processes (above) in-combination effects from dredge or disposal plumes from adjacent sites will only exist for a short period of time (a matter of hours) when activities are taking place concurrently. Once the next peak tide (ebb or flood) has dispersed the plume across the wider study area, the increased SSC values are unlikely to be distinguishable from the existing background concentrations. It is also considered likely that the availability of dredging plant (servicing the ports and approaches across the wider Humber, including Goole, Hull and Grimsby) will mean the potential for dredging to be taking place at adjacent locations and at the same time is limited.	Neutral	None	Neutral
				Ground conditions, including land quality	Yes	There are no cumulative effects anticipated as this marine side project is not considered to share a source-pathway-receptor linkage with the landside IERRT project in relation to ground conditions and land quality.	N/A	N/A	N/A
				Air quality	Yes	There is the potential for cumulative effects on local air quality. Activities associated with MLA/2014/00431 may have emissions to air that could coincide with proposed IERRT emissions and effect shared receptors. Due to the location of MLA/2014/00431 emission sources, shared receptors are limited to air quality sensitive habitats within the	Minor adverse	None	Minor adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						Humber Estuary Special Area of Conservation, namely the closet areas of saltmarsh. The proposed IERRT project does not impact on the nearest saltmarsh habitats to the extent that the effect is significant. Any emissions associated with MLA/2014/00431 will be limited due to the number of emission sources and intermittent operation of those sources over the course of a year. It is considered unlikely that a significant cumulative effect will occur, due to the insignificant effect of the of the proposed IERRT project, as reported in Chapter 13 of the ES, and the limited scale of emissions to air associated with MLA/2014/00431.			
				Noise and vibration	Yes	There is the potential for cumulative effects on NSRs if the dredging activities associated with MLA/2014/00431 occur at the same time as construction and maintenance dredging as part of IERRT. The dredging associated with IERRT is predicted to have a minor adverse (not significant) effect. The noise associated with MLA/2014/00431 is likely to be similar to the dredging operations for IERRT and will be limited due the intermittent operation over the course of a year. It is also considered likely that the availability of dredging plant (servicing the ports and approaches across the wider Humber, including Goole, Hull and Grimsby) will mean the potential for dredging to be taking place at adjacent locations and at the same time is limited. It is considered unlikely that a significant cumulative effect will occur due to the not significant effect of the proposed IERRT on NSRs as reported in Chapter 14 of the ES and the limited noise associated with MLA/2014/00431	Minor adverse	None	Minor adverse
				Cultural heritage and marine archaeology	Yes	No cumulative effects anticipated as project is not located within the proposed IERRT project and therefore will not be affected by direct disturbance or damage. No cumulative effects anticipated as project is unlikely to cause noticeable changes to hydrodynamic and sediment transport regimes.	N/A	N/A	N/A
				Socio-economic receptors	Yes	This project is not considered to result in a notable effect for any of the IERRT socio-economic impact pathways. Therefore, no socio-economic cumulative effects are anticipated as a result of this development.	N/A	N/A	N/A
				Traffic and transport	No	There are no cumulative effects anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to this topic. This is because the proposal will not result in any change in terrestrial traffic flows.	N/A	N/A	N/A
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
2.	**Humber International Terminal (HIT) berth 2: adaptation for car carriers** **Licencing authority:** Marine Management Organisation **Licence holder:** Associated British Ports **Full application:** MLA/2020/00520 **Description and location of the project:** Adaptation of the Humber International Terminal's western berth (berth 2), located at the Port of Immingham, so that it is capable of handling pure car carriers with stern starboard quarterdeck ramps as well as its current traffic of partly-laden cape-size bulkers. The most extensive items will be a floating pontoon and linkspan which will be fabricated offsite and craned in to position as discrete units. It is stated that these structures will not have any contact with the bed of the estuary. **Application date and approval (where relevant):** Initial application submitted 16/11/2020, not yet determined. **Approx. size of the project:** 1 ha **Construction, operation and decommissioning timescales:** The construction time is relatively brief with the greatest potential disruption centred around the driving of the marine piles - which would take around 2 weeks. Most parts of the infrastructure are assembled offsite and brought into position by a combination of marine craft and terrestrial deliveries, and simply craned into position. Subsequent works would be confined to smaller discrete items using hand tools and smaller pieces of plant and would be synonymous with ongoing maintenance works taking place in the port every day. The Marine Licence proposed expiry date is 30/09/2024.	Approx. 2.5 km	Tier 1: Submitted applications not yet determined	Physical processes	Yes	There is the potential for cumulative effects with respect to the following elements in relation to the physical processes chapter: • Changes to hydrodynamics (flows and waves); and • Changes to sediment transport pathways. **Changes to hydrodynamics:** The marine elements of the proposed HIT berth 2 works are located approximately 2.5 km up-estuary of the IERRT location. In between the two schemes is the infrastructure associated with the Immingham Eastern and Western jetties, the Immingham Outer Harbour and the Humber international Terminal. The assessment for IERRT indicates that the extent of change to hydrodynamics and waves does not extend up-estuary to the HIT berth 2 works location. Whilst an assessment of the potential change from the HIT works together with the IERRT project has not been undertaken, it is likely that any changes to the hydrodynamics and waves (in the direction of the IERRT) will be tempered by the existing port infrastructure described above. Consequently, it is considered unlikely that any in-combination effects will be generated. **Changes to sediment transport pathways**: As described above, it is considered unlikely that any in-combination effects on hydrodynamics will develop from the construction and operation of both IERRT and the HIT berth 2 works. Since these are the driving forces of the local sediment transport pathways, it is further considered unlikely that any in-combination effects will develop in relation to this element.	Negligible exposure to change	None	Negligible exposure to change
				Water and sediment quality	Yes	In relation to water and sediment quality, there is the potential for cumulative effects with respect to increased suspended sediment concentrations and changes to dissolved oxygen and chemical water quality as a result of seabed disturbance during piling. Any changes would cause highly localised and temporary changes in suspended sediment levels (and related changes in sediment bound contaminants and dissolved oxygen) which is considered unlikely to produce adverse effects. On this basis and given that water quality effects as part of the IERRT project were assessed as insignificant to minor adverse, cumulative effects are also anticipated to be insignificant to minor adverse.	Insignificant to minor adverse	None	Insignificant to minor adverse
				Nature conservation and marine ecology	Yes	There is the potential for cumulative effects with respect to the following pathways in relation to marine ecology: • Change to marine habitats; • Water quality; • Underwater noise; and • Airborne visual and noise disturbance. **Change to marine habitats**: The piles required for the HIT berth 2 works will result in a *de minimis* loss of subtidal habitat. In addition, sedimentation due to the localised resuspension of sediment as a result of seabed disturbance during piling and changes to hydrodynamic and sedimentary processes due to the presence of the piles including potential scouring directly around piles effects are anticipated to be negligible and highly localised. Furthermore, the benthic community is expected to recover relatively rapidly from any localised physical disturbance with subtidal species known to occur in the area typically considered fast growing and/or have rapid reproductive rates. On this basis and given that changes to marine habitats as part of the IERRT project were assessed as insignificant to minor, cumulative effects are anticipated to be negligible. **Water Quality:** The resuspension of sediment as a result of seabed disturbance during piling would cause highly localised and	Minor adverse	None	Minor adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						temporary changes in suspended sediment levels (and related changes in sediment bound contaminants and dissolved oxygen) which is considered unlikely to produce adverse effects in any species. On this basis and given that water quality effects on marine ecology receptors as part of the IERRT project were assessed as insignificant to minor, cumulative effects are anticipated to be insignificant to minor adverse. **Underwater noise:** Underwater noise generated during piling required as part of the IERRT project along with HIT berth 2 works have the potential to result in cumulative effects on fish (including diadromous migratory species) and marine mammal receptors in the Humber Estuary. Piling noise has the potential to cause injury effects in fish and marine mammals within close proximity to the piling activity and strong behavioural responses over a wider area of the Humber estuary for both projects. Both projects will require similar mitigation to help minimise potential adverse effects (such as soft start procedures, timing restrictions to avoid sensitive periods for migratory fish and the use of marine mammal observers). Without mitigation potential cumulative effects are considered to be moderate adverse. With the application of mitigation, the residual cumulative effect is minor adverse. **Airborne visual and noise disturbance:** There is the potential for the IERRT project along with HIT berth 2 works to cause cumulative effects in term of visual and noise disturbance to coastal waterbirds along the foreshore during construction. Data presented as part of the marine licence application for the HIT berth 2 works suggest that waterbirds such as Shelduck, Dunlin, Curlew, Redshank and Black-tailed Godwit are only recorded in very low numbers (typically <10-20 individuals). Piling for the HIT berth 2 works will be short term (2 weeks) with only intermittent piling activity undertaken each day (several hours per day) during this period. Mild disturbance responses and short-term and localised displacement of the very low numbers of this species present in the vicinity of the proposed development during the works is possible. However, rather than being displaced from the local area completely, birds would be expected to redistribute to nearby foreshore in the Immingham area and continue to feed and roost in these alternative locations following dispersal. Following completion of the construction phase, birds would be expected to return to use the same areas as used prior to construction with any effects considered temporary. In order to reduce potential waterbird disturbance effects associated with the IERRT project a range of mitigation measures are proposed. It is assumed that both projects will be subject to controls by the statutory bodies to avoid the potential for any adverse cumulative effects on marine ecology receptors. Appropriate mitigation measures will be secured through the DCO/CEMP and will be followed during construction of the IERRT project and therefore cumulative effects are considered to be at worst **minor** and not significant.			
				Commercial and recreational navigation	Yes	The only cumulative effect relevant from a commercial and recreational navigation perspective is the increased utilisation of the estuary as a result of greater vessel traffic. Existing embedded controls already in place for IMM and HES Marine Safety Management Systems mitigate risks associated with vessel movements on the estuary to an 'as low as reasonably practicable' (ALARP) state already.	Insignificant	None	Insignificant

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
				Coastal protection, flood risk and drainage	Yes	There is the potential for cumulative effects with respect to the following elements in relation to the coastal protection, flood risk and drainage chapter: • Changes to tidal water levels; and • Changes to erosion/accretion rates on the foreshore. **Changes to tidal water levels:** As noted in relation to physical processes (above) the assessment for IERRT indicates that the extent of change to hydrodynamics and waves does not extend up-estuary to the HIT berth 2 works location. Whilst an assessment of the potential change from the HIT works together with the IERRT project has not been undertaken, it is likely that any changes to the hydrodynamics and waves (in the direction of the IERRT project) will be tempered by the existing port infrastructure described above. Consequently, it is considered unlikely that any in-combination effects will be generated. **Changes to erosion/accretion rates on the foreshore**: As described above, it is considered unlikely that any in-combination effects on hydrodynamics will develop from the construction and operation of both the IERRT project and the HIT berth 2 works. Since these are the driving forces of the local sediment transport pathways, it is further considered unlikely that any in-combination effects will develop in relation to this element.	Neutral	None	Neutral
				Ground conditions, including land quality	No	There are no cumulative effects anticipated as the Humber International Terminal Berth 2 development falls outside of the IERRT ZoI for the ground conditions and land quality topic. It is not considered that there is an overlap between the landside IERRT ZoI and the marine side HIT ZoI for this topic.	N/A	N/A	N/A
				Air quality	No	Unlikely to have a cumulative effect on local air quality, due to the distance from emissions sources and the limited duration of activities associated with MLA/2020/00520.	N/A	N/A	N/A
				Noise and vibration	No	There are no cumulative effects anticipated as the Humber International Terminal Berth 2 development falls outside of the IERRT ZoI for Noise and vibration	N/A	N/A	N/A
				Cultural heritage and marine archaeology	No	No cumulative effects anticipated as project is not located within the proposed IERRT project ZoI and therefore topic will not be affected by direct and indirect disturbance or damage.	N/A	N/A	N/A
				Socio-economic receptors	No	This project is not considered to result in a notable effect for any of the IERRT socio-economic impact pathways. Therefore, no socio-economic cumulative effects are anticipated as a result of this development.	N/A	N/A	N/A
				Traffic and transport	No	There are no cumulative effects anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to this topic. This is because the proposal will not result in any change in terrestrial traffic flows.	N/A	N/A	N/A
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment.	N/A	N/A	N/A

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.			
3.	**Outstrays to Skeffling Managed Realignment Scheme (OtSMRS)** **Licencing authority:** Marine Management Organisation **Licence holder:** Environment Agency **Full application:** MLA/2019/00111 MLA/2019/00112 **Application variations:** MLA/2019/00111/2 **Description and location of the project:** Implementation of a managed realignment scheme on the north bank of the Humber Estuary, East Riding of Yorkshire, in order to create intertidal habitat and improve protection from tidal flooding to the local area in line with future climate change projections. It is proposed to construct new earth embankments set back from the existing coastal flood defences and insert controlled breaches in the existing defences to create new habitat. The work to occur below MHWS involves breaching the existing flood defence and reprofiling. Variation request for the managed realignment at Outstrays extended the licence time period to end on 30/08/2024 due to programme delays and working time restrictions. **Application date and approval (where relevant):** Initial applications submitted 14/03/2019 and accepted 11/12/2020. Variation 2 submitted 07/02/2022 and accepted 19/05/2022. **Approx. size of the project:** 250 ha **Construction, operation and decommissioning timescales:** The first phase of construction started in the summer of 2021 with ground investigations, site clearance and installation of site compounds and road access. Main site works on the new embankments and drainage network, footpaths and car parks will be undertaken between 2022 and 2024. The breach of the old embankments will occur in spring 2024 when tidal water will flood the site and begin to create intertidal habitat. Work is likely to be undertaken during 0700 to 1900 Monday to Friday. It is assumed that any work on a Saturday would be undertaken from 0700 to 1300. Reprofiling will be carried out once all landward works are complete. The works will be programmed to avoid high tide periods.	Approx.10 km	Tier 1: Projects on the MMO marine licence register that are being undertaken/constructed	Physical Processes	Yes	The proposed OtSMRS is located approximately 10 km from the IERRT project. The managed realignment site works has the potential to result in highly localised effects on physical processes elements (such as local flows and elevated suspended sediment levels and sediment deposition) as a result of the breaching. However, the highly localised and (likely) low magnitude effects will not significantly overlap with the ZoI of the hydrodynamic or sedimentary effects as a result of the IERRT project.	Negligible exposure to change	None	Negligible exposure to change
				Water and sediment quality	Yes	The proposed OtSMRS is located approximately 10 km from the IERRT project. The managed realignment site works has the potential to result in highly localised effects on water quality (such as due to elevated suspended sediment levels and changes to dissolved oxygen and chemical water quality) as a result of the breaching. However, the highly localised and low magnitude effects will not significantly overlap with the ZoI of the effects on water and sediment quality as a result of the IERRT project.	Insignificant	None	Insignificant
				Nature conservation and marine ecology	Yes	The proposed OtSMRS is located approximately 10 km from the IERRT project. The managed realignment site works has the potential to result in highly localised effects on marine ecology receptors (such as due to elevated suspended sediment levels and sediment deposition) as a result of the breaching. However, the highly localised and low magnitude effects will not overlap with the ZoI of the effects on marine ecology receptors as a result of the IERRT project. In addition, while both projects have the potential to cause potential disturbance to waterbirds, the distance between each of the projects means that different local populations will be potentially affected.	Insignificant	None	Insignificant
				Commercial and recreational navigation	No	There are no cumulative effects anticipated as the OtSMRS falls outside of the IERRT ZoI for commercial and recreational navigation.	N/A	N/A	N/A
				Coastal protection, flood risk and drainage	No	Unlikely to have a cumulative effect on coastal protection, flood risk and drainage, due to the distance between the IERRT project and OtSMRS.	N/A	N/A	N/A
				Ground conditions, including land quality	No	There are no cumulative effects anticipated as the OtSMRS falls outside of the IERRT ZoI for the ground conditions and land quality topic. It is not considered that there is an overlap between the IERRT ZoI and the OtSMRS ZoI for this topic.	N/A	N/A	N/A
				Air quality	No	Unlikely to have a cumulative effect on local air quality, due to the distance from emissions sources associated with OtSMRS.	N/A	N/A	N/A
				Noise and vibration	No	There are no cumulative effects anticipated as the OtSMRS falls outside of the IERRT ZoI for noise and vibration.	N/A	N/A	N/A
				Cultural heritage and marine archaeology	No	No cumulative effects anticipated as project is not located within the proposed IERRT project and therefore topic will not be affected by direct and indirect disturbance or damage.	N/A	N/A	N/A
				Socio-economic receptors	No	This project is not considered to result in a notable effect for any of the IERRT socio-economic impact pathways, due to being located a notable distance from the scheme. Therefore, no socio-economic cumulative effects are anticipated as a result of this development.	N/A	N/A	N/A
				Traffic and transport	No	There are no cumulative effects anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to this topic. This is because the proposal will not result in any change in terrestrial traffic flows.	N/A	N/A	N/A
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically	N/A	N/A	N/A

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
	The Marine Licence for Outstrays will expire on 30/08/2024, and the Marine Licence for Skeffling will expire 29/07/2024.					constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.			
21.	**Development of a sustainable transport fuels facility Two discharge of conditions applications in 2022. Land at Hobson Way, Stallingborough.** **Local planning authority:** North East Lincolnshire Council **Planning Permission Applicant:** enzygo **Full application:** DM/0664/19/FUL **Description and location of the project:** Development of a sustainable transport fuels facility, including various stacks up to 80 m high, creation of new accesses, installation of pipe lines, rail link, associated infrastructure and ancillary works. **Application date and approval (where relevant):** Application validated 09/08/19 and approved 12/06/2020. **Approx. size of the project:** 35.9 ha **Construction, operation and decommissioning timescales:** It is not clear from publicly available information what the timescales are for construction, operation and decommissioning of this proposed development. The permission expiry date is 12/06/2023.	Approx. 2.2 km	Tier 1: Permitted application not yet implemented	Physical Processes	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to physical processes.	N/A	N/A	N/A
				Water and sediment quality	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to water and sediment quality.	N/A	N/A	N/A
				Nature conservation and marine ecology	Yes	There is the potential for cumulative effects with respect to potential change to marine habitats as a result of changes to air quality as the projects may share sensitive receptor locations. The proposed DM/0664/19/FUL development is located within 1 km of receptor SAC2, which represents a section of saltmarsh habitat within the SAC. At that location, the effect of the IERRT project has been screened as insignificant as the contribution of IERRT emissions accounts for less than 1% of the relevant air quality objective and Critical Load. The proposed DM/0664/19/FUL development will operate in accordance with best available techniques (BAT) and regulated by the Environment Agency which will include measures to minimise the impacts of emissions. It is reasonable to assume that the planning application process has identified a proportionate level of mitigation to do likewise for DM/0664/19/FUL. Given the above, a minor adverse residual cumulative effect is concluded.	Minor adverse	None	Minor adverse
				Commercial and recreational navigation	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to commercial and recreational navigation.	N/A	N/A	N/A
				Coastal protection, flood risk and drainage	Yes	It is anticipated that even if there were overlap between the construction of this scheme and the IERRT project, given the size of the scheme it would not be anticipated to have a cumulative effect on any receptors affected by the IERRT project.	N/A	N/A	N/A
				Ground conditions, including land quality	No	There are no cumulative effects anticipated as DM/0664/19/FUL falls outside of the IERRT ZoI for the ground conditions and land quality topic. It is not considered that there is an overlap between the IERRT ZoI and the DM/0664/19/FUL ZoI for this topic.	N/A	N/A	N/A
				Air quality	Yes	Unlikely to have a cumulative effect on local air quality as a result of dust during construction. Potential for cumulative effects in relation to operational effects from emissions. In terms of impacts from DM/0664/19/FUL on the Humber Estuary, with respect to annual mean NOx, annual mean ammonia and annual mean sulphur dioxide; total concentrations will be below the relevant critical levels. With respect to 24-hour mean NOx, nutrient nitrogen deposition and acid deposition, baseline concentrations	Minor adverse	None	Minor adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						currently exceed the critical level or load and as the predicted process contributions exceed 1% (long-term) and 10% (short term) of the relevant critical levels and critical loads, significant impacts cannot be discounted. However, most sensitive habitats considered in the assessment of the IERRT project are located 5 km or more away from the DM/0664/19/FUL site and the contribution from the IERRT project and DM/0664/19/FUL site at these locations is minimal. The exception to this is an area of saltmarsh habitat within 1 km to the northeast of the DM/0664/19/FUL site. At this location, the impact of the IERRT project is less than 1% of the relevant air quality objective and Critical Load (receptor SAC2). The proposed DM/0664/19/FUL development will operate in accordance with BAT and regulated by the Environment Agency which will include measures to minimise the impacts of emissions. It is reasonable to assume that the planning application process has identified a proportionate level of mitigation to do likewise for DM/0664/19/FUL. A minor adverse residual cumulative effect is concluded.			
				Noise and vibration	No	Unlikely to have a cumulative effect on local NSRs due to the distance of the Consent Order from the proposed IERRT project.	N/A	N/A	N/A
				Cultural heritage and marine archaeology	No	No cumulative effects anticipated as project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to cultural heritage and marine archaeology.	N/A	N/A	N/A
				Socio-economic receptors	Yes	It is anticipated that even if there were overlap between the construction of this scheme and IERRT, the employment required for a scheme of this size would not be anticipated to have a cumulative effect on any receptors affected by IERRT.	N/A	N/A	N/A
				Traffic and transport	Yes	The Transport Assessment for the IERRT project sets out future traffic data flows derived using Tempro growth factors, and specific committed developments. This development is included as one of those specific committed developments.	Insignificant	None	Insignificant
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A
35.	**Construction of an Energy Recovery Facility with an electricity export capacity of up to 49.5 mW and associated infrastructure including a stack to 90 m high.** **Local planning authority:** North East Lincolnshire Council **Planning Permission Applicant:**	Approx. 177 m	Tier 1: Submitted application not yet determined	Physical Processes	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to physical processes.	N/A	N/A	N/A
				Water and sediment quality	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to water and sediment quality.	N/A	N/A	N/A

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
	Axis PED **Full application:** DM/0026/18/FUL DM/0102/22/CND **Description and location of the project:** Discharge of conditions application attached to DM/0026/18/FUL to erect an energy recovery facility (ERF) with an export capacity of up to 49.5 mw and a stack up to 90 m high. Land south of Queens Road, North Beck Energy Centre. **Application date and approval (where relevant):** Application validated 09/02/22 Decision pending. **Approx. size of the project:** 5.97 ha **Construction, operation and decommissioning timescales:** It is not clear from publicly available information what the timescales are for construction, operation and decommissioning of this proposed development.			Nature conservation and marine ecology	Yes	There is the potential for cumulative effects with respect to potential change to marine habitats as a result of changes to air quality and airborne noise and visual disturbance. **Changes to marine habitats** The proposed DM/0026/18/FUL development will operate in accordance with BAT and regulated by the Environment Agency which will include measures to minimise the impacts of emissions. It is reasonable to assume that the planning application process has identified a proportionate level of mitigation to do likewise for DM/0664/19/FUL. A minor adverse residual cumulative effect is concluded. **Airborne noise and visual disturbance** Given the generally localised nature of noise effects associated with the construction and operation of each scheme and provided IERRT and DM/0026/18/FUL complies with any assigned noise and vibration limits and follows the general guidance contained within BS 5228-1 with respect to noise mitigation, it is considered unlikely that significant cumulative construction or operational noise effects will occur on marine ecology receptors.	Minor adverse	N/A	Minor adverse
				Commercial and recreational navigation	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to commercial and recreational navigation.	N/A	N/A	N/A
				Coastal protection, flood risk and drainage	Yes	It is anticipated that even if there were overlap between the construction of this scheme and the IERRT project, given the size of the scheme it would not be anticipated to have a cumulative effect on any receptors affected by the IERRT project.	N/A	N/A	N/A
				Ground conditions, including land quality	Yes	There is potential for cumulative effects with respect to: • Human health; • Surface water; and • Groundwater. **Human Health (occupiers of residential and commercial properties and adjacent site workers):** The human health of residents and adjacent site workers in the surrounding area to the IERRT project site and DM/0026/18/FUL site may be affected during the construction phase. Nearby residents and adjacent site workers may be affected by off-site migration of vapour, dust and contaminated groundwater during construction. The significance effect) is considered Moderate. The residual cumulative effect is considered Slight Adverse following the implementation of mitigation measures adherence to environmental good practice, legislation, regulations and CEMP. **Surface Water:** The construction and operational phase of DM/0026/18/FUL may result in potential spillages of fuel which may affect nearby surface water courses, including the North Beck catchment. The significance (effect) is considered Moderate / Large Adverse. The residual cumulative effect is considered Neutral / Slight Adverse as it is assumed that the environmental legislation, regulations, good practice and the CEMP will be adhered to during construction and operation phases. **Groundwater:** The groundwater within the superficial deposits may be affected by potential spillages of fuel during the construction phase and operational phase which may migrate to the superficial aquifers. The significance (effect) is considered to be Slight Adverse for the superficial aquifers. The residual cumulative effect is considered Neutral.	Neutral to Neutral / Slight Adverse	None	Neutral to Neutral / Slight Adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
				Air quality	Yes	Unlikely to have a cumulative effect on local air quality as a result of dust during construction. Potential for cumulative effects in relation to operational effects from emissions. At human health sensitive locations on Queens Road, concentrations of the relevant pollutants remain well below the air quality objectives with the operation of the IERRT project. Any additional contribution to pollutant concentrations from the DM/0026/18/FUL site is unlikely to constrain the air quality objectives at these locations. In terms of impacts from DM/0026/18/FUL on the Humber Estuary, with respect to annual mean NOx, annual mean ammonia and annual mean sulphur dioxide total concentrations will be below the relevant critical levels. There is a small magnitude increase in oxides of nitrogen levels and nitrogen deposition on saltmarsh habitats and this is assessed as not significant. At similar and representative saltmarsh locations within the SAC, the IERRT project contributes less than 1% of the Critical Load for nitrogen deposition. The IERRT project contributes a little more than 1% of the air quality objective for annual mean at NOx at salt marsh habitats on the northern shore of the Estuary, but at locations where the air quality objective is not exceeded. The proposed DM/0026/18/FUL development will operate in accordance with BAT and regulated by the Environment Agency which will include measures to minimise the impacts of emissions. A minor adverse residual effect is concluded. It is reasonable to assume that the planning application process has identified a proportionate level of mitigation to do likewise for DM/0026/18/FUL.	Minor adverse	None	Minor adverse
				Noise and vibration	Yes	There is the potential for some cumulative noise effects if there are simultaneous construction works. However, given the generally localised nature of noise effects associated with the construction of each scheme, and provided IERRT and DM/0026/18/FUL complies with any assigned noise and vibration limits and follows the general guidance contained within BS 5228-1 with respect to noise mitigation, it is considered unlikely that significant cumulative construction noise effects will occur at nearby receptors. There also potential for cumulative operational noise effects, however provided each scheme complies with any operational noise limits or planning conditions/requirements to protect residential amenity it is considered unlikely that significant cumulative operational noise effects will occur at nearby receptors. Cumulative operational road traffic noise effects have already been included in the road traffic noise assessment reported in Chapter 14 Noise and Vibration. The traffic data used to inform the noise assessment for the proposed IERRT project is inherently cumulative with regards to DM/0026/18/FUL	Minor adverse	None	Minor adverse
				Cultural heritage and marine archaeology	Yes	No cumulative effects anticipated as project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to cultural heritage and marine archaeology.	N/A	N/A	N/A
				Socio-economic receptors	Yes	It is anticipated that even if there were overlap between the construction of this scheme and IERRT, the employment required for a scheme of this size would not be anticipated to have a cumulative effect on any receptors affected by IERRT.	N/A	N/A	N/A
				Traffic and transport	Yes	The Transport Assessment for the IERRT project sets out future traffic data flows derived using Tempro growth factors, and specific committed developments. This development is included as one of those specific committed developments.	Insignificant	None	Insignificant

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A
44.	**New access road from existing public highway on Queens Road, Immingham** **Local planning authority:** North East Lincolnshire Council **Planning Permission Applicant:** Associated British Ports **Full application:** DM/0294/21/FUL **Description and location of the project:** Permission for a new access road from the existing public highway crossing the existing footpath to a new development. Road would be constructed on land adjacent to the Recycling centre on Queens Road. Permission condition states that no surface water from the access shall be drained onto the highway. **Application date and approval (where relevant):** Application validated 18/03/2021 and approved 18/06/2021. **Approx. size of the project:** 0.0012 ha **Construction, operation and decommissioning timescales:** It is not clear from publicly available information what the timescales are for construction, operation and decommissioning of this proposed development. The permission expiry date is 18/06/2024.	Approx. 0.25 km	Tier 1: Projects that are under construction	Physical Processes	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to physical processes.	N/A	N/A	N/A
				Water and sediment quality	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to water and sediment quality.	N/A	N/A	N/A
				Nature conservation and marine ecology	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to marine ecology.	N/A	N/A	N/A
				Commercial and recreational navigation	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to commercial and recreational navigation.	N/A	N/A	N/A
				Coastal protection, flood risk and drainage	Yes	It is anticipated that even if there were overlap between the construction of this scheme and the IERRT project, given the size of the scheme it would not be anticipated to have a cumulative effect on any receptors affected by the IERRT project.	N/A	N/A	N/A
				Ground conditions, including land quality	Yes	There is potential for cumulative effects with respect to: • Human health; • Surface water; and • Groundwater. **Human Health (occupiers of residential and commercial properties and adjacent site workers):** The human health of residents and adjacent site workers in the surrounding area to the IERRT project site and Queens Road site may be affected during the construction phase. Nearby residents and adjacent site workers may be affected by off-site migration of vapour, dust and contaminated groundwater during construction. The significance effect) is considered Moderate. The residual cumulative effect is considered Slight Adverse following the implementation of mitigation measures adherence to environmental good practice, legislation, regulations and CEMP. **Surface Water:** The construction and operational phase of the access road may result in potential spillages of fuel which may affect nearby surface water courses, including the North Beck catchment. The significance (effect) is considered Moderate / Large Adverse. The residual cumulative effect is considered Neutral / Slight Adverse as it is assumed that the environmental legislation,	Neutral to Neutral / Slight Adverse	None	Neutral to Neutral / Slight Adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						regulations, good practice and the CEMP will be adhered to during construction and operation phases. **Groundwater:** The groundwater within the superficial deposits may be affected by potential spillages of fuel during the construction phase and operational phase which may migrate to the superficial aquifers. The significance (effect) is considered to be Slight Adverse for the superficial aquifers. The residual cumulative effect is considered Neutral.			
				Air quality	Yes	Potential for construction dust impacts to affect shared receptors located within 350 m of the proposed IERRT project site boundary and the DM/0294/21/FUL site boundary, should the construction phases overlap. The air quality assessment undertaken for the proposed IERRT project has identified the level of mitigation required to mitigate significant effects. It is reasonable to assume that the planning application process has identified a proportionate level of mitigation to do likewise for DM/0294/21/FUL. With an appropriate level of mitigation to control dust impacts from both the proposed IERRT project site and the DM/0294/21/FUL, which are standard practice on all well managed construction sites, the cumulative effect will not be significant.	Minor adverse	None	Minor adverse
				Noise and vibration	Yes	There is the potential for some cumulative noise effects if there are simultaneous construction works. However, given the generally localised nature of noise effects associated with the construction of each scheme, and provided IERRT and DM/0294/21/FUL complies with any assigned noise and vibration limits and follows the general guidance contained within BS 5228-1 with respect to noise mitigation, it is considered unlikely that significant cumulative construction noise effects will occur at nearby receptors	Minor adverse	None	Minor adverse
				Cultural heritage and marine archaeology	Yes	No cumulative effects anticipated as project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to cultural heritage and marine archaeology.	N/A	N/A	N/A
				Socio-economic receptors	Yes	It is anticipated that even if there were overlap between the construction of this scheme and IERRT, the employment required for a scheme of this size would not be anticipated to have a cumulative effect on any receptors affected by IERRT.	N/A	N/A	N/A
				Traffic and transport	No	There is no traffic generation associated with this planning application as it is an application for a site access.	N/A	N/A	N/A
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
51.	**Erection of 2x 24 m Biomass Flues. Netherlands Way, Stallingborough.** **Local planning authority:** North East Lincolnshire Council **Planning Permission Applicant:** Mistral energy **Full application:** DM/1056/20/FUL **Description and location of the project:** Biomass boiler installation at Scandinavian Way with two boiler systems where one stack (Stack A) has six Angus 130kW biomass fuelled boilers connected to a stack terminating 24 m above local ground level and the other stack, terminating at the same height (Stack B) has eight 130kW biomass fuelled boilers. **Application date and approval (where relevant):** Application validated 05/01/21 and approved 26/03/21. **Approx. size of the project:** 0.64 ha **Construction, operation and decommissioning timescales:** It is not clear from publicly available information what the timescales are for construction, operation and decommissioning of this proposed development. The permission expiry date is 26/03/2024.	Approx. 840 m	Tier 1: Permitted application not yet implemented	Physical Processes	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to physical processes.	N/A	N/A	N/A
				Water and sediment quality	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to water and sediment quality.	N/A	N/A	N/A
				Nature conservation and marine ecology	Yes	There is the potential for cumulative effects with respect to potential change to marine habitats as a result of changes to air quality, however the air quality assessment for DM/1056/20/FUL concluded that the effects were insignificant at all receptors and given the scale of the project there are no anticipated cumulative effects.	Insignificant	None	Insignificant
				Commercial and recreational navigation	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to commercial and recreational navigation.	N/A	N/A	N/A
				Coastal protection, flood risk and drainage	Yes	It is anticipated that even if there were overlap between the construction of this scheme and the IERRT project, given the size of the scheme it would not be anticipated to have a cumulative effect on any receptors affected by the IERRT project.	N/A	N/A	N/A
				Ground conditions, including land quality	No	There are no cumulative effects anticipated as DM/1056/20/FUL falls outside of the IERRT ZoI for the ground conditions and land quality topic. It is not considered that there is an overlap between the IERRT ZoI and the DM/1056/20/FUL ZoI for this topic.	N/A	N/A	N/A
				Air quality	Yes	Unlikely to have a cumulative effect on local air quality as a result of dust during construction or operation. Potential for cumulative effects in relation to operational effects from emissions. The air quality assessment for DM/1056/20/FUL concluded that the effects were insignificant at all receptors and given the scale of the project there are no anticipated cumulative effects.	Minor adverse	None	Minor adverse
				Noise and vibration	No	Unlikely to have a cumulative effect on local NSRs due to the distance of the Consent Order from the proposed IERRT project.	N/A	N/A	N/A
				Cultural heritage and marine archaeology	Yes	No cumulative effects anticipated as project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to cultural heritage and marine archaeology.	N/A	N/A	N/A
				Socio-economic receptors	Yes	It is anticipated that even if there were overlap between the construction of this scheme and IERRT, the employment required for a scheme of this size would not be anticipated to have a cumulative effect on any receptors affected by IERRT.	N/A	N/A	N/A
				Traffic and transport	Yes	The Transport Assessment for the IERRT project sets out future traffic data flows derived using Tempro growth factors, and specific committed developments.	Insignificant	None	Insignificant
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment.	N/A	N/A	N/A

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.			
53.	**Able Marine Energy Park (AMEP) DCO as consented and Material Change 1 and 2** **Consenting organisation:** National Infrastructure Planning **Developer:** Able Humber Ports Ltd. **Full application:** Able Marine Energy Park Development **Application variations:** Able Marine Energy Park Variation (licence expiry extension) Able Marine Energy Park Variation 2 (licence expiry extension) Able Marine Energy Park Material Change 1 (change consultation and notification requirements) Able Marine Energy Park Material Change 2 (change to construction methodology) **Description and location of the project:** The Consent Order is for the development of a new solid berth quay, a heavy component manufacturing base for offshore wind turbines, overflow storage area, supply chain park at Killingholme in North Lincolnshire, on the south bank of the Humber Estuary 2 km north of Immingham, along with the creation of a compensatory intertidal habitat and roosting and feeding habitat at Cherry Cobb Sands (discussed below). The proposed works will include capital dredging the berthing pocket, approach channel and turning area using a trailing suction hopper dredger. Material Change 2 includes a realignment of the proposed quay to remove a berth pocket, changes to the construction methodology to allow the relieving slab at the rear of the quay to be at the surface as an alternative to being buried or omitted, the use of anchor poles as an alternative to flap anchors, changes to dredging, and realignment of a footpath diversion to go around railway track rather than crossing it. **Application date and approval (where relevant):** Application submitted 19/12/2012, approved 18/12/2013, and DCO came into force in 2014. Variation 1 submitted 04/04/2017, licence condition changed 23/06/2017. Variation 2 submitted 15/04/2020, licence condition changed 16/09/2020. Material Change 1 application submitted 25/11/2020 and approved 02/02/2021. Material Change 2 application submitted 25/06/2021, DCO amended 16/07/2022, coming into force 06/08/2022.	Approx. 2.8 km	Tier 1: Projects on the PINS Programme of Projects that are under construction	Physical Processes	Yes	There is the potential for cumulative effects with respect to the following elements in relation to the physical processes chapter: • Changes to hydrodynamics (flows and waves); and • Changes to sediment transport pathways. **Changes to hydrodynamics:** The marine elements of the proposed AMEP works are located approximately 2.8 km up-estuary of the IERRT location. In between the two schemes is the infrastructure associated with the Immingham Eastern and Western jetties, the Immingham Outer Harbour, the Humber International Terminal and the Immingham Gas Jetty. The assessment for IERRT indicates that the extent of change to hydrodynamics and waves does not extend up-estuary to the AMEP works location. Whilst an assessment of the potential change from the AMEP works together with the IERRT project has not been undertaken, it is likely that any changes to the hydrodynamics and waves (in the direction of the IERRT) will be tempered by the existing port infrastructure described above. Consequently, it is considered unlikely that any in-combination effects will be generated. **Changes to sediment transport pathways**: As described above, it is considered unlikely that any in-combination effects on hydrodynamics will develop from the construction and operation of both IERRT and the AMEP works. Since these are the driving forces of the local sediment transport pathways, it is further considered unlikely that any in-combination effects will develop in relation to this element.	Negligible exposure to change	None	Negligible exposure to change
				Water and sediment quality	Yes	In relation to water and sediment quality, there is the potential for cumulative effects with respect to increased suspended sediment concentrations and changes to dissolved oxygen and chemical water quality as a result of seabed disturbance. Any changes would cause highly localised and temporary changes in suspended sediment levels (and related changes in sediment bound contaminants and dissolved oxygen) which is considered unlikely to produce adverse effects. On this basis and given that water quality effects as part of the IERRT project were assessed as insignificant to minor adverse, cumulative effects are also anticipated to be insignificant to minor adverse.	Insignificant to minor adverse	None	Insignificant to minor adverse
				Nature conservation and marine ecology	Yes	There is the potential for cumulative effects with respect to the following key pathways in relation to marine ecology and ornithology: • Change to marine habitats; • Water quality; • Underwater noise; • Visual and noise disturbance during construction and operation; and • Loss/change to waterbird feeding and roosting habitat. **Changes to marine habitats:** Both the AMEP and IERRT project have the potential to result in changes to marine habitats as a result of capital dredging due to physical disturbance during sediment removal, sediment deposition and indirectly as a result of changes to hydrodynamic and sedimentary processes. These potential effects were assessed as not significant for both projects. The subtidal habitats around the Port of Immingham are typically impoverished and of low ecological value reflecting the existing high levels of physical disturbance in the area due to strong near bed tidal currents and sediment transport. Deposition of sediment as a result of dredging for both projects were predicted to be localised and similar to background variability away from the dredge	Minor adverse	None	Minor adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
	Approx. size of the project: 286 ha (excluding compensatory site) **Construction, operation and decommissioning timescales:** As part of AMEP Variation 2 in 2020, it was stated that construction works had yet to commence, therefore, an amendment to the licence was granted whereby the licence period was extended to 10 years from the date of the Order coming into force. The terms of this licence must see the construction and capital dredge works carried out in the first 9 years (up to 2023) and maintenance dredging for the remaining (up to 2024). The pre-construction requirements for the AMEP DCO have been fulfilled and the development was commenced in 2021 with the construction of a pumping station.					pockets with species occurring in the local area considered tolerant to some sediment deposition. The magnitude of change on marine habitats and species from the highly localised and small scale predicted effects due to hydrodynamic and sedimentary processes is considered to be negligible for both projects. **Water quality**: The effects of increased suspended sediment concentrations and water quality impacts associated with the remobilisation of sediment bound contaminants as part of both the AMEP and IERRT project during dredging was assessed as not significant for both projects. Increased SSCs due to the capital dredge and disposal activity was considered to be in the range that can frequently occur naturally with benthic species and fish in the Humber Estuary considered adapted to living in in an area with variable and typically very high suspended sediment loads. The level of contamination in the proposed dredge area for both projects was considered to be low with material expected be rapidly dispersed by strong tidal currents in the area. Potential cumulative effects are considered to be insignificant to minor. **Underwater noise:** Underwater noise generated during piling and dredging required as part of the IERRT project along with AMEP have the potential to result in cumulative effects on fish (including diadromous migratory species) and marine mammal receptors in the Humber Estuary. Dredging for both projects is only expected to cause behavioural reactions in a relatively localised area in the vicinity of the dredger for both fish and marine mammals. However, piling noise has the potential to cause injury effects in fish and marine mammals within close proximity to the piling activity and strong behavioural responses over a wider area of the Humber estuary for both projects. Both projects will require similar mitigation to help minimise potential adverse effects (such as soft start procedures, timing restrictions to avoid sensitive periods for migratory fish and the use of marine mammal observers). Without mitigation potential cumulative effects are considered to be moderate adverse. With the application of mitigation, the residual cumulative effect is minor adverse. **Visual and noise disturbance during construction and operation:** There is the potential for the AMEP project along with the IERRT project to cause cumulative effects in term of visual and noise disturbance to coastal waterbirds along the foreshore during construction and operation. Mitigation measures for AMEP include a cold weather construction restriction. In addition, indirect functional loss of intertidal habitat (mudflat and saltmarsh) through disturbance (predicted to be over an area of 12.4 ha) will also be provided at the Cherry Cobb Sands compensation site. With these measures in place and the proposed mitigation measures for IERRT, potential disturbance effects are assessed as **minor.** **Loss/change to waterbird feeding and roosting habitat:** The AMEP project will result in a direct loss of intertidal habitat (mudflat and saltmarsh) as a result of the reclamation of the proposed quay (33 ha). Compensation for this loss will be provided at the Cherry Cobb Sands compensation site. Direct loss of intertidal as a result of the proposed IERRT development will be *de minimis* in extent with birds expected to feed below or very close to the approach jetty and other infrastructure on the foreshore. Any avoidance of marine infrastructure is expected to be limited (and highly localised) and is unlikely to change the overall distribution of waterbird assemblages more widely on the foreshore in the local area. Therefore, with the provision of the compensatory habitat required			

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						for AMEP project, potential loss/changes to waterbird roosting and feeding habitat is assessed as **minor.**			
				Commercial and recreational navigation	No	There are no cumulative effects anticipated as the AMEP development falls outside of the IERRT ZoI for commercial and recreational navigation.	N/A	N/A	N/A
				Coastal protection, flood risk and drainage	Yes	There is the potential for cumulative effects with respect to the following elements in relation to the coastal protection, flood risk and drainage chapter: • Changes to tidal water levels; and • Changes to erosion/accretion rates on the foreshore. **Changes to tidal water levels:** As noted in relation to physical processes (above) assessment for the IERRT project indicates that the extent of change to hydrodynamics and waves does not extend up-estuary to the AMEP works location. Whilst an assessment of the potential change from the AMEP works together with the IERRT project has not been undertaken, it is likely that any changes to the hydrodynamics and waves (in the direction of the IERRT project) will be tempered by the existing port infrastructure described above. Consequently, it is considered unlikely that any in-combination effects will be generated. **Changes to erosion/accretion rates on the foreshore**: it is considered unlikely that any in-combination effects on hydrodynamics will develop from the construction and operation of both the IERRT project and the AMEP works. Since these are the driving forces of the local sediment transport pathways, it is further considered unlikely that any in-combination effects will develop in relation to this element	Neutral	None	Neutral
				Ground conditions, including land quality	No	There are no cumulative effects anticipated as the marine side AMEP development falls outside of the landside IERRT ZoI for the ground conditions and land quality topic. It is not considered that there is an overlap between the IERRT ZoI for the ground conditions and land quality and the project's ZoI for this topic.	N/A	N/A	N/A
				Air quality	Yes	The traffic data used to inform the air quality assessment for the proposed IERRT project is inherently cumulative with regards to the Consent Order for the AMEP.	Negligible	N/A	Negligible
				Noise and vibration	Yes	Outside the ZoI for construction. The traffic data used to inform the noise assessment for the proposed IERRT project is inherently cumulative with regards to the Consent Order for the AMEP (i.e., it has been considered within the traffic model and the outputs from this have informed the noise and vibration assessment).	Negligible	N/A	Negligible
				Cultural heritage and marine archaeology	Yes	Cumulative impacts from direct and indirect impacts for the proposed IERRT project would be negligible as direct disturbance or damage will be mitigated for the implementation of a Written Scheme of Investigation (WSI), including a Protocol for Archaeological Discoveries (PAD) to mitigate against any new discoveries. The project is unlikely to cause noticeable changes to hydrodynamic and sediment transport regimes and therefore no cumulative impacts are anticipated for cultural heritage and marine archaeology.	N/A	N/A	N/A
				Socio-economic receptors	Yes	There could be a limited overlap of the employment periods of the two schemes, which could result in cumulative impacts for IERRT. Both the AMEP and IERRT projects have the potential to result in employment generation and a changing influx of workers. If there is a limited overlap in construction period, this may not result in any cumulative effects. Though in a worst-case scenario of a longer overlap of construction periods, it is likely that there could be cumulative effects. These could include a beneficial cumulative	Moderate beneficial (employment), negligible (changing influx)	None	Moderate beneficial (employment), minor adverse (changing influx)

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						impact on employment creation, generating more employment in the local economy. Though the scheme could result in an adverse cumulative impact on the changing influx of workers during the overlapped construction phases, with more workers requiring to be brought into the local area to work on the projects.			
				Traffic and transport	Yes	The Transport Assessment for the IERRT project sets out future traffic data flows derived using Tempro growth factors, and specific committed developments. This development is included as one of those specific committed developments.	Insignificant	None	Insignificant
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A
54.	**Able Marine Energy Park (AMEP) Regulated Tidal Exchange & Managed Realignment scheme at Cherry Cobb Sands** **Consenting organisation:** National Infrastructure Planning **Developer:** Able Humber Ports Ltd. **Full application:** Able Marine Energy Park Development **Application variation:** Able Marine Energy Park Material Change 2 **Description and location of the project:** Under the Able Marine Energy Park Development Consent Order 2014, a Regulated Tidal Exchange & Managed Realignment scheme on the north bank of the Humber Estuary near Cherry Cobb Sands will be undertaken to compensate for the development of a new quay and associated development at Killingholme in North Lincolnshire, on the south bank of the Humber Estuary. At Cherry Cobb, the existing flood defences will be realigned, and ground levels re-contoured to provide new intertidal habitat of functional value to wildfowl and wading birds as well as other flora and fauna. A total of 94.6 ha of habitat (73.4 ha of intertidal mudflat and 21.2 ha of subtidal estuary) will be recreated to compensate impacts to the SAC, and 101.5 ha for the SPA. The managed realignment scheme will comprise 30.6 ha of which 27 ha is anticipated to revert to saltmarsh.	Approx. 3.5 km	Tier 1: Projects on the PINS Programme of Projects that are under construction	Physical Processes	Yes	The proposed Managed Realignment Scheme is located on the opposite bank of the Humber Estuary and has the potential to result in highly localised effects on physical processes elements (such as local flows and elevated suspended sediment levels and sediment deposition) as a result of the breaching. However, the highly localised and (likely) low magnitude effects will not significantly overlap with the ZoI of the hydrodynamic or sedimentary effects as a result of the IERRT project.	N/A	N/A	N/A
				Water and sediment quality	Yes	The proposed Managed Realignment Scheme is located on the opposite bank of the Humber Estuary. The managed realignment site works has the potential to result in highly localised effects on water quality (such as due to elevated suspended sediment levels and changes to dissolved oxygen and chemical water quality) as a result of the breaching. However, the highly localised and low magnitude effects will not significantly overlap with the ZoI of the effects on water and sediment quality as a result of the IERRT project.	N/A	N/A	N/A
				Nature conservation and marine ecology	Yes	The managed realignment site works has the potential to result in highly localised and temporary effects on marine ecology receptors which will be of a negligible magnitude (such as due to elevated suspended sediment levels and sediment deposition) due to breaching and channel excavation. In addition, potential bird disturbance to waterbirds will also be localised and temporary. On this basis, cumulative effects are considered to be **insignificant.** It is assumed that both projects will be subject to controls by statutory bodies to avoid the potential for any adverse cumulative effects on marine ecology receptors. Appropriate mitigation measures will be secured through the DCO/CEMP and will be followed during construction of the IERRT project and therefore cumulative effects are considered to be i**nsignificant**.	Insignificant	None	Insignificant
				Commercial and recreational navigation	No	There are no cumulative effects anticipated as the managed realignment site falls outside of the IERRT ZoI for commercial and recreational navigation.	N/A	N/A	N/A
				Coastal protection, flood risk and drainage	No	There are no cumulative effects anticipated as the Managed Realignment site falls outside of the IERRT project ZoI for Coastal protection, flood risk and drainage	N/A	N/A	N/A

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
	Application date and approval (where relevant): Application submitted 19/12/2012, approved 18/12/2013, and DCO came into force in 2014. Material Change 2 application submitted 25/06/2021, DCO amended 16/07/2022, coming into force 06/08/2022. **Approx. size of the project:** 196.1 ha **Construction, operation and decommissioning timescales:** No works have commenced. The Cherry Cobb Sands breach must not be created until a new flood defence has been constructed landward of the existing flood defence, and the Cherry Cobb Sands breach must not be created until a channel has been excavated from the site of the breach to the foreshore at the level of the breach. The breach must occur no more than 15 months after commencing construction of the quay (which has yet to begin construction). The breach must also not be made until the new embankment has had an adequate period of time (likely to be, but not limited to, one winter period (November to April inclusive)) in which to stabilise and for vegetation to become established on the embankment to ensure the integrity of the new flood defences.			Ground conditions, including land quality	No	There are no cumulative effects anticipated as the marine side AMEP and tidal exchange development falls outside of the land side IERRT ZoI for the ground conditions and land quality topic. It is not considered that there is an overlap between the IERRT ZoI for the ground conditions and land quality and the project's ZoI for this topic.	N/A	N/A	N/A
				Air quality	No	Unlikely to have a cumulative effect on local air quality, due to the distance of the Consent Order from the proposed IERRT project and the nature of its emissions.	N/A	N/A	N/A
				Noise and vibration	No	Unlikely to have a cumulative effect on local NSRs due to the distance of the Consent Order from the proposed IERRT project.	N/A	N/A	N/A
				Cultural heritage and marine archaeology	Yes	No cumulative effects anticipated as project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to cultural heritage and marine archaeology.	N/A	N/A	N/A
				Socio-economic receptors	No	It is not anticipated that these elements of the Managed Realignment Scheme will result in any socio-economic impact that could affect the IERRT socio-economic impact pathways.	N/A	N/A	N/A
				Traffic and transport	No	There are no cumulative effects anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to this topic. This is because the proposal will not result in any change in terrestrial traffic flows.	N/A	N/A	N/A
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A
55.	**Humber Low Carbon Pipelines** **Consenting organisation:** National Infrastructure Planning **Developer:** National Grid Carbon **Scoping application:** Humber Low Carbon Pipelines **Description and location of the project:** Construction of carbon dioxide (to facilitate carbon capture, utilisation and storage) and hydrogen transportation pipelines between Drax in North Yorkshire and Easington in East Riding of Yorkshire, connecting various emitters and generators in the Humber. The objective is to deliver a new onshore pipeline network to transport captured carbon dioxide from the region's emitters for safe subsea storage and to enable industries to fuel-switch from fossil fuels to low carbon hydrogen. The project will comprise of onshore pipeline systems, a tunnel beneath the	Current proposal within 10 km	Tier 2: Projects on the Programme of Projects where a scoping report has been submitted	Physical Processes	Yes	There is the potential for cumulative effects with respect to the following elements in relation to the physical processes chapter: • Changes to hydrodynamics (flows and waves); and • Changes to sediment transport pathways. **Changes to hydrodynamics:** The marine elements of the proposed pipelines works are located approximately 10 km up-estuary of the IERRT location. The assessment for IERRT indicates that the extent of change to hydrodynamics and waves does not extend up-estuary to the proposed pipelines works location. Whilst an assessment of the potential change from the pipeline works together with the IERRT project has not been undertaken, it is considered unlikely that any changes to the hydrodynamics and waves will extend as far as the IERRT scheme (due to the distance between sites). Consequently, it is considered unlikely that any in-combination effects will be generated. **Changes to sediment transport pathways**: As described above, it is considered unlikely that any in-combination effects on hydrodynamics will develop from the construction and operation of both IERRT and the pipelines works. Since these are the driving forces of the local sediment transport pathways, it is further considered unlikely that any in-combination effects will develop in relation to this element.	Negligible exposure to change	None	Negligible exposure to change

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
	Humber Estuary, above ground installations and a landfall on the Holderness coast. The Humber will be crossed with pipelines laid at a depth of a minimum of 6 m below the true bed of the river within a tunnel of 3 m diameter minimum and 6 m diameter maximum. The pipeline route suggested for the first round of consultation crosses the Humber approximately 6-9 km north of Immingham. **Application date and approval (where relevant):** Scoping submitted April 2022. Application expected to be submitted to PINS Q3 2022. **Approx. size of the project:** Approximate 120 km **Construction, operation and decommissioning timescales:** The overall construction period for the Project from the commencement of construction works to the completion of commissioning is anticipated to be approximately 44 months assuming that both the carbon dioxide and the hydrogen pipelines are constructed at the same time. Construction of the Humber crossing is expected to start Q1 in year 1, construction of the pump facility in Q3 in year 1 and the pipeline construction in Q2 of year 3. Works will be completed by Q4 in year 4. A date for the commencement of the works has not been decided and the construction programme will be further assessed in the respective ES. The pipelines will have an operational life of at least 40 years at which point pipelines will be left in situ.			Water and sediment quality	Yes	In relation to water and sediment quality, there is the potential for cumulative effects with respect to increased suspended sediment concentrations and changes to dissolved oxygen and chemical water quality as a result of seabed disturbance. Any changes would cause highly localised and temporary changes in suspended sediment levels (and related changes in sediment bound contaminants and dissolved oxygen) which is considered unlikely to produce adverse effects. On this basis and given that water quality effects as part of the IERRT project were assessed as insignificant to minor adverse, cumulative effects are also anticipated to be insignificant to minor adverse.	Insignificant to minor adverse	None	Insignificant to minor adverse
				Nature conservation and marine ecology	Yes	Based on information provided in the EIA scoping report for the Humber Low Carbon Project, trenchless methods (e.g., bored tunnel) could be used to minimise potential effects on marine ecology receptors where the pipelines cross the Humber Estuary. However, construction method has not been confirmed at the landfall (trenchless, e.g., Horizontal Directional Drilling (HDD), or via cofferdam) and, therefore, marine ecology receptors could not be scoped out. Coastal waterbirds using functionally linked land within the footprint of the pipeline corridor could also be potentially impacted due to disturbance during construction which could lead to cumulative effects with the IERRT project. As the precise construction methods and construction programme for the Humber Low Carbon Pipeline have not yet been finalised, it is not possible to provide an accurate assessment of the cumulative effects relating to marine ecology and coastal waterbird receptors. However, it is assumed that both projects will be subject to controls by statutory bodies to avoid the potential for any adverse cumulative effects on marine habitats and species. Appropriate mitigation measures will be secured through the DCO/CEMP and will be followed during construction of the IERRT project and therefore cumulative effects are considered to be at worst **minor.**	Minor adverse	None	Minor adverse
				Commercial and recreational navigation	No	There are no cumulative effects anticipated as the Humber Low Carbon Pipeline development falls outside of the IERRT ZoI for commercial and recreational navigation.	N/A	N/A	N/A
				Coastal protection, flood risk and drainage	No	Unlikely to have a cumulative effect on coastal protection, flood risk and drainage, due to distance between the IERRT project and Humber Low Carbon Pipelines.	N/A	N/A	N/A
				Ground conditions, including land quality	No	There are no cumulative effects anticipated as the Humber Low Carbon Pipeline development falls outside of the IERRT ZoI for the ground conditions and land quality topic. It is not considered that there is an overlap between the IERRT ZoI for the ground conditions and land quality and the project's ZoI for this topic.	N/A	N/A	N/A
				Air quality	No	Unlikely to be significant cumulative effects on local air quality, due to the distance of the Consent Order application site from the proposed IERRT project, although there is some potential for temporary road traffic emissions impacts, subject to further information on the Consent Order application being published.	N/A	N/A	N/A
				Noise and vibration	No	Unlikely to have a cumulative effect on noise and vibration, due to distance between the IERRT project and the proposed Humber Low Carbon Pipelines.	N/A	N/A	N/A
				Cultural heritage and marine archaeology	No	No effects are anticipated at this distance.	N/A	N/A	N/A
				Socio-economic receptors	No	The precise construction methods and construction programme for the Humber Low Carbon Pipeline have not yet been finalised, In a worst-case scenario that there was overlap between the schemes' construction periods, there could be some cumulative effects experienced. If construction phases were to overlap, it is expected that there could be a positive cumulative effect on employment, generating more employment in the local economy. There could be an adverse effect on the changing influx of workers, based on more	Moderate beneficial (employment), negligible (changing influx)	None	Moderate beneficial (employment), minor adverse (changing influx)

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						construction workers being required to stay in the local area during the construction phase.			
				Traffic and transport	Yes	As the precise construction methods and construction programme for the Humber Low Carbon Pipeline have not yet been finalised, it is not possible to provide an accurate assessment of the cumulative effects relating to traffic and transport. That said, it is anticipated that construction traffic will be the main impact and therefore temporary.	Insignificant	None	Insignificant
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A
56.	**Viking CCS Pipeline** **Consenting organisation:** National Infrastructure Planning **Developer:** Chrysaor Producxtion (UK) Limited **Scoping application:** Viking CCS Pipeline (previously V Net Zero Pipeline) **Description and location of the project:** The project aims to transport compressed and conditioned CO_2 from the offtake facility at Immingham to storage in depleted gas reservoirs in the Southern North Sea. It consists of an onshore pipeline from Immingham to the former Theddlethorpe Gas Terminal, and transportation from Theddlethorpe Gas Terminal through the existing Lincolnshire Offshore Gas Gathering System pipeline to Mean Low Water Spring (MLWS) to approximately 140 km offshore. A pipeline offtake facility at Immingham will also be constructed. The onshore pipeline will be approximately 53 km in length and buried including cathodic protection. **Application date and approval (where relevant):** Scoping submitted March 2022. Application expected to be submitted to PINS Q1 2023.	Current proposal within 4 km	Tier 2: Projects on the Programme of Projects where a scoping report has been submitted	Physical Processes	No	The onshore transportation system only is being considered as part of the DCO application. No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to physical processes.	N/A	N/A	N/A
				Water and sediment quality	No	The onshore transportation system only is being considered as part of the DCO application. No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to water and sediment quality.	N/A	N/A	N/A
				Nature conservation and marine ecology	Yes	The onshore transportation system only is being considered as part of the DCO application. No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to benthic habitats/species, fish and marine mammals. Coastal waterbirds using functionally linked land within the footprint of the Viking CCS Pipeline corridor could be potentially impacted due to disturbance during construction which could lead to cumulative effects with the IERRT project. As the precise construction methods and construction programme for the Viking CCS Pipeline have not yet been finalised, it is not possible to provide an accurate assessment of the cumulative effects relating marine ecology and coastal waterbird receptors. However, it is assumed that both projects will be subject to controls by statutory bodies to avoid the potential for any adverse cumulative effects on marine habitats and species. Appropriate mitigation measures will be secured through the DCO/CEMP and will be followed during construction of the IERRT project and therefore cumulative effects on coastal waterbirds due to disturbance are considered to be at worst minor.	Minor adverse	None	Minor adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
	Approx. size of the project: 53 km **Construction, operation and decommissioning timescales:** The construction phase for the Project is expected to last up to 24 months in total, however a detailed programme of construction works will be prepared which will seek to limit the time during which specific locations are affected. A date for the commencement of the works has not been decided. The Project has a design life of approximately 40 years on which point decommissioning will occur in line with environmental legislation.			Commercial and recreational navigation	No	The onshore transportation system only is being considered as part of the DCO application. No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to commercial and recreational navigation.	N/A	N/A	N/A
				Coastal protection, flood risk and drainage	No	Unlikely to have a cumulative effect on coastal protection, flood risk and drainage, due to distance between the IERRT project and the Viking CCS Pipeline.	N/A	N/A	N/A
				Ground conditions, including land quality	No	There are no cumulative effects anticipated as the Viking CCS Pipeline development falls outside of the IERRT ZoI for the ground conditions and land quality topic. It is not considered that there is an overlap between the IERRT ZoI for the ground conditions and land quality and the project's ZoI for this topic.	N/A	N/A	N/A
				Air quality	No	Unlikely to be significant cumulative effects on local air quality, due to the distance of the Consent Order application site from the proposed IERRT project, although there is some potential for temporary road traffic emissions impacts, subject to further information on the Consent Order application being published.	N/A	N/A	N/A
				Noise and vibration	No	Unlikely to have a cumulative effect on noise and vibration, due to distance between the IERRT project and the Viking CCS Pipeline.	N/A	N/A	N/A
				Cultural heritage and marine archaeology	No	No effects are anticipated at this distance.	N/A	N/A	N/A
				Socio-economic receptors	Yes	Employment generated during the construction phases of IERRT and Viking CCS Pipeline has the potential to result in cumulative effects on the changing influx of workers. This is expected to last for up to 24 months depending on exact commencement of Viking CCS Pipeline. If there were overlap between the schemes' construction periods, there could be some cumulative effects experienced. If construction phases were to overlap, it is expected that there could be a positive cumulative effect on employment, generating more employment in the local economy. There could be an adverse effect on the changing influx of workers, based on more construction workers being required to stay in the local area during the construction phase.	Moderate beneficial (employment), negligible (changing influx)	None	Moderate beneficial (employment), minor adverse (changing influx)
				Traffic and transport	Yes	As the precise construction methods and construction programme for the Viking CCS Pipeline have not yet been finalised, it is not possible to provide an accurate assessment of the cumulative effects relating to traffic and transport. That said, it is anticipated it that construction traffic will be the main impact and therefore temporary. Overall flows will be below the operational assessments undertaken in any event.	Insignificant	None	Insignificant
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity. Whilst the Viking CCS pipeline and associated installations will present some major hazard risks in their vicinity, the risks will not extend as far as the IERRT.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment.	N/A	N/A	N/A

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.			
57.	**Immingham Green Energy Terminal** **Consenting organisation:** National Infrastructure Planning **Developer:** Associated British Ports **Scoping application:** Immingham Green Energy Terminal **Description and location of the project:** The objective of the project is to deliver the marine infrastructure needed to support the future transportation of liquid bulks associated with the energy sector that would support the transition to net zero. The project would initially be used as a conduit for the import of green ammonia to be converted to green hydrogen. The works involve the construction of a jetty and topside infrastructure to facilitate import and storage of ammonia, the creation of green hydrogen and the onward transport of green hydrogen to other parts of the UK. The marine side works would comprise of an approach trestle and jetty, two berths, and small capital dredge for the berth pocket. Landside infrastructure will consist of pipework from the jetty, ammonia storage, and hydrogen production, storage and export facilities. The project is located on the east side of the Port of Immingham. **Application date and approval (where relevant):** Scoping submitted August 2022. Application expected to be submitted to PINS Q2 2023. **Approx. size of the project:** 103 ha **Construction, operation and decommissioning timescales:** Subject to consent being granted for the DCO application, construction of the processing facility and the jetty (referred to as the first phase) is expected to start in Q3 2024. Following completion of the first phase, up to a further five phases will be constructed incrementally to increase the processing capacity as the market for green hydrogen increases. For the purposes of scoping, a development scenario was defined based on a six-phase construction timeline commencing in Q3 2024, through to full completion of all phases in 2034.	Approx. 0.1 km	Tier 2: Projects on the Programme of Projects where a scoping report has been submitted	Physical Processes	Yes	There is the potential for cumulative effects with respect to the following elements in relation to the physical processes chapter: • Changes to hydrodynamics (flows and waves); and • Changes to sediment transport pathways. **Changes to hydrodynamics:** The marine elements of the proposed Immingham Green Energy Terminal works are located approximately 0.1 km down-estuary of the IERRT location. In between the two schemes is the infrastructure associated with the Immingham Oil Terminal. The assessment for IERRT indicates that the extent of change to hydrodynamics does extend down-estuary to the Immingham Green Energy Terminal works location. Whilst an assessment of the potential change from the Immingham Green Energy Terminal works together with the IERRT project has not been undertaken, it is likely that changes to the hydrodynamics and waves (in the direction of the IERRT) will result in low magnitude, highly localised in-combination effects arising from the two schemes. **Changes to sediment transport pathways**: As described above, it is considered likely that any in-combination effects on hydrodynamics developing from the construction and operation of both IERRT and the Immingham Green Energy Terminal works will be small in magnitude and highly localised in extent. Since these are the driving forces of the local sediment transport pathways, it is further considered that any in-combination effects on this element will also be small in magnitude and localised in extent and the cumulative effects are therefore predicted to be negligible.	Negligible exposure to change	None	Negligible exposure to change
				Water and sediment quality	Yes	In relation to water and sediment quality, there is the potential for cumulative effects with respect to increased suspended sediment concentrations and changes to dissolved oxygen and chemical water quality as a result of seabed disturbance. Any changes would cause highly localised and temporary changes in suspended sediment levels (and related changes in sediment bound contaminants and dissolved oxygen) which is considered unlikely to produce adverse effects. On this basis and given that water quality effects as part of the IERRT project were assessed as insignificant to minor adverse, cumulative effects are also anticipated to be insignificant to minor adverse.	Insignificant to minor adverse	None	Insignificant to minor adverse
				Nature conservation and marine ecology	Yes	There is the potential for cumulative effects with respect to the following pathways in relation to marine ecology: • Change to marine habitats; • Water quality; • Underwater noise; and • Visual and noise disturbance. **Change to marine habitats**: The piles required for the jetty of the Immingham Green Energy Terminal project are likely to result in a small loss of subtidal habitat and a *de minimis* loss in the intertidal. In addition, sedimentation due to the localised resuspension of sediment as a result of seabed disturbance during piling and the small capital dredge as well as changes to hydrodynamic and sedimentary processes due to the presence of the piles/dredging are anticipated to be negligible and highly localised. Furthermore, the benthic community is expected to recover relatively rapidly from any localised physical disturbance with subtidal species known to occur in the area typically considered fast growing and/or have	Minor adverse	None	Minor adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						rapid reproductive rates. On this basis and given that changes to marine habitats as part of the IERRT project were assessed as insignificant to minor, cumulative effects are anticipated to be negligible. **Water Quality:** The resuspension of sediment as a result of seabed disturbance during piling and the small capital dredge will cause highly localised and temporary changes in suspended sediment levels (and related changes in sediment bound contaminants and dissolved oxygen) which are considered unlikely to produce adverse effects in any species. On this basis and given that water quality effects on marine ecology receptors as part of the IERRT project were assessed as insignificant to minor, cumulative effects are anticipated to be insignificant to minor adverse. **Underwater noise:** Underwater noise generated during piling required as part of the IERRT project along with Immingham Green Energy Terminal project have the potential to result in cumulative effects on fish (including diadromous migratory species) and marine mammal receptors in the Humber Estuary. Piling noise has the potential to cause injury effects in fish and marine mammals within close proximity to the piling activity and strong behavioural responses over a wider area of the Humber estuary for both projects. It is assumed that the Immingham Green Energy Terminal project will require similar mitigation to the IERRT project to help minimise potential adverse effects (such as soft start procedures, timing restrictions to avoid sensitive periods for migratory fish and the use of marine mammal observers). Without mitigation potential cumulative effects are considered to be moderate adverse. With the application of mitigation, the residual cumulative effect is minor adverse. **Airborne visual and noise disturbance:** There is the potential for the IERRT project along with the Immingham Green Energy Terminal to cause cumulative effects in term of visual and noise disturbance to coastal waterbirds along the foreshore if disturbing activities associated with each of the construction programmes are being undertaken concurrently. This could reduce the amount of foreshore available with limited disturbance in the local area. However, the potential magnitude of disturbance impacts associated with the Immingham Green Energy Terminal project has not been assessed as the EIA/HRA assessments have not been undertaken at this stage. On this basis, while a detailed cumulative assessment is not possible, it is assumed that similar mitigation to that required for the IERRT project might be required to reduce potential adverse disturbance effects. Both projects will be subject to controls by statutory bodies to avoid the potential for any adverse cumulative effects on marine ecology receptors. Appropriate mitigation measures will be secured through the DCO/CEMP and will be followed during construction of the IERRT project and therefore cumulative effects are considered to be at worst **minor** and not significant.			
				Commercial and recreational navigation	Yes	The only cumulative effect relevant from a commercial and recreational navigation perspective is the increased utilisation of the estuary as a result of greater vessel traffic. Existing embedded controls already in place for IMM and HES Marine Safety Management Systems mitigate risks associated with vessel movements on the estuary to an ALARP state already.	Insignificant	None	Insignificant
				Coastal protection, flood risk and drainage	Yes	There is the potential for cumulative effects with respect to the following elements in relation to the coastal protection, flood risk and drainage chapter:	Neutral / Slight Beneficial	None	Neutral / Slight Beneficial

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						• Changes to tidal water levels; • Changes to erosion/accretion rates on the foreshore; and • Increase in surface water run-off rates/volumes. **Changes to tidal water levels:** As noted in relation to physical processes assessment (above) for the IERRT project indicates that the extent of change to hydrodynamics does extend down-estuary to the Immingham Green Energy Terminal works location. Whilst an assessment of the potential change from the Immingham Green Energy Terminal works together with the IERRT project has not been undertaken, it is likely that changes to the hydrodynamics and waves (in the direction of the IERRT project) will result in low magnitude, highly localised in-combination effects arising from the two schemes. **Changes to erosion/accretion rates on the foreshore**: It is considered likely that any in-combination effects on hydrodynamics developing from the construction and operation of both the IERRT project and the Immingham Green Energy Terminal works will be small in magnitude and highly localised in extent. Since these are the driving forces of the local sediment transport pathways, it is further considered that any in-combination effects on this element will also be small in magnitude and localised in extent. **Increase in surface water run-off volumes/rates**: The construction and operational phase of the landside infrastructure may result in potential increases in surface water run-off rates and volumes generated from new areas of hardstanding which affects water levels and flood risk associated with Habrough Marsh Drain and capacity issues with surface water drainage infrastructure. However, the site will be constructed and operated in accordance with environmental legislation, regulations and good practice including the surface water drainage systems and discharge rates to Habrough Marsh Drain, which will be agreed with the North East Lindsey Internal Drainage Board (IDB). The significance (effect) is considered Neutral/Slight Beneficial. The residual cumulative effect is considered Neutral / Slight Beneficial through adherence to environmental legislation, regulations, good practice and the CEMP.			
				Ground conditions, including land quality	Yes	There is potential for cumulative effects associated with the landside development with respect to the following receptors: • Human health; • Surface water; and • Groundwater. **Human Health (occupiers of residential and commercial properties and adjacent site workers):** The human health of residents and site workers in the surrounding area to the IERRT project site and the Immingham Green Energy Park site may be affected during the construction phase by off-site migration of vapour, dust and contaminated groundwater during construction. The significance (effect) is considered Moderate. The residual cumulative effect is considered Slight Adverse following mitigation measures implementation such as adherence to environmental good practice, legislation and regulations and the CEMP. **Surface Water:** The construction and operational phase of the landside infrastructure may result in potential spillages on site which may affect nearby surface water courses, including the North Beck catchment. However, the site will be operated in accordance with environmental legislation, regulations and good practice. The significance (effect) is considered Moderate / Large Adverse. The	Neutral to Neutral / Slight Adverse	None	Neutral to Neutral / Slight Adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						residual cumulative effect is considered Neutral / Slight Adverse through adherence to environmental legislation, regulations, good practice and CEMP. **Groundwater:** During the construction phase, groundwater beneath the Immingham Green Energy Terminal site and the IERRT project site may be a potential receptor. Piles may create preferential pathways to the Principal Aquifer for migration of potential contaminants may migrate vertically and laterally. During the operational phase, potential spillages from the pipelines and storage tanks may result in contaminant migration to superficial deposits/aquifers Where piled foundations are required, best practice guidance for piling, including the use of piling method statements and proposed mitigation measures to protect the aquifer from potential pollution. During the operational phase, the site will be operated in accordance with existing environmental legislation, regulations and good practice. The significance (effect) is considered Moderate / Large Adverse for the Principal bedrock aquifer and Slight Adverse for the superficial aquifers. The residual cumulative effect is considered Neutral / Slight Adverse.			
				Air quality	Yes	Potential for significant cumulative effects on local air quality, due to the proximity of the Immingham Green Energy Terminal application site to the proposed IERRT project, shared receptors and pollutants. The projects have a common access route via Kings Road and Queens Road which will be used during the construction and operational phases of both projects for HGV access. Construction phase and operational phase traffic data on the local road network due to the Immingham Green Energy Terminal have been reviewed against air quality impact screening criteria published by the Institute of Air Quality Management/Environmental Protection UK and criteria published by National Highways. During both construction and operational phases, additional traffic movements due to the Immingham Green Energy Terminal fall below all air quality impact screening criteria. The effect of the proposed IERRT project on air quality is not significant and total pollutant concentrations with the IERRT project in operation remain well below the air quality objective values. Given that the additional movements from the Immingham Green Energy Terminal fall below the screening criteria and the fact that with the IERRT project in operation total pollutant concentrations remain well below the air quality objectives, it can be concluded that the cumulative effects of both projects on air quality from additional traffic movements, when considered together, are not significant. During operation the site plant and vessel emissions from construction and operational phases of IERRT and the Immingham Green Energy Terminal would both generate emissions to air that could impact on the same locations within the Humber Estuary SAC/SPA/Ramsar. Habitats within the designated areas close to IERRT and the Immingham Green Energy Terminal are not considered sensitive to construction dust impacts. Saltmarsh habitat, the nearest of which is approximately 3 km from IERRT and 2.5 km from the Immingham Green Energy Terminal, are sensitive to emissions of NOx and the subsequent deposition of nitrogen. Individually, air quality assessments for both projects have concluded that the air quality effect on saltmarsh habitats is not significant, and this lowers the potential for a significant cumulative effect to arise. However, this conclusion cannot be confirmed until further information on the Immingham Green Energy Terminal application is available.	N/A	N/A	N/A

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
				Noise and vibration	Yes	Potential for significant cumulative effects on noise and vibration due to the proximity of the Immingham Green Energy Terminal application site to the proposed IERRT project. Potential cumulative effects may arise from an increase in road traffic on Queens Road and the A1173, and to a lesser extent by distant activities related to loading and unloading of sea vessels and use of new parking/waiting areas within the existing port area. It is considered that the cumulative effects of noise from traffic using Queens Road, if operation of IERRT coincided with construction of the Immingham Green Energy Terminal, remains at minor adverse or less (not significant), given the proposed installation of an appropriate package of noise insulation to the northern facades of the properties associated with the IERRT proposals. However, there is the potential for cumulative effects of noise from IERRT operational traffic on Queens Road impacting the northern façade of these properties (albeit reduced due to the package of sound insulation to be provided in association with the IERRT proposals) whilst construction or operation of the Immingham Green Energy Terminal on the West site could impact the southern (rear) facades of the same properties. As the precise construction methods and construction programme for the Immingham Green Energy Terminal have not yet been finalised, nor the operational noise impact assessment, it is not possible to provide an accurate assessment of the cumulative effects relating to noise. A further consideration is the hydrogen production facility which is part of the Immingham Green Energy Terminal project which may result in a requirement to discontinue the residential use of seven properties on the west side of Queens Road. In the event that these properties were no longer occupied an adverse effect from noise and vibration would no longer arise.	Uncertain	Immingham Green Energy Terminal to manage construction and operational noise impacts on Queens Road properties.	Uncertain
				Cultural heritage and marine archaeology	Yes	Cumulative impacts from direct and indirect impacts for the proposed IERRT project would be negligible as direct disturbance or damage will be mitigated for through the implementation of a Written Scheme of Investigation (WSI), including a Protocol for Archaeological Discoveries (PAD) to mitigate against any new discoveries. The project is unlikely to cause noticeable changes to hydrodynamic and sediment transport regimes and therefore no cumulative impacts are anticipated for cultural heritage and marine archaeology.	N/A	N/A	N/A
				Socio-economic receptors	Yes	Both the Immingham Green Energy Terminal and IERRT projects have the potential to result in additional employment and a changing influx of workers during the construction phases for up to 24 months. The creation of construction employment is considered a beneficial impact and will contribute to the local economy and labour market. The influx of workers could lead to an adverse effect as a cumulative effect, with more workers required to temporarily reside in the local area. Due to the potential for construction phases to overlap for up to 24 months, a cumulative effect could arise in regard to impacts on existing businesses due to additional marine and landside works in this phase. However, this is not expected to cause any further impacts as the environment will be successfully managed by ABP to ensure congestion and scheduling do not affect businesses.	Moderate beneficial (employment), negligible (changing influx), negligible (impacts on existing businesses).	None	Moderate beneficial (employment, minor adverse (changing influx), negligible (impacts on existing businesses).
				Traffic and transport	Yes	Potential for significant cumulative effects on noise and vibration due to the proximity of the Immingham Green Energy Terminal application site to the proposed IERRT project. Operational HGV movements for the Immingham Green Energy Terminal project are 195 HGVs movements per day predicted during peak construction	Insignificant	None	Insignificant

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						phase and 84 HGV movements per day during the operational phase. With the proposed mitigation measures the effect of the proposed IERRT project on traffic and transport is not significant. Given this, it is considered unlikely that a cumulative effect would arise between the two projects in a scenario when IERRT is operational and the Immingham Green Energy Terminal project is either in construction or operation. If the construction phases of the two projects overlap the risk of a cumulative effect is not considered likely to be significant due to the limited predicted construction phase impact from the Immingham Green Energy Terminal project and the introduction and management of the traffic for both projects through Construction Traffic Management Plans.			
				Land use planning	No	The proposed Immingham Green Energy Terminal will be located to the east of the port and is anticipated to be an upper tier Control of Major Accidents and Hazards (COMAH) establishment due to the hazards associated with ammonia and hydrogen. Whilst these new hazards may add slightly to the risks for people at the IERRT, the current understanding indicates that the Immingham Green Energy Terminal proposal would not be such as to lead the HSE to advise against the granting of Hazardous Substances Consent – i.e., the risks at any existing development in the vicinity of the Immingham Green Energy Terminal (including the IERRT) will not increase to an unacceptable level. This will need to be confirmed by the HSE when a formal Hazardous Substances Consent application is made for the Immingham Green Energy Terminal.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A
58.	**South Humber Bank Energy Centre** **Consenting organisation:** National Infrastructure Planning **Developer:** EP Waste Management Limited **Description and location of the project:** The construction and operation of an energy from waste plant of up to 95 megawatts gross capacity and associated development including an electrical connection, landscaping and access. **Application date and approval (where relevant):** DCO consent granted 10/11/21. Application for Corrections Order granted 5/4/22. **Approx. size of the project:** 23 ha	Approx. 3.8 km	Tier 1: Projects with development consent not yet implemented	Physical Processes	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to physical processes.	N/A	N/A	N/A
				Water and sediment quality	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to water and sediment quality.	N/A	N/A	N/A
				Nature conservation and marine ecology	Yes	There is the potential for cumulative effects with respect to the following pathways in relation to marine ecology: • Change to marine habitats as a result of changes to air quality; and • Visual and noise disturbance during construction. **Change to marine habitats**: The stack height has been designed to avoid impacts from air pollutants at sensitive ecological receptors (saltmarsh). Based on the calculations the assessment concludes that there are no significant adverse effects.	Minor adverse	None	Minor adverse

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	Construction, operation and decommissioning timescales: Subject to consent being granted for the DCO application, construction was planned to commence in Q2 2020 taking approximately three years to complete with the Additional Works being constructed approximately half way through the same construction period. It is assumed that given the application for a Corrections order that the planned start of construction has been delayed.					**Airborne visual and noise disturbance:** There is the potential for the IERRT project along with the South Humber Bank Energy Centre to cause cumulative effects in term of visual and noise disturbance to coastal waterbirds which are present on the field to the south of the site, but this will be mitigated for by changing the type of piling technique or applying seasonal timing restrictions to drop hammer piling. On this basis, given the proposed mitigation for both projects, it is concluded that the potential for any adverse cumulative effects on coastal waterbirds would be avoided. Appropriate mitigation measures will be secured through the DCO/CEMP and will be followed during construction of the IERRT project and therefore cumulative effects are considered to be at worst **minor** and not significant.			
				Commercial and recreational navigation	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to commercial and recreational navigation.	N/A	N/A	N/A
				Coastal protection, flood risk and drainage	Yes	It is anticipated that even if there were overlap between the construction of this scheme and the IERRT project, given the proposed mitigation for both schemes there are no anticipated cumulative effect on any receptors affected by the IERRT project.	N/A	N/A	N/A
				Ground conditions, including land quality	Yes	There is potential for cumulative effects with respect to: • Human health; • Surface water; and • Groundwater. **Human Health (occupiers of residential and commercial properties and adjacent site workers):** The human health of residents and adjacent site workers in the surrounding area to the IERRT project site and South Humber Bank Energy Centre site may be affected during the construction phase. Nearby residents and adjacent site workers may be affected by off-site migration of vapour, dust and contaminated groundwater during construction. The significance of this effect is considered Moderate. The residual cumulative effect is considered Slight Adverse following the implementation of mitigation measures adherence to environmental good practice, legislation, regulations and CEMP. **Surface Water:** The construction and operational phase of South Humber Bank Energy Centre may result in potential spillages of fuel which may affect nearby surface water courses, including the North Beck catchment. The significance (effect) is considered Moderate / Large Adverse. The residual cumulative effect is considered Neutral / Slight Adverse as it is assumed that the environmental legislation, regulations, good practice and the CEMP will be adhered to during construction and operation phases. **Groundwater:** The groundwater within the superficial deposits may be affected by potential spillages of fuel during the construction phase and operational phase which may migrate to the superficial aquifers. The significance (effect) is considered to be Slight Adverse for the superficial aquifers. The residual cumulative effect is considered Neutral.	Neutral to Neutral / Slight Adverse	None	Neutral to Neutral / Slight Adverse
				Air quality	Yes	Some potential for significant cumulative effects on local air quality, due to the proximity of the South Humber Bank Energy Centre application site from the proposed IERRT project, shared receptors and pollutants. There are no significant cumulative adverse effects on air quality during construction from the IERRT or the South Humber Bank Energy Centre. Predicted concentrations of air pollutants at ground level due to emissions from the stacks during	Minor adverse	None	Minor adverse

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						operation of the Humber Bank Energy Centre have been calculated and used to determine the appropriate height of stacks. Most sensitive habitats considered in the assessment of the IERRT project are located 5 km or more away from the South Humber Bank Energy Centre site and the contribution from the IERRT project and South Humber Bank Energy Centre site at these locations is minimal. The exception to this is an area of saltmarsh habitat within 1 km to the northeast of the South Humber Bank Energy Centre site. At this location, the impact of the IERRT project is less than 1% of the relevant air quality objective and Critical Load (receptor SAC2). The proposed South Humber Bank Energy Centre development will operate in accordance with BAT and regulated by the Environment Agency which will include measures to minimise the impacts of emissions. It is reasonable to assume that the planning application process has identified a proportionate level of mitigation to do likewise for Humber Bank Energy Centre. A minor adverse residual cumulative effect is concluded.			
				Noise and vibration	No	Unlikely to have any cumulative effects on noise and vibration due to the distance between the IERRT project and the South Humber Bank Energy Centre.	N/A	N/A	N/A
				Cultural heritage and marine archaeology	Yes	Cumulative impacts from direct and indirect impacts for the proposed IERRT project would be negligible as direct disturbance or damage will be mitigated for through the implementation of a Written Scheme of Investigation (WSI), including a Protocol for Archaeological Discoveries (PAD) to mitigate against any new discoveries.	N/A	N/A	N/A
				Socio-economic receptors	Yes	Both the South Humber Bank Energy Centre and IERRT projects have the potential to result in additional employment and a changing influx of workers during the construction phases for up to 36 months. The creation of construction employment is considered a beneficial impact and will contribute to the local economy and labour market. The influx of workers could lead to an adverse effect as a cumulative effect, with more workers require to temporarily reside in the local area.	Moderate beneficial (employment), negligible (changing influx)	None	Moderate beneficial (employment), minor adverse (changing influx)
				Traffic and transport	Yes	The Transport Assessment for the IERRT project sets out future traffic data flows derived using Tempro growth factors, and specific committed developments. This development is included as one of those specific committed developments.	Insignificant	None	Insignificant
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A
59.	**VPI Immingham B OCGT** **Consenting organisation:**	Approx. 5 km	Tier 1: Projects with development	Physical Processes	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as	N/A	N/A	N/A

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	National Infrastructure Planning **Developer:** VP Immingham B Limited **Description and location of the project:** The construction and operation of a new Open Cycle Gas Turbine ('OCGT') Power Station of up to 299 megawatts ('MW') gross output and associated development including gas and electrical connections. **Application date and approval (where relevant):** DCO consent granted 07/08/20. Application for a non-material change submitted 14/10/22. **Approx. size of the project:** 3 ha **Construction, operation and decommissioning timescales:** Subject to consent being granted for the DCO application, construction of the Proposed Development was scheduled for Q1 2021. However, it is assumed that given the application for a non-material change that the planned start of construction has been delayed. The shortest construction and commissioning programme would be approximately 24 months		consent not yet implemented			the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to physical processes.			
				Water and sediment quality	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to water and sediment quality.	N/A	N/A	N/A
				Nature conservation and marine ecology	Yes	There is the potential for cumulative effects with respect to potential change to marine habitats as a result of changes to air quality. The proposed VPI Immingham B OCGT development is located within 1.5 km of receptor SAC1, which represents a section of saltmarsh habitat within the SAC. At that location, the effect of the IERRT project has been screened as insignificant as the contribution of IERRT emissions accounts for less than 1% of the relevant air quality objective and Critical Load. The proposed VPI Immingham B OCGT development will operate in accordance with BAT and regulated by the Environment Agency which will include measures to minimise the impacts of emissions. It is reasonable to assume that the planning application process has identified a proportionate level of mitigation to do likewise for VPI Immingham B OCGT development. In light of the above, a minor adverse residual cumulative effect is concluded.	Minor adverse	None	Minor adverse
				Commercial and recreational navigation	No	No marine works are proposed as part of this terrestrial development. Therefore, no cumulative effects are anticipated as the project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to commercial and recreational navigation.	N/A	N/A	N/A
				Coastal protection, flood risk and drainage	No	Unlikely to have a cumulative effect on coastal protection, flood risk and drainage, due to distance between the IERRT project and the VPI Immingham B OCGT development.	N/A	N/A	N/A
				Ground conditions, including land quality	No	There are no cumulative effects anticipated as the VPI Immingham B OCGT development falls outside of the IERRT ZoI for the ground conditions and land quality topic. It is not considered that there is an overlap between the IERRT ZoI for the ground conditions and land quality and the project's ZoI for this topic.	N/A	N/A	N/A
				Air quality	Yes	Some potential for significant cumulative effects on local air quality, due to the proximity of the VPI Immingham B OCGT development application site from the proposed IERRT project, shared receptors and pollutants. There are no significant cumulative adverse effects on air quality during construction from the IERRT or the VPI Immingham B OCGT development. Predicted concentrations of air pollutants at ground level due to emissions from the stacks during operation of the VPI Immingham B OCGT development have been calculated and used to determine the appropriate height of stacks. However, most sensitive habitats considered in the assessment of the IERRT project are located 5 km or more away from the VPI Immingham B OCGT site and the contribution from the IERRT project and VPI Immingham B OCGT site at these locations is minimal. The exception to this is an area of saltmarsh habitat within 1.5 km to the north of the VPI Immingham B OCGT. At this location, the impact of the IERRT project is less than 1% of the relevant air quality objective and Critical Load (receptor SAC1) The proposed VPI Immingham B OCGT development will operate in accordance with BAT and regulated by the Environment Agency which will include measures to minimise the impacts of emissions. It is reasonable to assume that the planning application process has	Minor adverse	None	Minor adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						identified a proportionate level of mitigation to do likewise for VPI Immingham B OCGT development. A minor adverse residual cumulative effect is concluded.			
				Noise and vibration	No	Unlikely to have a cumulative effect on noise and vibration, due to distance between the IERRT project and the VPI Immingham B OCGT development.	N/A	N/A	N/A
				Cultural heritage and marine archaeology	No	No effects are anticipated at this distance.	N/A	N/A	N/A
				Socio-economic receptors	Yes	Both the VPI Immingham B OCGT development and IERRT projects have the potential to result in additional employment and a changing influx of workers during the construction phases for up to 24 months and a minor increase in employment opportunities during operation. The creation of construction employment is considered a beneficial impact and will contribute to the local economy and labour market. The influx of workers could lead to an adverse effect as a cumulative effect, with more workers require to temporarily reside in the local area.	Moderate beneficial (employment), negligible (changing influx)	None	Moderate beneficial (employment), minor adverse (changing influx)
				Traffic and transport	Yes	As the precise construction methods and construction programme for the VPI Immingham B OCGT development have not yet been finalised, it is not possible to provide an accurate assessment of the cumulative effects relating to traffic and transport. That said, it is anticipated that construction traffic will be the main impact and therefore temporary. Overall flows will be below the operational assessments undertaken in any event.	Insignificant	None	Insignificant
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A
60.	**North Killingholme Power Project** **Consenting organisation:** National Infrastructure Planning **Developer:** C.GEN Killingholme Limited **Description and location of the project:** The proposal is for a new thermal generating station that will operate either as a Combined Cycle Gas Turbine (CCGT) plant or as an Integrated Gasification Combined Cycle (IGCC) plant, with a total electrical output of up to 470 mWe. **Application date and approval (where relevant):**	Approx. 8 km	Tier 1: Projects with development consent not yet implemented	Physical processes	Yes	There is the potential for cumulative effects with respect to the following elements in relation to the physical processes chapter: • Changes to hydrodynamics (flows and waves); and • Changes to sediment transport pathways. **Changes to hydrodynamics:** The marine elements of the proposed North Killingholme Power Project are located approximately 8 km up-estuary of the IERRT location. In between the two schemes is the infrastructure associated with the Immingham Eastern and Western jetties, the Immingham Outer Harbour and the Humber international Terminal. The assessment for IERRT indicates that the extent of change to hydrodynamics and waves does not extend up-estuary to the North Killingholme Power Project location. It is likely that any changes to the hydrodynamics and waves (in the direction of the IERRT) will be tempered by the existing port infrastructure described above. Consequently, it is considered unlikely that any in-combination effects will be generated.	Negligible exposure to change	None	Negligible exposure to change

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	DCO consent granted 11/09/14. Amendment Order issued 17/09/21. **Approx. size of the project:** The Principal Project Area (108.2 ha); the Electrical Grid Connection Land (92.9 ha); and the Gas Connection Land (84.8 ha). **Construction, operation and decommissioning timescales:** The timeframe for development the commence has been extended to October 2026.					**Changes to sediment transport pathways**: As described above, it is considered unlikely that any in-combination effects on hydrodynamics will develop from the construction and operation of both IERRT and the North Killingholme Power Project works. Since these are the driving forces of the local sediment transport pathways, it is further considered unlikely that any in-combination effects will develop in relation to this element.			
				Water and sediment quality	Yes	In relation to water and sediment quality, there is the potential for cumulative effects with respect to increased suspended sediment concentrations and changes to dissolved oxygen and chemical water quality as a result of seabed disturbance during piling. Any changes would cause highly localised and temporary changes in suspended sediment levels (and related changes in sediment bound contaminants and dissolved oxygen) which is considered unlikely to produce adverse effects. On this basis and given the distance and that water quality effects as part of the IERRT project were assessed as insignificant to minor adverse, cumulative effects are also anticipated to be insignificant to minor adverse.	Insignificant to minor adverse	None	Insignificant to minor adverse
				Nature conservation and marine ecology	Yes	There is the potential for cumulative effects with respect to the following pathways in relation to marine ecology: • Change to marine habitats (both direct physical change and indirect effects from changes to air quality); • Underwater noise; and • Airborne visual and noise disturbance. **Change to marine habitats (physical)**: The North Killingholme Power Project involves the construction of an intake and piling within the existing footprint of the Killingholme Ports jetty. The DCO requires the scheme to be approved by the MMO prior to construction. Given that consent has been granted it is considered that impacts from the North Killingholme Power Project have been adequately mitigated. On this basis and given that changes to marine habitats as part of the IERRT project were assessed as insignificant to minor, cumulative effects are anticipated to be negligible. **Change to marine habitats (air quality)**: The North Killingholme Power Project will operate in accordance with BAT and regulated by the Environment Agency which will include measures to minimise the impacts of emissions. The assessment of the North Killingholme Power Project concluded no significant effects on habitats from emissions during construction or operation. It is reasonable to assume that given consent has been granted for this project that there is a proportionate level of mitigation. A minor adverse residual cumulative effect is concluded. **Underwater noise:** Underwater noise generated during piling required as part of the IERRT project along with construction of the intake and piling for the North Killingholme Power Project have the potential to result in cumulative effects on fish (including diadromous migratory species) and marine mammal receptors in the Humber Estuary. Piling noise has the potential to cause injury effects in fish and marine mammals within close proximity to the piling activity and strong behavioural responses over a wider area of the Humber estuary for both projects. Both projects will require similar mitigation to help minimise potential adverse effects (such as soft start procedures, timing restrictions to avoid sensitive periods for migratory fish and the use of marine mammal observers). Without mitigation potential cumulative effects are considered to be moderate adverse. With the application of mitigation, the residual cumulative effect is minor adverse.	Minor adverse	None	Minor adverse

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						Airborne visual and noise disturbance: There is the potential for the IERRT project along with North Killingholme Power Project to cause cumulative effects in term of visual and noise disturbance to coastal waterbirds. However, given the mitigation proposed for both projects which includes soft start procedures and timing restrictions to avoid sensitive periods, it is considered that the impacts are likely to result in mild disturbance responses and short term displacement. The works are located 8 km from IERRT and therefore would affect different local populations. It is assumed that both projects will be subject to controls by the statutory bodies to avoid the potential for any adverse cumulative effects on marine ecology receptors. Appropriate mitigation measures will be secured through the DCO/CEMP and will be followed during construction of the IERRT project and therefore cumulative effects are considered to be at worst **minor** and not significant			
				Commercial and recreational navigation	Yes	The only cumulative effect relevant from a commercial and recreational navigation perspective is the increased utilisation of the estuary as a result of greater vessel traffic during construction of the North Killingholme Power Project. Existing embedded controls already in place for IMM and HES Marine Safety Management Systems mitigate risks associated with vessel movements on the estuary to an ALARP state already.	Insignificant	None	Insignificant
				Coastal protection, flood risk and drainage	No	Unlikely to have a cumulative effect on coastal protection, flood risk and drainage, due to distance between the IERRT project and the North Killingholme Power Project.	N/A	N/A	N/A
				Ground conditions, including land quality	No	There are no cumulative effects anticipated as the North Killingholme Power Project falls outside of the IERRT ZoI for the ground conditions and land quality topic. It is not considered that there is an overlap between the IERRT ZoI for the ground conditions and land quality and the project's ZoI for this topic.	N/A	N/A	N/A
				Air quality	Yes	Some potential for significant cumulative effects on air quality. The assessment for the North Killingholme Power Project found no risk of exceedances for the majority of pollutants but considered the potential for an increase in nitrogen deposition which show a maximum impact around 1 km north-east of the stack. The model showed maximum impacts on NOx are >1% of the critical level in all scenarios, and the total concentration exceeds critical level, however project-specific monitoring has shown that the Defra and Air Pollution Information System (APIS) datasets overestimated NOx in the vicinity of the facility and that total concentrations are therefore likely to be below the critical level. Some of the sensitive saltmarsh habitat within the SAC that were considered in the assessment of the IERRT project will also experience a contribution from emissions associated with the North Killingholme Power Project. The impact of the IERRT project on annual nitrogen deposition rates at these habitats accounted for less than 1% of the Critical Load. The impact of the IERRT project on annual mean concentrations of NOx exceeded 1% of the air quality objective at some sections of the saltmarsh habitat on the northern shore of the estuary. The proposed North Killingholme Power Project will operate in accordance with BAT and will be regulated by the Environment Agency which will include measures to minimise the impacts of emissions. It is reasonable to assume that the planning application process has identified a proportionate level of mitigation to do likewise for North Killingholme Power Project. A minor adverse residual cumulative effect is concluded.	Minor adverse	None	Minor adverse
				Noise and vibration	No	Unlikely to have a cumulative effect on noise and vibration, due to distance between the IERRT project and the North Killingholme Power Project.	N/A	N/A	N/A

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
				Cultural heritage and marine archaeology	No	No effects are anticipated at this distance.	N/A	N/A	N/A
				Socio-economic receptors	Yes	Both the North Killingholme Power Project and IERRT projects have the potential to result in additional employment and a changing influx of workers during the construction phases and a minor increase in employment opportunities during operation. The details of the increase for the North Killingholme Power Project are not known however the creation of construction employment is considered a beneficial impact and will contribute to the local economy and labour market. The influx of workers could lead to an adverse effect as a cumulative effect, with more workers require to temporarily reside in the local area.	Moderate beneficial (employment), negligible (changing influx)	None	Moderate beneficial (employment), minor adverse (changing influx)
				Traffic and transport	Yes	As the precise construction methods and construction programme for the North Killingholme Power Project have not yet been finalised, it is not possible to provide an accurate assessment of the cumulative effects relating to traffic and transport. That said, it is anticipated that construction traffic will be the main impact and therefore temporary. Overall flows will be below the operational assessments undertaken in any event.	Insignificant	None	Insignificant
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A
61.	**Humber Stallingborough Phase 3 Project** **Consenting organisation:** Marine Management Organisation and North East Lincolnshire Council **Developer:** Environment Agency **Description and location of the project:** The Environment Agency is promoting a flood defence project between Stallingborough and Grimsby. The amount of publicly available information on the project is presently limited as it is still in the relatively early stages of planning and environmental assessment. The flood defence works will comprise refurbishment and upgrades to the defences between Stallingborough and Grimsby to protect the frontage for the next 25 years, as well as upgrades to four outfalls to improve access for maintenance and tidal integrity. Along the northern portion of the defence approximately 1.5 – 2 m granite rocks will be	Approx. 2 km	Tier 3: Projects identified in other plans and programmes (as appropriate) which set the framework for future development consents/ approvals, where such development is reasonably likely to come forward	Physical Processes	Yes	There is the potential for cumulative effects with respect to the following elements in relation to the physical processes chapter: • Changes to hydrodynamics (flows and waves); and • Changes to sediment transport pathways. **Changes to hydrodynamics:** The marine elements of the proposed Humber Stallingborough Phase 3 works are located approximately 2 km down-estuary of the IERRT location. In between the two schemes is the infrastructure associated with the Immingham Oil Terminal. The assessment for IERRT indicates that the extent of change to hydrodynamics and waves does not extend down-estuary to the Humber Stallingborough Phase 3 works location. Whilst an assessment of the potential change from the Humber Stallingborough Phase 3 works together with the IERRT project has not been undertaken, it is considered likely that any changes to the hydrodynamics and waves (in the direction of the IERRT) will be small in magnitude and limited in extent (as a result of the nature of the works), whilst also tempered by the existing port infrastructure described above. Consequently, it is considered unlikely that any in-combination effects will be generated. **Changes to sediment transport pathways**: As described above, it is considered unlikely that any in-combination effects on hydrodynamics will develop from the construction and operation of	Negligible exposure to change	None	Negligible exposure to change

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
	placed above and on the toe of the current revetment. Further south towards Grimsby, rock placement at the toe of the revetment and resealing is required. Ornithological data in this area of the Humber Estuary suggests bird usage is higher towards the southern section of the frontage. **Application date and approval (where relevant):** Not yet submitted **Approx. size of the project:** Unknown **Construction, operation and decommissioning timescales:** It is anticipated that construction will be undertaken over two seasons between April and October in 2023 and 2024. A third year of construction in 2025, between April and October, may also be required if sufficient progress has not been achieved in the first two years. The intention is to complete the works to the northern section of the frontage in the first season and complete the works to the southern section of the frontage in the second season.					both IERRT and the Humber Stallingborough Phase 3 works. Since these are the driving forces of the local sediment transport pathways, it is further considered unlikely that any in-combination effects will develop in relation to this element.			
				Water and sediment quality	Yes	In relation to water and sediment quality, there is the potential for cumulative effects with respect to increased suspended sediment concentrations and changes to dissolved oxygen and chemical water quality as a result of seabed disturbance. Any changes would cause highly localised and temporary changes in suspended sediment levels (and related changes in sediment bound contaminants and dissolved oxygen) which is considered unlikely to produce adverse effects. On this basis and given that water quality effects as part of the IERRT project were assessed as insignificant to minor adverse, cumulative effects are also anticipated to be insignificant to minor adverse.	Insignificant to minor adverse	None	Insignificant to minor adverse
				Nature conservation and marine ecology	Yes	There is the potential for cumulative effects with respect to the following pathways in relation to marine ecology: • Loss/change to marine habitats; • Water quality; • Underwater noise; and • Visual and noise disturbance. **Loss/change to marine habitats:** The revetments works will be restricted to the upper foreshore with the effects of the marine works for the IERRT project largely restricted to subtidal habitats. Any indirect effects resulting from the IERRT project on intertidal habitats in the vicinity of Humber Stallingborough Phase 3 Project (located approximately 2 km away) will be negligible. **Water quality:** Any potential impacts on water quality resulting from the Humber Stallingborough Phase 3 Project (such as increased suspended sediment levels) will be highly localised, temporary and of a magnitude not expected to cause any adverse reactions in marine species. Potential water quality impacts of the IERRT project were assessed as insignificant. **Underwater noise:** Potential underwater noise effects on marine ecology receptors (invertebrates, fish and marine mammals) are expected to be negligible as a result of the revetment project. This is because revetment construction is typically undertaken when the revetment footprint is not inundated with sea water (i.e., remains in the air) which limits underwater noise propagation. Even assuming some noise propagation, the low noise levels associated with this type of coastal defence activity will at worst produce underwater noise levels that will be barely discernible above background conditions and unlikely to cause any behavioural reactions in marine species (even in very close proximity). The residual effects of the IERRT project with respect to underwater noise have been assessed as minor with appropriate mitigation measures in place. **Visual and noise disturbance:** There is the potential for the IERRT project along with the Stallingborough Phase 3 Project to cause cumulative effects in term of visual and noise disturbance to coastal waterbirds along the foreshore if disturbing activities associated with each of the construction programmes are being undertaken concurrently. This could reduce the amount of foreshore available with limited disturbance stimuli in the local area. However, the Stallingborough Phase 3 Project will not be undertaken during the winter period (between October and March) which will help minimise potential disturbance effects associated	Minor adverse	None	Minor adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						with this project. In order to reduce potential waterbird disturbance effects associated with the IERRT project a range of mitigation measures are proposed. It is assumed that both projects will be subject to controls by statutory bodies to avoid the potential for any adverse cumulative effects on marine ecology receptors. Appropriate mitigation measures will be secured through the DCO/CEMP and will be followed during construction of the IERRT project and therefore cumulative effects are considered to be at worst **minor** and not significant.			
				Commercial and recreational navigation	No	There are no cumulative effects anticipated as the Humber Stallingborough Phase 3 Project development falls outside of the IERRT ZoI for commercial and recreational navigation.	N/A	N/A	N/A
				Coastal protection, flood risk and drainage	Yes	There is the potential for cumulative effects with respect to the following elements in relation to the coastal protection, flood risk and drainage chapter: • Changes to tidal water levels; and • Changes to erosion/accretion rates on the foreshore. **Changes to tidal water levels:** As noted in Physical Processes (above) assessment indicates that the extent of change to hydrodynamics and waves does not extend down-estuary to the Humber Stallingborough Phase 3 works location. Consequently, it is considered unlikely that any in-combination effects with regards to changes in tidal levels will be generated. **Changes to erosion/accretion rates on the foreshore**: it is considered unlikely that any in-combination effects on hydrodynamics will develop from the construction and operation of both the IERRT project and the Humber Stallingborough Phase 3 works. Since these are the driving forces of the local sediment transport pathways, it is further considered unlikely that any in-combination effects with regards changes in erosion/accretion rates along the foreshore will develop in relation to this element.	Neutral	None	Neutral
				Ground conditions, including land quality	No	There are no cumulative effects anticipated as the Humber Stallingborough Phase 3 Project development falls outside of the IERRT ZoI for the ground conditions and land quality topic. It is not considered that there is an overlap between the IERRT ZoI for this ground conditions and land quality and the project's ZoI for this topic	N/A	N/A	N/A
				Air quality	Yes	There is the potential for cumulative effects on local air quality. Activities associated with Environment Agency scheme may have emissions to air that could coincide with proposed IERRT emissions and effect shared receptors. Due to the location of Environment Agency scheme emission sources, shared receptors are limited to air quality sensitive habitats within the Humber Estuary Special Area of Conservation, namely the area of saltmarsh at Stallingborough. The proposed IERRT project does not impact on the nearest saltmarsh habitats to the extent that the effect is significant. Any emissions associated with the Environment Agency scheme will be limited due to the number of emission sources and intermittent and temporary nature of their operation. It is considered unlikely that a significant cumulative effect will occur, due to the insignificant effect of the of the proposed IERRT project, as reported in Chapter 13 of the ES, and the likely limited	Minor adverse	None	Minor adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						scale of emissions to air associated with the Environment Agency scheme.			
				Noise and vibration	No	Unlikely to have any cumulative effects on noise and vibration due to the distance between the IERRT project and the Humber Stallingborough Phase 3 Project.	N/A	N/A	N/A
				Cultural heritage and marine archaeology	Yes	No cumulative effects anticipated as project is not considered to share a source-pathway-receptor linkage with the IERRT project in relation to cultural heritage and marine archaeology.	N/A	N/A	N/A
				Socio-economic receptors	Yes	There is potential for the construction phases of the IERRT and Humber Stallingborough projects to overlap in April to October of 2024 and 2025. Both projects are expected to generate employment and produce a changing influx of workers during this phase. The creation of construction employment will be a beneficial cumulative impact for the local economy. The influx of workers could lead to an adverse cumulative effect, with more workers required to temporarily reside in the local area	Moderate beneficial (employment), negligible (changing influx)	None	Moderate beneficial (employment), minor adverse (changing influx)
				Traffic and transport	Yes	No operational traffic will be generated. Most construction material is likely to be brought in by sea. As the precise construction methods, traffic and construction programme for the Humber Stallingborough Phase 3 Project have not yet been finalised, it is not possible to provide an accurate assessment of the cumulative effects relating to traffic and transport. That said, it is anticipated that construction traffic will be the main impact and therefore temporary. Overall flows will be below the operational assessments undertaken in any event.	Insignificant	None	Insignificant
				Land use planning	No	There are no cumulative effects anticipated as the project will not affect the levels of major hazard risk in the vicinity.	N/A	N/A	N/A
				Climate change	Yes	The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A
N/A	**Summary of potential for inter-project effects as a result of all other projects/developments/activities**	N/A	N/A	Physical processes	N/A	There is the potential for cumulative effects with respect to the following pathways in relation to physical processes: • Changes to hydrodynamics (flows and waves); and • Changes to sediment transport pathways. The assessment for IERRT indicates that the extent of change to hydrodynamics and sediment transport is predicted to be small in magnitude and highly localised in extent. Therefore, the exposure to change resulting from inter-project effects is considered to be negligible.	Negligible exposure to change	None	Negligible exposure to change
				Water and sediment quality		Where the potential for cumulative effects have been identified in relation to water and sediment quality, there is the potential for increased suspended sediment concentrations and changes to dissolved oxygen and chemical water quality as a result of seabed	Insignificant to minor adverse	None	Insignificant to minor adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						disturbance. Any changes would cause highly localised and temporary changes in suspended sediment levels (and related changes in sediment bound contaminants and dissolved oxygen) which is considered unlikely to produce adverse effects. On this basis and given that water quality effects as part of the IERRT project were assessed as insignificant to minor adverse, cumulative effects are also anticipated to be insignificant to minor adverse.			
				Nature conservation and marine ecology		There is the potential for cumulative effects with respect to the following pathways in relation to marine ecology: • Change to marine habitats; • Water quality; • Underwater noise; and • Airborne visual and noise disturbance. Most predicted effects as a result of the IERRT project are anticipated to be relatively localised, temporary and low magnitude. Potentially adverse significant effects have been assessed with respect to underwater noise (on diadromous migratory fish and marine mammals) and disturbance to waterbirds. However, residual effects of the IERRT project with respect to these pathways have been assessed as minor with the proposed mitigation measures. All projects will be subject to controls by the statutory bodies to avoid the potential for any adverse cumulative effects on marine ecology receptors. Appropriate mitigation measures will be secured through the DCO/CEMP and will be followed during construction of the IERRT project and therefore cumulative effects are considered to be at worst **minor** and not significant.	Minor adverse	N/A	Minor adverse
				Commercial and recreational navigation		Where the potential for cumulative effects have been identified, existing embedded controls already in place for IMM and HES Marine Safety Management Systems mitigate risks associated with vessel movements on the estuary to an ALARP state already.	Insignificant	None	Insignificant
				Coastal protection, flood risk and drainage		There is the potential for cumulative effects with respect to the following elements in relation to coastal protection, flood risk and drainage: • Changes to tidal water levels; • Changes to erosion/accretion rates on the foreshore; and • Increase in surface water run-off rates/volumes. Most predicted effects as a result of the IERRT project are anticipated to be relatively localised, temporary and low magnitude. Potentially adverse significant effects have been assessed with respect to changes in surface water run-off rates and volumes generated from new areas of hardstanding which affects water levels and flood risk associated with Habrough Marsh Drain and capacity issues with surface water drainage infrastructure. However, residual effects of the IERRT project with respect to these pathways have been assessed as Neutral to Slight Beneficial with the proposed mitigation measures. All projects will be subject to controls by the statutory bodies to avoid the potential for any adverse cumulative effects on coastal protection, flood risk and drainage receptors. Appropriate mitigation measures will be secured through the DCO/CEMP and will be followed during construction of the IERRT project and therefore cumulative effects are considered to be at worst **minor** and not significant.	Neutral / Slight Beneficial	None	Neutral / Slight Beneficial
				Ground conditions, including land quality		There is the potential for cumulative effects with respect to the following receptors: • Human health; • Surface water; and • Groundwater.	Neutral to Neutral / Slight Adverse	None	Neutral to Neutral / Slight Adverse

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						Human Health (occupiers of residential and commercial properties and adjacent site workers): The human health of residents and adjacent site workers between, and in the surrounding area of the IERRT project site and the proposed inter-project sites may be affected during the construction phase by off-site migration of vapour, dust and contaminated groundwater . The significance (effect) is considered Moderate. The residual cumulative effect is considered Slight Adverse following mitigation measures implementation and adherence to environmental good practice, legislation and regulations and CEMP. **Surface Water:** The IERRT Project and inter-project sites may affect potential receptors such as nearby surface watercourses, including the North Beck catchment. The significance (effect) is considered Moderate / Large Adverse. The residual cumulative effect is considered Neutral / Slight Adverse. **Groundwater:** The superficial and bedrock aquifers are identified as shared receptors for all inter-project sites. The superficial aquifers may be a potential receptor to contamination via vertical migration pathways and lateral migration pathways towards the IERRT project site. The bedrock aquifer may be a potential receptor to contamination, particularly where piled foundations are required. The significance (effect) is considered Moderate / Large Adverse for the Principal bedrock aquifer and Slight Adverse for the superficial aquifers. The residual cumulative effect is considered Neutral / Slight Adverse.			
				Air quality		There is the potential for cumulative effects to occur where there are shared receptors and pollutants between the proposed IERRT project and other nearby schemes. Chapter 13 of the ES demonstrates that the proposed IERRT project does not have a significant effect on air quality. The scale, location and nature of emission sources associated with the other schemes suggests that they will not affect air quality at shared receptors to the extent that cumulative effects would be significant, where data for such schemes is currently available.	Minor adverse	None	Minor adverse
				Noise and vibration		There is the potential for some cumulative noise effects if there are simultaneous construction works. However, given the generally localised nature of noise effects associated with the construction of each scheme, and provided each scheme complies with any assigned noise and vibration limits and follows the general guidance contained within BS 5228-1 with respect to noise mitigation, it is considered unlikely that significant cumulative construction noise effects will occur at nearby receptors. There also potential for cumulative operational noise effects, however provided each scheme complies with any operational noise limits or planning conditions/requirements to protect residential amenity it is considered unlikely that significant cumulative operational noise effects will occur at nearby receptors. Cumulative operational road traffic noise effects have already been included in the road traffic noise assessment reported in Chapter 14 Noise and Vibration.	Minor adverse	None	Minor adverse
				Cultural heritage and marine archaeology		Direct and indirect physical impacts on marine archaeology will in most cases be limited by the location and extent of sensitive receptors. None of the listed projects are located within the proposed IERRT project and therefore marine receptors will not be affected by direct disturbance or damage.	N/A	N/A	N/A

ID	Application / Project Details	Distance from IERRT project	Tier	Environmental Topic	Within Topic ZOI?	Assessment of Potential Significant Cumulative Effects	Significance of Effect	Mitigation	Residual Cumulative Effect
						None of the listed projects are anticipated to cause noticeable changes to hydrodynamic and sediment transport regimes. Due to the proposed embedded mitigation such as the implementation of Archaeological Exclusion Zones (AEZs), archaeological reporting protocols and other best-practice elements, most effects will be avoided, particularly to known receptors identified on, in or beneath the seabed. Therefore, any cumulative impacts from direct and indirect impacts from other projects would be negligible and not significant.			
				Socio-economic receptors		If there were overlap between the IERRT project construction phase and the construction phase of other schemes, there could be some cumulative effects experienced. If construction phases were to overlap, it is expected that there could be a positive cumulative effect on employment, generating more employment in the local economy. This could also lead to an increase in the number of incoming construction workers that may need to stay in the local area. Available data suggests that the effect is likely to be negligible based on capacity within the housing market and proportion of construction workers expected to require accommodation. There is potential for adverse effects on existing businesses as a result of the cumulative indirect impacts of air quality, traffic and transport, and noise from other developments that may overlap with the IERRT project.	Moderate beneficial (employment), negligible (changing influx)	None	Moderate beneficial (employment), negligible (changing influx)
				Traffic and transport		The Transport Assessment for the IERRT project sets out future traffic data flows derived using Tempro growth factors, and specific committed developments. As such, it is considered that cumulative effects arising from the construction and operation of other committed development has been accounted for in the modelling.	N/A	N/A	N/A
				Land use planning		There are no cumulative effects anticipated as the listed projects will not increase major hazard risk in the vicinity to unacceptable levels.	N/A	N/A	N/A
				Climate change		The GHG assessment presented in Chapter 19 Climate Change is inherently cumulative. The receptor for GHG emissions is the global climate; as the effects of GHG emissions are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect on the atmosphere. The impacts and effects of GHG emissions are therefore global not local. The approach to inter project cumulative effects therefore differs for the GHG assessment compared to other EIA topics as all global cumulative GHG sources are relevant to the effect on climate change. As stated in IEMA Guidance there is no basis for selecting any particular project over any for the GHG cumulative assessment. The climate change resilience assessment considers the impact of climate change on the IERRT project itself. Inter project cumulative assessment is therefore not applicable.	N/A	N/A	N/A

20.6 Intra-project effects assessment

20.6.1 From a review of the topic assessments in the chapters of this ES and in accordance with the methodology outlined in this chapter, the following receptors have been identified as having impact pathways with residual adverse impacts:

- Water and sediment quality;
- Benthic habitats and species;
- Fish;
- Marine mammals;
- Coastal waterbirds;
- Local residents / population;
- Flood defences;
- Soils/groundwater;
- Existing development/property (building and services); and
- Proposed development.

20.6.2 An overview of the residual effects these receptors are predicted to experience is set out in Table 20.6.

20.6.3 The impact pathways identified within each topic chapter of this ES as having residual adverse impacts (i.e., minor adverse or greater) that have the potential to act on the same receptor are discussed and assessed below. For each receptor, the impact pathways with residual adverse impacts from across all topic chapters have been identified and the potential cumulative/in-combination effects assessed.

20.6.4 It should be noted that the GHG assessment provided in the Climate Change chapter (Chapter 19 of this ES) is inherently a cumulative assessment. This is because it considers impacts to the climate from the proposed development as a whole (i.e., emissions from a number of different sources throughout both construction and operation of the IERRT project are accounted for in the assessment). This assessment is considered comprehensive and includes a worst case within the defined assessment parameters. Therefore, no additional intra-project effects assessment is required within this chapter. The effects of climate change on different receptors in-combination with the other identified impact pathways within the EIA have already been assessed in each topic chapter of this ES through consideration of the future baseline.

Table 20.6. Receptors and environmental effects identified for inclusion in the intra-project effects assessment

Receptors	Construction impact pathways							Operational impact pathways						
	Dredging, piling and disposal	Underwater noise	Noise and visual disturbance	Invasive non-native species	Flood risk	Ground contamination	Noise and vibration	Dredging and disposal	Noise and visual disturbance	Invasive non-native species	Flood risk	Ground contamination	Noise and vibration	Traffic
Water and sediment quality	X					X		X						
Benthic habitats and species	X			X				X		X				
Fish		X												
Marine mammals		X												
Coastal waterbirds	X		X						X					
Human population / residents					X	X	X				X	X	X	X
Flood defences					X						X			
Soils / groundwater						X						X		
Existing development / property (building and services)						X	X				X	X	X	

Water and sediment quality

20.6.5 The residual impacts associated with the following impact pathways from the water and sediment quality assessment (Chapter 8) and the ground conditions, including land quality assessment (Chapter 12) have the potential to act on water and sediment quality:

- Changes to dissolved oxygen concentrations as a result of increased SSC during piling, capital dredging and disposal activities: **Insignificant to minor adverse**;
- Changes to dissolved oxygen concentrations as a result of increased SSC during the maintenance dredging and disposal activities: **Minor adverse**; and
- Spills and leakages from vehicles or stored materials into the Habrough Marsh Drain on the perimeter of the site and into the North Beck Drain Catchment / run-off from exposed ground and material stockpiles causing changes to water and sediment quality: **Neutral/slight adverse**.

20.6.6 Piling could potentially occur concurrently with capital dredging during construction which could result in potential cumulative effects on dissolved oxygen concentrations. However, the effects from piling are likely to be highly localised (see Chapter 7 of this ES). Furthermore, the physico-chemical quality element 'Dissolved oxygen' is currently, based on the 2019 interim classification, at high status in the Humber Lower transitional water body. It is therefore considered unlikely that dissolved oxygen concentrations will fall below the standards set under the Water Framework Directive (WFD) as a result of piling and dredging together.

20.6.7 Maintenance dredging and disposal during operation would not occur at the same time as capital dredging, piling and construction activities. Therefore, no cumulative effects on dissolved oxygen are anticipated.

20.6.8 Spills, leakages and run-off from exposed ground and material stockpiles are unlikely to impact dissolved oxygen concentrations in surface water. It is anticipated that earthworks will follow guidance such as CIRIA C741 Environmental good practice on site and appropriate measures will be in place to control runoff on site including temporary drainage measures and appropriate consents or permit for discharge of water to foul sewer or to watercourse, respectively.

20.6.9 It is anticipated that any spills or leakages, during construction or operation stage will take place on hardstanding and that the site operators will have procedures in place to control such occurrences. The site drainage system will also include oil interceptors and it is therefore unlikely spills and/ or leakages will reach surface water and impact on water and sediment quality.

20.6.10 Overall, there is limited potential for cumulative effects on dissolved oxygen concentrations in the Humber Estuary, Habrough Marsh Drain and North Beck Drain Catchment, and the drainage system will prevent contaminants

and sediment entering these waterbodies. Therefore, the intra-project effects on water and sediment quality are considered to be **insignificant**.

Benthic habitats and species

20.6.11 The residual impacts associated with the following impact pathways from the nature conservation and marine ecology assessment (Chapter 9) have the potential to act on benthic habitats and species:

- Changes to benthic habitats and species as result of the removal of seabed material during capital dredging: **Insignificant to minor adverse**;
- Introduction and spread of non-native species during construction: **Insignificant to minor adverse**;
- Changes to benthic habitats and species as result of seabed removal during maintenance dredging: **Insignificant to minor adverse**; and
- Non-native species transfer during vessel operations: **Insignificant to minor adverse**.

20.6.12 The capital dredge and ongoing maintenance dredging have the potential to result in cumulative effects on subtidal habitats and species with respect to habitat change. Following the cessation of capital dredging, a broadly similar benthic assemblage would be expected to occur as a result of recolonisation which would occur relatively quickly (with populations of infaunal species in the area known to fully re-establish in typically less than 1-2 years and for some species within a few months). However, the frequency of dredging required as part of the proposed maintenance dredging programme will mean that the seabed in the berths is likely to be disturbed on a regular basis once the proposed development is operational. This will, therefore, cause an ongoing source of seabed disturbance in these areas. However, a generally impoverished subtidal benthic community consisting of commonly occurring species was recorded in the dredge footprint which is likely to reflect the existing high levels of physical disturbance in the area due to strong near bed tidal currents and sediment transport.

20.6.13 Cumulative effects could also occur due to introduction and spread of non-native species during construction and operation. However, biosecurity control measures will be implemented during both phases to minimise the risk.

20.6.14 Following the impact assessment methodology, the probability of occurrence and of cumulative impact pathways interacting is considered to be high but the magnitude of change will be small at worst with the application of the proposed measures. The exposure to change is, therefore, assessed as low. Given the overall low to moderate sensitivity of benthic habitats and species with the mitigation measures in place, and their moderate to high importance (depending on the nature conservation value of individual habitats and species), the potential cumulative and in-combination effects are assessed as **insignificant to minor adverse** and not significant.

Fish

20.6.15 The residual impacts associated with the following impact pathways from the nature conservation and marine ecology assessment (Chapter 9) have the potential to act on fish:

- Underwater noise disturbance and vibration during piling, capital dredging and dredge disposal: **Insignificant to minor adverse**.

20.6.16 Piling could potentially occur concurrently with capital dredging during construction which could result in potential cumulative underwater noise effects on fish. However, capital dredging is only expected to cause behavioural reactions in a relatively localised area in the vicinity of the dredger and is expected to be of a similar magnitude to noise from maintenance dredging vessels and ships operating in the local area. Furthermore, any cumulative/in-combination effects on fish will be temporary, only occurring for the duration of construction, and the baseline situation will fully return upon cessation of the works.

20.6.17 Following the impact assessment methodology, the probability of occurrence of a cumulative effect is considered to be high but the magnitude of change will be small at worst with the application of the proposed piling mitigation measures. The exposure to change is, therefore, assessed as low. Given the overall low to moderate sensitivity of fish with the mitigation measures in place, and their low to high importance (depending on the nature conservation and/or commercial value of individual species), the potential cumulative and in-combination effects are assessed as **insignificant to minor adverse** and not significant.

Marine mammals

20.6.18 The residual impacts associated with the following impact pathways from the nature conservation and marine ecology assessment (Chapter 9) have the potential to act on marine mammals:

- Underwater noise disturbance and vibration during piling, capital dredging and dredge disposal: **Minor adverse**.

20.6.19 Piling could potentially occur concurrently with capital dredging during construction which could result in potential cumulative underwater noise effects on marine mammals. However, capital dredging is only expected to cause behavioural reactions in a relatively localised area in the vicinity of the dredger and is expected to be of a similar magnitude to noise from maintenance dredging vessels and ships operating in the local area. Furthermore, any cumulative/in-combination effects on marine mammals will be temporary, only occurring for the duration of construction, and the baseline situation will fully return upon cessation of the works.

20.6.20 Following the impact assessment methodology, the probability of occurrence of a cumulative effect is considered to be high but the magnitude of change will be small at worst with the application of the proposed piling mitigation measures. The exposure to change is, therefore, assessed as low. Given the overall low to moderate sensitivity of marine mammals with the mitigation measures in place, and high importance (depending on the nature conservation and/or commercial value of individual species), the potential cumulative and in-combination effects are assessed as **insignificant to minor adverse** and not significant.

Coastal waterbirds

20.6.21 The residual impacts associated with the following impact pathways from the nature conservation and marine ecology assessment (Chapter 9) have the potential to act on coastal waterbirds:

- Noise and visual disturbance during construction: **Minor adverse**;
- Direct changes to foraging and roosting habitat as a result of the presence of infrastructure during operation: **Minor adverse**; and
- Disturbance of waterbirds during operation: **Minor adverse**.

20.6.22 There is the potential for cumulative effects related to the changes in habitat as a result of the presence of infrastructure along with potential disturbance during operation. However, it is acknowledged that such effects are likely to be interrelated to some extent. Some waterbirds (such as Turnstone) would be expected to feed below or very close to the approach jetty and other infrastructure. Some limited local avoidance is also considered possible for other species (such as Shelduck or Black-tailed Godwit) (i.e., directly underneath or in close proximity) irrespective of operational disturbance stimuli. Operational disturbance responses are expected to be relatively limited although intermittent and localised responses could potentially occur, particularly during initial operation when birds are likely to be less habituated to the new activity.

20.6.23 Based on the information provided above, the probability of avoidance responses occurring due to both the presence of structures and operational disturbance stimuli is considered to be high. However, responses are expected to be limited to relatively localised area around berthing infrastructure. Magnitude and consequently exposure to change is, therefore, likely to be small when considered cumulatively. Given the moderate sensitivity of some species and as importance is high because of the protection afforded to coastal waterbirds, the potential cumulative and in-combination effects are assessed as **minor adverse** and not significant.

Human population / residents

20.6.24 The residual impacts associated with the following assessment topics: coastal protection, flood defence and drainage assessment (Chapter 11), ground conditions, including land quality assessment (Chapter 12), noise

and vibration assessment (Chapter 14), and traffic and transport assessment (Chapter 17) have the potential to act on humans:

- Exposure of people on-site to floodwater via flooding from predominantly tidal sources e.g., overtopping or breach of defences (during construction): **Slight adverse**;
- Exposure of people on-site to floodwater via flooding from predominantly tidal sources e.g., overtopping or breach of defences (during operation): **Slight adverse**;
- Exposure of people on-site to vapour, dust, and contaminated groundwater, and direct contact with contaminated soil during construction: **Slight adverse**;
- Exposure of people on-site to contaminants, vapour, dust, and contaminated groundwater during operation: **Neutral/ slight adverse**;
- Noise from on-site activities affecting NSRs within the site/ Port of Immingham during construction: **Negligible to minor adverse**;
- Road-traffic noise affecting NSRs on Queens Road during construction: **Minor adverse**;
- Noise from on-site activities affecting NSRs within the site/ Port of Immingham and on Kings Road and Queens Road during operation: **Minor adverse or less**;
- Road-traffic noise affecting NSRs on Queens Road during operation: **Moderate/ major adverse** although mitigation to reduce internal noise levels would reduce the impact to **not significant**;
- Severance affecting people on Queens Road during operation: **Insignificant/ minor adverse**;
- Driver delay affecting drivers on local roads between the IERRT project site and the A180 during operation: **Insignificant/ minor adverse**;
- Pedestrian delay and amenity affecting people on Queens Road during operation: **Insignificant/ minor adverse**; and
- Fear and intimidation affecting people on Queens Road during operation: **Insignificant/ minor adverse**.

20.6.25 On-site human receptors may be affected by exposure to floodwater, vapour, dust, contaminated groundwater, direct contact with contaminated soil, and noise from on-site activities during construction. The greatest of these individual impacts is assessed to be minor adverse. Vapour, dust and contamination-related impacts will be managed in accordance with the CEMP (Application Reference Document number 9.2). The combined effect of all these impacts acting together is not considered to be greater than **minor adverse** and **not significant**.

20.6.26 On-site human receptors may be affected by exposure to floodwater, vapour, dust, contaminated groundwater, and noise from on-site activities during operation. The greatest of these individual impacts is assessed to be minor adverse. The combined effect of all these impacts acting together is not considered to be greater than **minor adverse** and **not significant**.

20.6.27 Off-site human receptors that could experience combined effects during construction from road traffic noise and traffic impacts (severance, driver

delay, pedestrian delay and amenity, and fear and intimidation) are those located on Queens Road. The greatest of these individual impacts is assessed to be minor adverse, and the combined effect of all these impacts acting together is not considered to be greater than **minor adverse** and **not significant**.

20.6.28 Off-site human receptors that could experience combined effects during operation from road traffic noise, noise from on-site activities and traffic impacts (severance, driver delay, pedestrian delay and amenity, and fear and intimidation) are those located on Kings Road and Queens Road. The greatest of these individual impacts is assessed to be moderate/ major adverse (which could be reduced to minor adverse through mitigation), and the combined effect of all these impacts acting together is not considered to be greater than **minor adverse** and **not significant**.

20.6.29 No other off-site human receptors assessed in this ES would be impacted by more than one impact pathway (i.e., traffic) so no combined effects on these receptors have been identified.

Flood defences

20.6.30 The residual impacts associated with the following impact pathways from the coastal protection, flood defence and drainage assessment (Chapter 11) have the potential to act on flood defences:

- Changes in tidal regime e.g., wave heights, water levels, erosion/deposition due to dredging/ construction activities: **Slight adverse**; and
- Changes in tidal regime e.g., wave heights, water levels, erosion/deposition due to dredging and offshore development: **Slight adverse**.

20.6.31 There is not considered to be an intra-project effect with regards to flood defences from changes in tidal regime e.g., wave heights, water levels, erosion/deposition due to dredging and offshore development (during construction and operation).

Soils / groundwater

20.6.32 The residual impacts associated with the following impact pathways from the ground conditions, including land quality assessment (Chapter 12) have the potential to act on soils and groundwater:

- Changes to hydrogeological regime / mobilisation of contaminants into groundwater during construction / vertical migration of spills and leakages / increases in rainwater infiltration through changes in ground cover: **Neutral/ slight adverse**;
- Potential mobilisation of existing contaminants via dust generation or exposure of soil during construction: **Neutral/ slight adverse**; and

- Accidental spills resulting from handling or leakage of fuels, lubricants, stored chemicals and processed liquids during operation: **Neutral/ slight adverse**.

20.6.33 None of the residual impacts described above are significant in isolation. Whilst effects on soils and groundwater may be inter-related, soils and groundwater are different receptors so the two construction impacts listed above would not act in combination on a single receptor. **No intra-project effects** on soils and groundwater receptors are therefore identified for the construction phase.

20.6.34 Contamination effects during construction and operation could act cumulatively on soils and groundwater receptors, but the combined effect is not considered to be any more significant than the effects of each stage in isolation (**neutral/ slight adverse** and **not significant**). Effects are also unlikely to occur given the implementation of mitigation measures such as the CEMP and the design of the IERRT project.

Existing development / property (building and services)

20.6.35 The residual impacts associated with the following impact pathways from the coastal protection, flood defence and drainage assessment (Chapter 11), ground conditions, including land quality assessment (Chapter 12), and noise and vibration assessment (Chapter 14) have the potential to act on existing development and property:

- Floodplain inundation from tidal flooding, new overland flow routes and from fluvial/ surface water sources during operation on- and off-site: **Slight adverse**;
- Accumulation of ground gas on site during construction: **Neutral/ slight adverse**; and
- Exposure to contaminants in soil, leachate, groundwater on site and accumulation of ground gas on site during operation: **Neutral/ slight adverse**.

20.6.36 There are no potential combined effects on existing development/ property during construction as only one neutral/ slight adverse residual effect is identified.

20.6.37 The same on-site receptors could be affected by flooding, exposure to contaminants and ground gas during operation. Floodplain inundation and overland flow routes may result in the increased mobilisation of contaminants in soil, leachate and groundwater, which may affect the existing development and property. However, it is anticipated that concrete and service pipes appropriate for any aggressive ground conditions will be used. Ground gas protection measures will also be implemented into building design which will mitigate the risk to the proposed development from the accumulation of ground gas. The intra cumulative effect is considered to be **Neutral/ slight adverse** and **not significant.**

20.7 References

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20.8 Abbreviations/Acronyms

Acronym	Definition
AA	Appropriate Assessment
ABP	Associated British Ports
AEZs	Archaeological Exclusion Zones
ALARP	As Low As Reasonably Practicable
AMEP	Able Marine Energy Park
ANPR	Automatic Number Plate Recognition
APIS	Air Pollution Information System
ARN	Affected Road Network
BAT	Best Available Techniques
CCGT	Combined Cycle Gas Turbine
CEA	Cumulative Effects Assessment
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CEMP	Construction Environmental Management Plan
CIRIA	Construction Industry Research and Information Association
COMAH	Control of Major Accidents and Hazards
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport

DTA	David Tucker Associates
EC	European Commission
EEC	European Economic Community
EfW	Energy From Waste
EIA	Environmental Impact Assessment
ERF	Energy Recovery Facility
ES	Environmental Statement
EU	European Union
GHD	Grab Hopper Dredger
GHG	Greenhouse Gas
ha	Hectare(s)
HDD	Horizontal Directional Drilling
HES	Humber Estuary Services
HGV	Heavy Good Vehicle
HIT	Humber International Terminal
HPF	Hydrogen Production Facility
HRA	Habitats Regulations Assessment
HSE	Health and Safety Executive
IDB	Internal Drainage Board
IEMA	Institution for Environmental Management and Assessment
IERRT	Immingham Eastern Ro-Ro Terminal
IGCC	Integrated Gasification Combined Cycle
IMM	Immingham
LSE	Likely Significant Effect
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMO	Marine management Organisation
MPS	Marine Policy Statement
N/A	Not Applicable
NELC	North East Lincolnshire Council
NPSfP	National Policy Statement for Ports
NSIP	Nationally Significant Infrastructure Project
NSRs	Noise Sensitive Receptors
OCGT	Open Cycle Gas Turbine
OSPAR	Oslo and Paris Convention
OtSMRS	Outstrays to Skeffling Managed Realignment Scheme
PAD	Protocol for Archaeological Discoveries

PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
Ramsar	Wetlands of international importance, designated under The Convention on Wetlands (Ramsar, Iran, 1971)
Ro-Ro	Roll-on/Roll-off
SAC	Special Area of Conservation
SPA	Special Protection Area
SSC	Suspended Sediment Concentrations
TSHD	Trailer Suction Hopper Dredger
UK	United Kingdom
VTS	Vessel traffic Services
WFD	Water Framework Directive
WSI	Written Scheme of Investigation
ZoI	Zone of Influence

Cardinal points/directions are used unless otherwise stated.

SI units are used unless otherwise stated.

20.9 Glossary

Term	Definition
Cumulative/in-combination effects	Additional or modified effects on receptors as a result of interactions between the individual impacts of the proposed development and/or the proposed development and other plans, projects, and ongoing activities
Inter-project effects	Cumulative and/or in-combination effects of the proposed development with other plans, projects, and ongoing activities on the same receptor
Intra-project effects	Cumulative and/or in-combination effects of the proposed development alone acting on the same receptor

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