

5 APPROACH TO THE EIA

The purpose of EIA is to provide an independent assessment of a project's potential environmental impacts to enable authorities, and the public, to understand the potential impacts before making decisions on whether consent for the development should be granted. This section sets out the approach for the assessment of impacts which has been adopted within this EIA Report. In summary, this section presents:

- A summary of the EIA process.
- A summary of the consultation undertaken in relation to the proposed scheme and how issues raised have been addressed through the EIA process.
- The results of the scoping exercise undertaken to define the issues to be addressed by the EIA process and the approach to be taken to the assessment of these issues.
- The approach adopted to define the baseline environment (specific details are provided for each environmental topic considered in the relevant chapter).
- The generic approach taken to assess potential impacts, including the evaluation of significance (where a different approach has been adopted for a specific topic, this is set out in the relevant chapter).
- The generic approach taken to the derivation of mitigation measures and the assessment of residual impacts.
- The approach taken to the assessment of cumulative impacts with other plans and projects.
- The approach taken to WFD compliance assessment.
- The approach taken to the HRA.

5.1 The EIA process

EIA is an iterative tool for systematically examining and assessing the impacts and effects of the construction, operation and decommissioning phases of the proposed scheme on the environment. The formal reporting mechanism for an EIA is the EIA Report. In accordance with Schedule 3 of the 2007 Regulations (as amended), the EIA Report should include such information as is reasonably required to assess the likely significant environmental effects of the proposed scheme and which the applicant can reasonably be required to compile, including:

- A description of the project and of the regulated activity, in particular:
 - A description of the location of the project.
 - A description of the physical characteristics of the whole project and regulated activity.
 - A description of the main characteristics of the operational phase of the project and the regulated activity.
 - An estimate of expected residues and emissions resulting from operation of the proposed project and the regulated activity.
- A description of the reasonable alternatives studied by the applicant which are relevant to the proposed project, the regulated activity and their specific characteristics, and an indication of the main reasons for selecting the chosen option.
- A description of the relevant aspects of the current state of the environment (baseline scenario), and an outline of the likely evolution thereof without implementation of the project.
- A description of the factors specified in Regulation 21A(2)(a) to (e) likely to be significantly affected by the project and the regulated activity: population, human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage and landscape.
- A description of the likely significant effects of the project and the regulated activity on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects of the project.

- A description of the forecasting methods or evidence used to identify and assess the significant effects on the environment including any difficulties encountered.
- A description of the measures envisaged to avoid, prevent, reduce or if possible offset any identified significant adverse effects on the environment and where appropriate any proposed monitoring arrangements.
- A description of the expected significant adverse effects of the project and the regulated activity on the environment deriving from the vulnerability of the project and the regulated activity to risks of major accident or disaster which are relevant to the project.
- A non-technical summary of the information provided under this part of the EIA Regulations.
- A reference list detailing the sources used for the description and assessments included in the report.

The following stages were included in this EIA:

- Review of scoping opinions previously issued by the MMO and RCBC.
- Consultation with stakeholders.
- Desk-based data collection to establish the baseline environment.
- New data collection and surveys (where necessary) to supplement desk-based information and to fill any data gaps.
- Impact identification and the evaluation of significance.
- The identification of mitigation measures (where required) to reduce the significance of, or avoid, any identified adverse impacts.
- The evaluation of impacts, post-mitigation, to determine the significance of residual impacts.
- The assessment of cumulative impacts with other past, present and reasonably foreseeable future developments and plans.
- Identification of appropriate monitoring requirements.

5.1.1 Screening

An agreement was previously reached between a third party and the MMO to undertake an EIA for a proposed scheme very similar to that which is the subject of this report under the Marine Works (Environmental Impact Assessment) Regulations 2007, as amended. In addition, RCBC issued a Scoping Opinion in June 2019 to the aforementioned third party which confirmed that various environmental assessments would be required in support of a planning application and the outputs presented in an Environmental Statement (ES).

On this basis, STDC has undertaken an EIA for the proposed scheme voluntarily under the Marine Works (Environmental Impact Assessment) Regulations 2007, as amended, and the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, without submitting a formal EIA Screening Request.

5.1.2 Scoping

As noted above, RCBC issued a Scoping Opinion in June 2019 and the MMO issued a Scoping Opinion in August 2019; these Scoping Opinions were issued to a third party for a scheme which was very similar to that which is the subject of this report.

A scoping note was submitted in July 2020 to the MMO and RCBC to inform discussions regarding the validity of the 2019 Scoping Opinions to inform this EIA (see **Appendix 2**). The scoping note presented the following information:

- A comparison of the key marine elements of the proposed scheme with that previously proposed in 2019.
- A commentary on the reasons that the Scoping Opinions provide adequate direction on the scope of the EIA for the proposed scheme in light of the preferred option for the berth length, alignment and structural concept for the quay structure.
- A summary of the Scoping Opinions previously issued by the MMO and RCBC.
- The key elements of the proposed approach to the marine EIA for each environmental parameter.

Meetings were held with RCBC in July 2020 and the MMO in August 2020 to confirm the scope of environmental assessment which was proposed within the scoping note. In summary both the MMO and RCBC confirmed that the proposed scope was acceptable. The MMO confirmed this through submission of a letter to our scoping enquiry in September 2020, and RCBC provided a scoping response in September 2020 (both within **Appendix 3**).

5.1.3 Description of the baseline environment

A wide range of information has been gathered and activities undertaken to define the baseline environment for the proposed scheme, including but not limited to the following:

- desk-based review of existing published data;
- data provided by consultees; and,
- field survey and site investigation information.

The term ‘baseline environment’ is used to describe the nature, scale, condition, and other relevant information to provide a detailed description of a given environmental receptor that falls within the scope of the EIA Report. Within this EIA Report, the description of the baseline environment consists of the following aspects:

- the spatial location and extent of the environmental features or receptors;
- a description of the environmental features or receptors and their character;
- the context of the environmental features or receptors in terms of rarity, function, and population at the local, regional and national level;
- the sensitivity of the environmental features or receptors in relation to physical, chemical or biological changes; and,
- the value of the environmental features or receptors (e.g. designated status).

Receptor ‘sensitivity’ and ‘value’ are considered further below.

Receptor sensitivity

All receptors will exhibit a greater or lesser degree of sensitivity to the changes brought about by the proposed scheme and defining receptor ‘sensitivity’ as part of the definition of the baseline environment helps to ensure that the subsequent assessment is transparent and robust. The sensitivity of a receptor is a function of its capacity to accommodate change and reflects its ability to recover if it is affected, and is defined by the following factors:

- Adaptability – the degree to which a receptor can avoid, adapt to or recover from an effect.
- Tolerance – the ability of a receptor to accommodate temporary or permanent change.
- Recoverability – the temporal scale over and extent to which a receptor will recover following an effect.

In order to define the sensitivity of a receptor, the guidelines presented in **Table 5.1** have been adopted in this EIA Report and the conclusions reached regarding the sensitivity of receptors has been presented in the baseline sections of each relevant environmental topic.

Table 5.1 *Generic guidelines used in the determination of receptor sensitivity and value*

Sensitivity	Description
Very high	Receptor has very limited or no capacity to accommodate physical or chemical changes or influences.
	Receptor possesses fundamental characteristics which contribute significantly to the distinctiveness, rarity and character of the resource, is of very high importance and rarity that is international in scale (e.g. designated sites such as SACs, SPAs, Ramsar Sites and Habitats Directive Annex II species), and has very limited potential for substitution / replacement).
High	Receptor has a limited capacity to accommodate physical or chemical changes or influences.
	Receptor possesses key characteristics which contribute significantly to the distinctiveness, rarity and character of the resource, is of high importance and rarity that is national in scale (e.g. designated sites such as SSSIs, NNRs, UK Biodiversity Action Plan (BAP) habitats and species, Scheduled Monuments, Grade I and II* Listed Buildings), and has limited potential for substitution / replacement.
Medium	Receptor has a limited capacity to accommodate physical or chemical changes or influences.
	Receptor possesses key characteristics which contribute to the distinctiveness and character of the resource, is of medium importance and rarity that is regional in scale (e.g. designated sites such as County Wildlife Sites (CWS), Grade II Listed Buildings, Local BAP), and has limited potential for substitution / replacement.
Low	Receptor has a moderate capacity to accommodate physical or chemical changes or influences.
	Receptor possess characteristics which are locally distinctive only, are of low to medium importance and rarity that is local in scale (e.g. designated sites such as Local Nature Reserves), and potentially can be substituted / replaced.
Very low	Receptor is generally tolerant of and can accommodate physical or chemical changes or influences.
	Receptor characteristics do not make a significant contribution to local character or distinctiveness, and are of very low importance and rarity, are not designated, and are easily substituted / replaced.

Value is defined as the measure of a receptor's importance; this forms part of the definition of sensitivity. In some instances, the inherent value of a receptor is recognised by means of designation, and the 'value' element of the composite criterion recognises and gives weight in the assessment to that designation. However, irrespective of the recognised value, all receptors will exhibit a greater or lesser degree of sensitivity to the potential changes brought about by the proposed scheme. It should be noted that the assessment of sensitivity is informed by a number of factors, including the findings of studies / monitoring / surveys as well as judgement applied by professional experts based on the receptors within the relevant study area.

5.1.4 Impact identification and assessment

The EIA has been undertaken within a framework that allows for a transparent approach to the assessment and the resulting conclusions presented within this EIA Report. This section sets out the assigned definitions that are used in the assessment process for a number of topics considered in the EIA Report. In addition, a description of the approach taken to the specific impact assessment for each environmental topic is provided (in each relevant chapter) so that it is clear to the reader how impacts have been defined, particularly where such an approach differs to that described within this section.

EIA provides an assessment of the impacts on sensitive receptors as a result of the effects of a development upon the environment. The terms 'effects' and 'impacts' have, in the past, been used interchangeably, but they are in fact different and one drives the other. Effects are physical changes in the environment that are set in motion as a consequence of a particular development or activity. Effects do not impact all receptors, as some receptors are not always sensitive to them.

Effects are measurable physical changes in the prevailing environment (e.g. volume, time and area) arising from construction and operation activities. Effects can be classified as primary (e.g. the physical presence of a built element of the development) or secondary (e.g. increase in erosion due to a change in the rate of discharge of surface water).

Impacts consider the possible changes in potentially sensitive receptors as a result of an effect. Impacts can be classified as direct or indirect, permanent or time-limited and beneficial or adverse.

The relationship between effects and impacts is not always straightforward. For example, a secondary effect may result in both a direct and indirect impact on a single receptor. Given this the EIA framework used herein is based on the 'source-pathway-receptor' conceptual model process used to provide a systematic and auditable approach to understanding the potential effects to arise, the spatial extents of the effect-receptor interactions, impact pathways, and potential impact significance. The conceptual '*source-pathway-receptor*' model is effective in the identification of potential effects and the means by which these can manifest themselves on the receiving environment and its sensitive receptors.

The term 'source' describes the origin of potential effects (e.g. construction activities) and the term 'pathway' describes the means (e.g. through air, water, or ground) by which the effect reaches the receiving sensitive 'receptor' (e.g. terrestrial habitats, archaeology and human receptors). If the source, pathway or receptor is absent, no linkage exists and thus there will be no potential for an impact to manifest.

For each effect, the assessment identifies receptors within the study area that are sensitive to that effect and implements a systematic approach to understand the impact pathways and the level of impacts on given receptors. The process considers the following:

- the magnitude of the effect;
- the sensitivity of a receptor to the effect;
- the probability that an effect-receptor interaction will occur;
- the determination and (where possible) qualification of the level of impact on a receptor, considering the probability that the effect-receptor interaction will occur, the spatial and temporal extents of the interaction and the significance of the resulting impact; and,
- the level of certainty at all stages.

The magnitude of effect

The magnitude of an effect is typically defined by four factors:

- Extent – the area over which an effect occurs.
- Duration – the time for which the effect occurs.
- Frequency – how often the effect occurs.
- Severity – the degree of change relative to existing environmental conditions.

In order to help define effect magnitude, the criteria presented in **Table 5.2** have been adopted for the purposes of this EIA. While this table provides guidelines of a generic nature, it should be noted that more

specific guidelines in relation to impact magnitude have been adopted for the topics assessed, where considered necessary.

Table 5.2 *Generic guidelines used in the determination of magnitude of effect*

Magnitude	Description
Very high	Loss of resource; severe damage to key characteristics, features or elements (Adverse). Permanent / irreplaceable change, which is certain to occur. Large scale improvement of resource or attribute quality; extensive restoration or enhancement (Beneficial).
High	Loss of resource; partial loss of or damage to key characteristics, features or elements (Adverse). Permanent / irreplaceable change, which is likely to occur. Improvement to, or addition of, key characteristics, features or elements of the resource; improvement of attribute quality (Beneficial).
Medium	Minor loss of, or alteration to, one (maybe more) key characteristics, features or elements; measurable change in attributes, quality or vulnerability (Adverse). Long-term though reversible change, which is likely to occur. Minor improvement to, or addition of, one (maybe more) key characteristics, features or elements of the resource; minor improvement to attribute quality (Beneficial).
Low	Very minor loss of, or alteration to, one (maybe more) key characteristics, features or elements; noticeable change in attributes, quality or vulnerability (Adverse). Short- to medium-term though reversible change, which could possibly occur. Very minor improvement to, or addition of, one (maybe more) key characteristic, feature or element; very minor improvement to attribute quality (Beneficial).
Very low	Temporary or intermittent very minor loss of, or alteration to, one (maybe more) characteristic, feature or element; possible change in attributes, quality or vulnerability (Adverse). Short-term, intermittent and reversible change, which is unlikely to occur. Possible very minor improvement to, or addition of, one (maybe more) characteristic, feature or element; possible improvement to attribute quality (Beneficial).

The determination and qualification of impact significance

The significance of an impact is determined by combining the predicted magnitude of the effect with the sensitivity of the receptor; for example, as defined in **Table 5.3**. Impact statements carry a degree of subjectivity, as they are based on expert judgement regarding the effect-receptor interaction that occurs and on available data. As such, impact statements should be qualified appropriately.

The probability of an effect occurring (i.e. an effect-receptor interaction) should also be considered in the assessment process; capturing the probability that the effect will occur and also the probability that the receptor will be present. For example, the magnitude of the effect and the sensitivity of the receptor may have been established, and it may be highly probable that the effect will occur; however, the probability that the receptor will be present at the same time should also be considered.

In the context of the EIA Regulations, 'significant impacts' are taken to be those of moderate or major significance (as defined above); albeit that appropriate mitigation, where available, should be sought for all impacts.

It should be reiterated that, although this section sets out the overall approach adopted for this EIA (using, for example, magnitude and sensitivity to determine the level of impact), individual sections may take their own approach where industry standard methodologies are appropriate or another approach has been agreed with the relevant regulator. Where a different approach is taken, this is explained in the relevant methodology section.

Table 5.3 *Impact assessment matrix*

Receptor sensitivity (inclusive of value)	Magnitude of effect				
	Very high	High	Medium	Low	Very low
Very high	Major	Major	Moderate	Moderate	Minor
High	Major	Moderate	Moderate	Minor	Negligible
Medium	Moderate	Moderate	Minor	Minor	Negligible
Low	Minor	Minor	Minor	Negligible	Negligible
Very low	Minor	Negligible	Negligible	Negligible	Negligible

Mitigation

Mitigation measures have been proposed, where available and practical, in those cases where adverse impacts have been identified. It is important to note that the mitigation measures applied should be proportionate to the scale of the impact predicted.

'*Mitigation through design*' is an important factor in ensuring that the environmental impacts of a proposed scheme are minimised. Through the development of the proposed scheme, and the iteration of the engineering and environmental impact studies, mitigation has been built into the design of the proposed scheme. Where significant impacts potentially remain, further issue-specific mitigation measures are defined.

Whilst mitigation for minor or negligible impacts may not be specifically defined as a matter of course, industry standard or 'embedded' mitigation often applies in these cases (and is set out herein). It is also recognised that minor and negligible impacts could become significant when considered cumulatively with other pressures on a receptor and, in this event, mitigation may be required.

With regard to the HRA (presented in Section 29), the recent ruling (April 2018) by the Court of Justice of the European Union (CJEU) referred to as *People Over Wind and Sweetman v Coillte Teoranta (C-323/17)* is relevant to the treatment of mitigation in HRA. The CJEU ruling determined that "...it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site". In the context of HRA, the phrase "...measures intended to avoid or reduce the harmful effects..." is interpreted as meaning any mitigation measures that are not clearly an intrinsic part of the design of a plan or project. The effect of this ruling is that mitigation measures, which are not clearly intrinsic to the proposed scheme design, have not been considered when determining likely significant effect (LSE) at the HRA screening stage.

Monitoring

Appropriate mitigation measures have been identified and recommended in this EIA Report where the EIA process has identified an adverse impact and mitigation is available (see above). In some cases, in order to ensure that the mitigation measures are successful or where there is significant uncertainty with respect to important receptors, monitoring requirements have been identified and are presented within the relevant topic chapters of this EIA Report.

Residual impacts

Where further mitigation measures are identified, the significance of the residual environmental impact (i.e. the post-mitigation impact) is assessed.

Assumptions and limitations

The EIA Regulations and relevant guidance require an EIA Report to provide an indication of any difficulties (technical deficiencies or lack of know-how) encountered during the assessment process. Any such assumptions or limitations are identified within the relevant topic chapter, where relevant.

The EIA Regulations also require that an EIA Report is prepared by competent experts. This EIA Report has been compiled by Royal HaskoningDHV, a company which is a corporate member of the Institute of Environmental Management & Assessment (IEMA) (number 0001189) and also a Corporate Registered Assessor for EIA under IEMA's voluntary EIA Quality Mark scheme. Through this scheme, EIA activity is independently reviewed, on an annual basis, to ensure it delivers excellence in areas including EIA management, team capabilities, regulatory compliance, content, presentation and improving practice.

5.1.5 Net gain / enhancement

In 2018, the Government sought views on proposals to improve the planning system in England to protect the environment. Consultation proposals for a mandatory requirement (to incorporate net gain into proposals) did not include nationally significant infrastructure project or marine projects (such as the marine elements of the proposed scheme).

After a period of consultation on a mandatory requirement for all new developments within the Town and Country Planning Act to deliver net gain for nature, the Government announced in March 2019 its favourable view on mandating biodiversity net gain for developments in England. This means that coastal and intertidal habitats will have to be considered to account for the whole regime of the Act, including the intertidal area down to the mean low water mark. Government advised in July 2019 that nationally significant infrastructure and net gain for marine development (meaning development under the Marine and Coastal Access Act, 2009) will remain out of scope of mandatory requirement in the Environment Bill.

The Chancellor also announced in 2019 that the Defra biodiversity metric 2.0 would be the mechanism used to calculate the amount of habitat creation or improvement needed to enable net gain in biodiversity. This metric has been developed for terrestrial habitats and was expanded to include coastal habitat. Natural England published a paper in April 2019 which presents a metric for intertidal habitat. Within this paper, Natural England (2019) states that net gain will be attained when the 'post-intervention' biodiversity units (i.e. the effect of implementation of habitat creation or improvement measures) are at least 10% higher than the original ('pre-intervention') biodiversity units, plus the predicted impact of the proposed scheme (i.e. loss of biodiversity units due to development).

STDC is in the process of developing a South Tees Regeneration Masterplan Environment & Biodiversity Strategy (the Strategy), which will define the works required to offset the loss of habitat arising as a result of works being proposed by STDC (including the proposed scheme which is the subject of this report). The extent and location of compensatory habitat creation and enhancements will be agreed with Natural England and RCBC. It is anticipated that the measures outlined in the Strategy will mean that the proposed scheme results in a biodiversity net gain.

5.1.6 Cumulative Impact Assessment

Impact inter-relationships

Council Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment (the EIA Directive) states that an EIA should identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following receptors:

- Population and human health.
- Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC.
- Land, soil, water, air and climate.
- Material assets, cultural heritage and the landscape.
- The interaction between the factors referred to above.

This EIA Report has given due consideration to the potential for different residual impacts to have a combined impact on key sensitive receptors. The objective is to identify where the accumulation of impacts on a single receptor, and the relationship between those impacts, potentially gives rise to a need for additional mitigation. Inter-relationships have been assessed within the relevant sections of the topic chapters of the EIA Report.

Cumulative impacts

In line with IEMA's Guidelines for EIA (2004), cumulative impacts are defined as: *"...the impacts on the environment which result from incremental impacts of the action when added to other past, present and reasonably foreseeable future actions ..."*

There is no legislation that outlines how cumulative impact assessments (CIAs) should be undertaken. However, the EIA and Habitats Directives and their associated regulations require the consideration of direct impacts and any indirect, secondary and cumulative effects of a project. Government guidance states that: "cumulative effects could refer to the combined effects of different development activities within the vicinity" (Department for Communities and Local Government, 2006, Paragraph 121).

The EIA Regulations do not define 'cumulative' but guidance on cumulative effects assessment is provided in a number of good practice documents (e.g. the European Commission, 1999). This guidance is not prescriptive, but rather suggests various approaches which may be used, depending on their suitability to the project (for example the use of matrices, expert opinion, consultation, spatial analysis and carrying capacity analysis).

A tiered approach has been adopted for the CIA, based upon the following definitions:

- Site-specific (or within-development) cumulative impacts - different effects associated with the proposed scheme have the potential to interact and, together, influence common receptors (e.g. noise and visual effects on ecology). Where applicable, these inter-relationships are considered in the CIA (in **Section 27**) and the HRA (**Section 29**).
- Wider cumulative impacts which are the combined impacts (additive or interactive) that may occur between the proposed scheme and any other relevant development(s).

With respect to 'past' projects, a useful ground rule in CIA is that the environmental impacts of schemes that have been completed should be included within the environmental baseline; as such, these impacts will be taken into account in the EIA process and, generally, can be excluded from the scope of CIA. However, the environmental impacts of recently completed projects may not be fully manifested and, therefore, the potential impacts of such projects should be taken into account in the CIA.

Project-wide and wider cumulative assessment has been documented within **Section 27**.