

CARDIGAN TIDAL FLOOD RISK MANAGEMENT SCHEME

Volume 1: Environmental Statement Chapter 4 – EIA Methodology

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4. EIA Methodology

4.1 Introduction

This chapter describes the general Environmental Impact Assessment (EIA) methodology applied throughout this Environmental Statement (ES).

Sections 4.4 and 4.5 outline the EIA Screening and Scoping approach for the Scheme. Where relevant legislation, planning policy or guidance applies to a specific chapter of the EIA, it has been discussed in full within the topic chapter.

Section 4.6 details the general impact assessment methodology applied throughout this ES. Where relevant guidance for individual topics stipulates a change to this methodology this is described in full within that chapter. Clearly outlining the methodology ensures consistency across the report and promotes transparency in how decisions are made. The EIA process involves a systematic procedure that assures the identified possible effects (positive or negative) are completely understood before a project development progresses.

Consultation with the public, statutory bodies and other relevant groups is an integral part of EIA. Chapter 2: Project Development provides a summary of the consultation undertaken to inform the design and content of this ES.

4.2 Legislative Context

The EIA Regulations relevant to the Scheme are:

- The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 as amended; and
- The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended).

4.3 EIA Process

The EIA process enables the early identification of potential environmental effects during the design development process and enables those effects to be avoided where possible through alternative design or construction methodologies. The EIA is a systematic process, including the following four principal stages:

- Screening: this involves identifying whether the project should be subject to an EIA.
- Scoping: this involves identifying the environmental receptors that may be subject to significant effects resulting from the project.
- Impact assessment: undertaking an assessment to identify the likely effects of the proposals and using set criteria to assess the significance of those effects. This allows the significance of the effects to be described, suitable mitigation to be developed and the resulting residual effects to be identified.
- Implementation: ensuring that essential mitigation identified through the impact assessment process is carried through to the construction and/or operational stages of the development.

The method for each of these stages, and where relevant the outcomes for the Scheme, are described in greater detail below.

4.4 Screening

The Scheme constitutes a Schedule 2 development under the Town and Country Planning EIA Regulations under Paragraph 10(h) '*Inland-waterway construction not included in Schedule 1, canalisation and flood-relief works*'.

Developments listed in Schedule 2 of the EIA Regulations, and that exceed a specified threshold, must be assessed to determine whether EIA is need based on whether a proposed development is likely, because of its size, nature or location, to have significant effects on the environment.

The applicable threshold for *Inland-waterway construction* is if the area of the works, including construction working areas, exceeds 1 hectare.

The Scheme constitutes a Schedule A2 development under the Marine Works EIA Regulations under Paragraph 64 '*Inland-waterway construction not included in Schedule A1, canalisation and flood relief works*'.

A Screening Opinion was requested from Ceredigion County Council (CCC) and the NRW Marine Licencing Team. Both CCC (Ref. Q230180, 14/11/2023) and the Marine Licencing Team (Ref. SC2303, 14/12/2023) confirmed that the Scheme comprises EIA development and therefore requires a statutory EIA.

4.5 Scoping

4.5.1 Scoping Process

Scoping is the second key stage of the EIA process. It is carried out to identify all potential environmental issues, and to determine those that are likely to result in significant effects and therefore require further detailed assessment in the Impact Assessment stage.

As part of the scoping process, an applicant has the option of seeking a Scoping Opinion from the competent authority (CA) to identify the information to be provided within the ES.

Where the CA has given a scoping opinion in relation to a project, the ES for that project need only address the matters specified in the scoping opinion. The aim is therefore to 'scope in' only those issues considered to have potential to give rise to likely significant effects either during construction or operation. Where suitable mitigation to avoid, reduce or remediate negative effects through construction are identified, that will reduce potentially significant effects to non-significant, these measures have been included in the Scheme design and have been scoped out of further assessment.

The scoping process for the Scheme involved multiple stages of correspondence with Ceredigion County Council and the NRW Marine Licencing team prior to reaching the final scoping opinion. The most recent scoping letter issued in August 2025 requested an update to the previous scoping opinions provided in December 2023.

A record of relevant correspondence during this process is outlined below.

4.5.2 Initial Scoping Opinion Request

- September 2023 – Combined screening and scoping request issued to Ceredigion County Council and the NRW Marine Licencing team.
- Response provided by Ceredigion County Council in December 2023 providing a scoping opinion.
- Response provided by the NRW Marine Licencing Team in December 2023 providing a scoping opinion.

4.5.3 Final Scoping Opinion Request

- July 2025 – Scoping letter issued to Ceredigion County Council and the NRW Marine Licensing Team requesting an update to the previous scoping opinions.
 - Requested that certain topics could be scoped out of the assessment on the basis of further information which was provided.
- October 2025 – Ceredigion County Council – Updated Scoping Response
 - Contained the final scoping opinion of the Local Planning Authority (LPA) in response to design changes and requests to scope out topics.
 - Provided responses as outlined within Table 4-1 commenting on whether certain effects and topics could be scoped out of the assessment.
 - Requested that a Land Use and Soils Chapter was also included within the ES.

Table 4-1 – Summary of October 2025 Scoping Response

Topic	Effect	Justification/decision	Removed from scope
Population and Human Health (Construction)	Potential for permanent negative effects due to the demolition of buildings	No negative effects expected – CCC agreed that no further assessment was required.	Yes
Population and Human Health (Operation)	Potential for negative effects to PRow due to flood detriment	Evidence provided by hydraulic modelling demonstrated that the proposed defences would cause no detriment to existing PRow routes – CCC agreed that no further assessment was required.	Yes
	Potential for permanent effects to river navigation from the sections of the Scheme encroaching into the river	No negative effects expected – CCC agreed that no further assessment was required, provided that the ES/CEMP contains sufficient detail to demonstrate how potential effects will be managed, as supported by the Navigational Risk Assessment.	Yes

Topic	Effect	Justification/decision	Removed from scope
Water Environment (Construction)	Impacts to water quality from construction related impacts (e.g., pollution, siltation)	Only negligible potential effects upon water quality based upon the construction methodology and assessment of the WFD Scoping report – CCC advised that scoping out water related effects may be premature and advised that a full WFD Compliance Assessment would be required, informed by a robust evidence-based physical processes assessment.	No
Water Environment (Operation)	Changes in flood risk	Only positive effects anticipated due to the nature of the development and evidence provided by the Hydraulic Modelling Report - CCC advised that scoping out water related effects may be premature and advised that a full WFD Compliance Assessment would be required, informed by a robust evidence-based physical processes assessment.	No
Land Use and Soil (Construction)	Potential impact due to mobilisation of existing contamination, including asbestos	Conclusions from the Contaminated Land Report highlighted that the possibility of significant harm to the identified receptors has not been proven at the site and is not likely to occur as a direct result of the construction of the Scheme – CCC requested the inclusion of a Land Use and Soil Chapter within the ES.	No
Air Quality (Construction)	Impact of dust generation	Considered that subject to implementation of dust prevention and mitigation measures as per the IAQM guidance through the CEMP and Dust Management Plan (DMP), further assessment would not be required – CCC welcomed the implementation of IAQM mitigation measures and agreed that scoping out may be acceptable subject to the DMP being enforceable.	Yes
	Impact of vehicular emissions on local air quality	Considered that construction of the Scheme would not generate sufficient HDV flows to warrant the need for further assessment – CCC agreed that scoping out may be acceptable but advised that the	Yes

Topic	Effect	Justification/decision	Removed from scope
		mitigation should not be considered sufficient until linked to the final design.	
Climate (Construction)	Construction of the flood defences will require use of natural resources i.e. construction material production and energy, which will result in the release of carbon emissions.	Considered that due to the relatively small scale of the Scheme and that it's construction would be unlikely to significantly contribute to climate change through the generation of emissions or use of natural resources. Sustainable material selection will be utilised to minimise embedded carbon and emissions. – CCC agreed that scoping out may be acceptable provided that the ES contains sufficient detail on design evolution and carbon reduction measures.	Yes
	Construction plant will result in carbon emissions	Considered that plant emissions will be minimised through the selection of sustainable, efficient plant – CCC agreed that scoping out may be acceptable provided that emission reduction measures are detailed within the ES.	Yes
Material Assets (Construction)	Installation of the proposed flood defences could have a temporary effect on utilities infrastructure.	The presence of utilities has been considered throughout the design development. Any impacts to utilities in the area are expected to be temporary and negligible as any disruptions will be limited – CCC accepted that impacts to utilities and demolition of one non-residential building are unlikely to result in significant effects. However, CCC requested that the ES should demonstrate how these matters have been considered in the final design and how any mitigation will be delivered through the CEMP.	Yes
	Potential demolition of buildings	No negative effects expected – CCC agreed that no further assessment was required.	Yes

A further scoping opinion was not received from NRW Marine Licencing Team following the July 2025 scoping letter, rather they referred back to their December 2023 scoping opinion. The October 2025 scoping opinion received from Ceredigion County Council aligns with that received from NRW Marine Licencing Team but requested some additional topics and effects be scoped in.

4.5.4 Topics Scoped In to the EIA

Following the scoping process, it is considered that the project has the potential to give rise to significant effects upon the following topics. These have therefore been assessed within this ES:

- Population and Human Health
- Biodiversity and Nature Conservation
- Historic Environment
- Landscape and Visual
- Traffic and Transport
- Water Environment
- Cumulative Effects.

Table 4-2 summarises the justification for topics which were scoped out of the EIA as a result of the scoping process. Whilst the project is not anticipated to give rise to significant effect upon these topics, where residual environmental risks have been identified appropriate mitigation has been incorporated into the Environmental Action Plan (EAP) (see Appendix 13.1).

Table 4-2 – Topics scoped out of EIA

Topic	Justification
Air Quality	Scoped out subject to enforceable Dust Management Plan.
Climate	Scoped out with sufficient detail on design evolution and carbon reduction.
Material Assets / Utilities / Demolition	Scoped out with mitigation secured via CEMP.
Population and Human Health (partial)	Demolition and PRow impacts scoped out.
Major Accidents and Disasters	Not considered likely to result in significant effects.

4.6 Impact Assessment

4.6.1 Scheme Area and Study Areas

The Scheme Area is defined by the area shown within Figure 1.1 of this ES. Study Areas are specific to the assessment methodology used within each topic chapter and are therefore defined within each chapter where necessary.

4.6.2 Description of Baseline and Future Baseline

The baseline is defined as the existing environmental, social and economic conditions of an area prior to the implementation of a development. The baseline serves as a reference point against which all potential effects of a proposed development will be measured.

The evolution of the future baseline section describes the likely natural evolution of the existing environment under baseline conditions (i.e. in the absence of the proposed development) and is used to provide context for the assessment of a proposed development.

The baseline environment and likely future evolution are described within each topic chapter.

4.6.3 Description of Effects and Embedded Mitigation

This ES reports the Likely Significant Effects of the Scheme and assesses their potential effect upon the environmental receptors identified in the baseline and which have been 'scoped in' to the assessment.

The description of effects provides a description of the Likely Significant Effects of the Scheme, taking account of mitigation measures that are inherent to, or embedded within, the Scheme design. The identification and description of effects at this stage reflects the evolution of the Scheme and the influence of design-led environmental considerations.

4.6.4 Assessment of Effects

The following general process has been followed to assess the significance of effects:

i) Determine the sensitivity of the environmental receptor / resource:

The sensitivity of the environmental receptor / resource is identified with consideration of its quality, relative abundance and/or level of statutory protection within the context of the existing baseline conditions in the defined Study Area. This process has been guided through ongoing consultation with stakeholders, where necessary.

ii) Determine the magnitude of the impact:

The magnitude of the impact considers the scale of the (physical) change that would arise from the effect.

iii) Assess the significance of the effects:

Professional judgement is typically used to assess the significance of the environmental effect based on a combination of the sensitivity of the receptor and the magnitude of the impact. For the purpose of this ES, 'significant' effects are classified as those identified as 'moderate' or 'major', whether positive or negative. Effects have been classified according to whether they are positive or negative, and whether they are temporary (short, medium, or long-term) or permanent. Effects are also classified as either direct or indirect.

iv) Identify additional mitigation measures to prevent or reduce negative effects:

Where negative effects are predicted, additional measures to avoid (for example, via changes to the design of the project), mitigate (for example, reduce the effects on site) or remedy (which could include compensation), those effects are identified. These mitigation measures are additional to those inherent to, or embedded within, the Scheme design.

Mitigation within the EIA is typically described in a hierarchical manner, reflecting best practice and the mitigation hierarchy. This is in accordance with the Stepwise approach set out in Planning Policy Wales (Welsh Government, 2024).

- **Avoidance:** Measures that prevent environmental effects from occurring altogether by removing the source of impact or altering the project design or location. Examples include the selection of alternative sites, micro-siting of infrastructure to avoid sensitive receptors, or timing works to avoid sensitive seasonal periods.
- **Reduction (or minimisation):** Measures that reduce the magnitude, extent or duration of an effect that cannot be entirely avoided. This may include the adoption of best practice construction methods, use of quieter or lower-emission plant, implementation of pollution control measures, or application of design standards that limit environmental disturbance.
- **Compensation (or offset):** Measures that seek to compensate for residual negative effects that remain after avoidance and reduction measures have been applied. Compensation does not reduce the impact itself but provides an alternative environmental benefit, for example through habitat creation, restoration or enhancement elsewhere. Where relevant, the topic chapters within the ES explain how compensatory measures are considered and the extent to which they influence the overall assessment of significance.

v) Assess the residual effect following mitigation:

The significance of residual effects after the proposed mitigation measures are incorporated is assessed. For the purpose of this ES, residual effects considered to have a 'moderate' or 'major' effect have been classified as 'significant'.

4.6.5 Assessment Criteria Definitions

General criteria used for classifying the sensitivity of the receptor is outlined within Table 4-3 based on standard EIA practice and professional judgement. However, ES topic chapters may use slightly different criteria or terminology for sensitivity depending on the industry best practice guidance utilised. Where criteria and terminology do vary, this is outlined within the topic chapter.

Table 4-3 – General criteria for classifying the sensitivity of environmental receptors

Sensitivity	Criteria
High	Highly sensitive sites can include sites that are designated of national or international importance or large numbers of people. Generally, highly sensitive sites are those of high quality / in good condition or highly regarded by people.
Moderate	Sites of moderate sensitivity can include sites of regional or local interest or importance, or a small number of people. Generally moderate sensitive sites are in moderate condition or locally regarded in value or quality.
Low	Sites of low sensitivity are unlikely to be designated. They are unlikely to be considered of value by either the local population or stakeholders.

General criteria used for classifying the magnitude of change arising from an effect is outlined within Table 4-4. However, ES topic chapters may use slightly different criteria or terminology for magnitude depending on the industry best practice guidance utilised. Where criteria and terminology do vary, this is outlined within the topic chapter. Typical descriptions of duration are outlined within Table 4-5.

Table 4-4 – General criteria for classifying the magnitude of change

Magnitude	Criteria
High	More than 50% of a site, area or population affected.
Moderate	Between 20% and 50% of a site, area or population affected.
Low	Between 5% and 20% of a site, area or population affected.
Very Low	Less than 5% of a site, area or population affected.
None	No change from existing baseline.

Table 4-5 – General criteria for classifying the duration of effects

Duration	Definition / Description
Short-term	Effect continues during construction (1 to 2 years) including up to 1 year following construction.
Medium-term	Effect continues 1 to 5 years following construction.
Long-term	Effect continues 5 to 10 years following construction.
Permanent	Due to the subjectivity of human perception of timeframes, those effects that continue for greater than 10 years following construction can be defined as permanent.

Significance is typically determined based upon the sensitivity of a receptor and the magnitude of change, which typically utilises a matrix as shown within Table 4-6.

Table 4-6 – Significance of environmental effects matrix

		Sensitivity of Receptor		
		High	Moderate	Low
Magnitude of Effect	High	Major (Significant)	Major (Significant)	Moderate (Significant)
	Moderate	Major (Significant)	Moderate (Significant)	Minor
	Low	Moderate (Significant)	Minor	Negligible
	Very Low	Minor	Negligible	Negligible
	None	None	None	None

Table 4-7 sets out the general definitions of significance.

Table 4-7 Definitions of Significance

Significance	Criteria
Major (Significant)	Significant change in environmental conditions causing breaches of legislation or the exceeding of statutory objectives. Likely to have an effect on sites designated for national or international importance. Likely to affect a large-scale area or a large number of people on frequent or permanent basis. May be an irreversible decline.
Moderate (Significant)	Unlikely to cause a breach of legislation but likely to have an effect on a site of regional or local environmental importance. Likely to affect a small number of people on a permanent basis.
Minor	Likely to have an effect on an area or feature of local interest or importance. Likely to have a temporary effect on a small number of people, or be a recoverable effect.
Negligible	No or indiscernible effect predicted.

4.6.6 Consideration of Cumulative Effects

Cumulative effects comprise both intra-project and inter-project cumulative effects. Intra-project effects occur where an environmental resource or receptor is affected by more than one impact from the same development and the impacts act together. Intra-project cumulative effects are assessed within Chapter 12: Cumulative Effects of the ES. Inter-project cumulative effects arise when the predicted residual effects of a project act in combination with the effects of other proposed developments to produce a new or greater magnitude of effect. Inter-project cumulative effects related to existing developments (considered part of the current baseline conditions) are assessed within the topic chapters of the ES. Inter-project cumulative effects related to other planned future developments are considered within Chapter 12: Cumulative Effects of this ES.

4.7 Implementation

This is the final stage in the EIA process, ensuring that essential mitigation identified through the impact assessment process to prevent or reduce environmental effects is carried through to the construction and/or operational stages of the development.

An EAP has been prepared as part of the ES, and this is provided as Appendix 13.1 along with an Environmental Constraints and Opportunities Plan (ECOP). The EAP will be used to implement, manage and monitor the environmental mitigation measures proposed in the EIA prior to, during and after construction, and to help deliver environmental opportunities. Mitigation measures are considered in detail within individual topic chapters.

A Construction Environmental Management Plan (CEMP) will be produced to outline how the construction phase will minimise environmental impacts and ensure compliance with environmental regulations and commitments. The CEMP will be informed by the EAP and include various effect specific management plans which contain specific guidance along with allowing for record keeping and auditing.

4.8 Difficulties and Uncertainties

The environmental assessments within the ES topic chapters are based on the project proposals outlined within Chapter 3: Project Description. This section identifies the project assumptions and exclusions that have been followed in the assessment to manage any remaining uncertainty. Topic-specific difficulties and uncertainties and details regarding how these are managed are reported in the topic chapters (Chapters 5 to 12).

The main uncertainty associated with the works relates of the proposed construction methodology and programme to be implemented. A contractor has not yet been appointed by NRW to construct the Scheme. Reasonable worst-case assumptions have therefore been made throughout this ES following preliminary advice from NRW's construction consultant. The approach is consistent with the precautionary principal.

4.9 References

Welsh Government, 2024. Planning Policy Wales. Volume Edition 12.