2. Approach to EIA

Introduction

2.1 This Chapter sets out the approach and methodology that has been undertaken to complete the assessment of the likely significant environmental effects of the Proposed Scheme (as described in **Chapter 4: Development Specification** and supporting plans). This Chapter follows the approach established through the EIA Scoping Report (**Appendix 2.1**), or where a deviation occurs, this has been clearly identified.

2.2 This Chapter sets out the following:

- Adoption and application of best practice within the EIA process;
- Interface of the ES (and EIA) with other licences, applications and consents;
- Scope of the ES, including a summary of the EIA Scoping process and the technical topics scoped in and out of the ES;
- Public engagement, summarising the key items raised during the public consultation and where these items are considered in the ES; and
- Approach to the assessment of likely significant effects, specifically covering: consideration of the full extent of development; approach to the assessment against a consistent baseline; future baseline; identification of sensitive receptors; information to inform assessment (development specification and plans); assessment of greenhouse gas emissions; assessment scenarios; implementation of mitigation and monitoring; criteria for determining the level of effects and significance; limitations/assumptions; and EIA requirements at later stages.

Adoption of Best Practice

2.3 As confirmed within **Chapter 1: Introduction**, this ES meets the requirements set out in Regulation 17, Paragraphs 3 – 4 and Schedule 4 of the EIA Regulations.

2.4 In addition, the EIA (and therefore the ES) has been undertaken with due consideration of the following guidance documents:

- IEMA, EIA Guide to Shaping Quality Development[1]; and
- IEMA, EIA Guide to Delivering Quality Development[2].

Interaction of ES with Other Licences, Applications and Consents

Marine Licence

2.5 As discussed in **Chapter 1: Introduction**, due to the inclusion of an extent of the marine environment of Port Talbot Docks for a construction wharf/jetty and permanent Marine Unloading/Loading Facility to support the import and export of materials to the Site via ship (see **Chapter 4: Development Specification** for more details), a marine licence is required under the Marine and Coastal Access Act 2009 (as amended)[3] for all works occurring with the

marine environment. However, as identified within **Chapter 1: Introduction**, the marine licence does not form part of this Application (as it is dealt with through a separate consenting regime). However, this ES has considered and assessed the 'works' required within the marine environment that require a marine licence, to ensure that the full nature (and environmental effects) of the Proposed Scheme is considered in the ES[a].

2.6 The application for the marine licence will be prepared and submitted separately and include any necessary environmental assessment where required, and if deemed necessary by National Resource Wales (NRW) an Environmental Impact Assessment (EIA).

2.7 It should be noted that for the marine works (full details of all works required in the marine environment are set out in **Chapter 4: Development Specification**), as the detailed design of the construction and operational wharf/jetty are not fully understood, assumptions have needed to be made in this ES (see **Chapter 4: Development Specification** for more details). These assumptions are based on a reasonable worst-case scenario. The marine licence application will assess the full details of the marine works, which are expected to fall within the assessment assumptions utilised within the ES. Where a deviation occurs with this ES, these will be addressed through the marine licence application and, where necessary, a verification report to this ES, submitted as supplementary information.

Permitting Applications and Consents

2.8 Given the industrial nature of the Proposed Scheme, a series of environmental permits and/or additional consents are being sought to allow for the operation of the Proposed Scheme. **Chapter 1: Introduction** explains the approach to the interaction of the ES with the permitting applications and consents. However, for clarity, a summary is provided here.

2.9 The key permitting / consents requirements that have been considered are:

- Environmental permit required from Natural Resources Wales (NRW) in accordance with The Environmental Permitting Regulations (England and Wales) 2016 (as amended)[4];
- Greenhouse Gas Emissions Permit, in accordance with the Greenhouse Gas Emissions Trading Scheme Regulations 2012;
- Water Abstraction Licence, in accordance with the Water Resources Act 1991 (as amended by the Water Act 2003), Environment Act 1995, the Water Resources (Abstraction and Impounding) Regulations 2006, and the Water Resources (Transitional Provisions) Regulations 2017);
- Hazardous Substance Consent, in accordance with the Planning (Hazardous Substances) (Wales) Regulations 2015[5]; and
- Adherence to the Control of Major Accident Hazards (COMAH) requirements due to the exceedance of the Upper – Tier COMAH threshold.

2.10 The above permits / consents regimes sit outside of the Town and Country Planning Act. However, there has been an element of overlap between the assessment work undertaken

[a] At this stage there is uncertainty regarding if the marine the license includes point for abstraction and discharge to dock system.

to inform the ES (and wider Application) and the various permitting / consenting processes. Where there is commonality between the effects being assessed through the EIA and corresponding requirements of permits/consents, coordinated assessments have been undertaken (i.e., emissions to air dispersion modelling and noise modelling). This approach ensures that the environmental information submitted in connection with the Proposed Scheme is consistent and robust.

2.11 Where coordinated assessments have been undertaken and utilised as part of the EIA these have been identified appropriately within the ES (**Chapter 11: Air Quality** and **Chapter 12: Noise and Vibration**).

Habitat Regulations Assessment

2.12 Regulation 26 of the EIA Regulations states:

"Where in relation to EIA development there is, in addition to the requirement for an environmental impact assessment to be carried out, also a requirement to carry out a Habitats Regulations Assessment, the relevant planning authority (or the Welsh Ministers, as the case may be) must where appropriate ensure that the Habitats Regulations Assessment and the environmental impact assessment are co-ordinated."

2.13 Several ecological designated sites[b] (relevant to HRA) have been identified within a 10km study area of the Site. Emissions modelling has been undertaken to inform **Chapter 11: Air Quality** and has defined air pollution concentrations of each relevant emission from the Proposed Scheme at three ecological designations[c]. The outputs of the modelling have been reviewed against the relevant UK Air Pollution Information System (APIS) datasets for the identified ecological designations[d]. The review has shown that there is no potential for likely significant effects (LSE) on the identified designated sites as the levels of pollutants do no exceed relevant critical load thresholds. Therefore, there is no need for an assessment under the Habitats Regulation Assessment to be undertaken. Further details are provided in **Chapter 11: Air Quality**.

Water Framework Directive

2.14 Although not specifically mentioned within Regulation 26 of the EIA Regulations, the need for a coordinated assessment is often applied when there is a need for a Water Framework Direction (WFD) assessment[6].

2.15 The Proposed Scheme (as described within **Chapter 4: Development Specification**) does interface with the marine environment, specifically Port Talbot Docks, whereby the need for a WFD assessment needs consideration. The dock itself is considered as a transitional waterbody, albeit both the River Afan and Ffrwd Wylt River feed into Port Talbot Docks (and therefore are upstream of the docks), and Swansea Bay (a defined Coastal WFD waterbody) is located to the west of Port Talbot Docks, beyond the dock gates (and River Afan). As such there is perceived connectivity between the Port Talbot Docks and WFD waterbodies (including a groundwater body).

[b] Defined as Special Areas of Conservation (SAC), Special Protection Areas (SPA), Wetlands of International Importance (Ramsar sites) and, in line with the Planning Policy Wales, potential SPAs, possible SACs and proposed Ramsar site.

[c] Kenfig Special Area of Conservation (SAC), Crymlyn Bog SAC and Cefn Cribwr SAC.

[d] **Appendix 11.2**, Table 11.2.4.

2.16 Therefore, it is necessary for a WFD assessment to be provided for the Proposed Scheme. The WFD assessment is currently at 'scoping' stage, whereby an evaluation of potential effects on the waterbodies is being prepared. Upon completion of the 'scoping' stage it will be necessary for the assessments within the ES to reflect the outputs of the WFD assessment. This will be done for the submission of the Application.

Scope of the ES

EIA Scoping and Consultation

2.17 The Applicant has undertaken a comprehensive scoping process prior to the preparation of the ES. This has included engagement with NPTCBC and other consultees where relevant.

2.18 The EIA Scoping process commenced in June 2022, informed by ongoing baseline analysis and early understanding of the Proposed Scheme, including a preliminary EIA Study Area Boundary. In November 2022, a pre-application meeting was held with NPTCBC to discuss and get NPTCBC's view on the emerging scope. The emerging scope was focused on technical topics expected to be scoped in and out of the ES. Initial feedback was provided by NPTCBC as part of the November 2022 consultation.

2.19 Using this feedback, the scope of the EIA was further developed and a draft EIA Scoping Report was produced with an updated scope. The draft report also considered changes to the Proposed Scheme that had occurred since the November 2022 consultation. The draft EIA Scoping Report was then shared with NPTCBC and Natural Resources Wales (NRW) in April 2023, to aid discussions at a further pre-application meeting that was held on 27th April 2023.

2.20 Additional feedback from this pre-application meeting was again incorporated into the EIA Scoping Report, which was then formally submitted (**Appendix 2.1**) to support a request for an EIA Scoping Opinion from NPTCBC on 1st June 2023.

2.21 An EIA Scoping Opinion (**Appendix 2.2**) from NPTCBC is pending. Upon receipt of the EIA Scoping Opinion, where additional information or clarification is requested as part of the EIA Scoping Opinion, the ES will summarise the comments received and how these have been addressed within the ES or other application report/document as necessary.

Evolution of Scope

2.22 As part of the EIA Scoping Report and request for EIA Scoping Opinion, the Applicant sought confirmation from NPTCBC that an iterative scoping approach was acceptable, to respond to the ongoing engineering development of the design of the Proposed Scheme.

2.23 Furthermore, as identified with **Chapter 1: Introduction**, following submission of the EIA Scoping Report on the 1st June 2023, changes were made to the EIA Study Area Boundary used as part of the EIA Scoping Report, specifically the inclusion of two additional parcels of land for use as temporary construction areas. These are identified as Temporary Construction Area East and West on **Figure 4.1**.

2.24 As such, a further validation exercise has been undertaken as part of the ES which has considered whether these changes amend the proposed scope, both in terms of technical topics scoped in/out of the ES, and the individual scope of assessment of **Technical Chapters**

6 – 13. The validation exercise concluded there was no amendments to the technical topics scoped out of the ES as part of the EIA Scoping Report.

2.25 As a result, where the scope of the assessment proposed within the EIA Scoping Report has been altered or amended, this has been clearly identified within the *"Scope of Assessment"* section of **Technical Chapters 6 – 13**. This includes additional evidence and/or rationale(s) for the alterations / related amendments to the scope of effects, where necessary. For completeness, the following technical topics have adopted an iterative scoping process, whereby the scope of effects / receptors deviates from that set out in the EIA Scoping Report (further clarification is set out within these chapters):

- **Chapter 8: Landscape and Visual**;
- **Chapter 10: Climate Change**;
- **Chapter 11: Air Quality;** and
- **Chapter 13: Marine Ecology**.

Final Scope of ES

Technical Topics 'Scoped In'

2.26 Following the iterative EIA Scoping exercise, the following technical topics and their associated likely significant environmental effects have been taken forward and assessed within the ES:

- Major Accidents and/or Disasters (**Chapter 6**);
- Terrestrial Ecology (**Chapter 7**);
- Landscape and Visual (**Chapter 8**);
- Socio-Economics and Human Health (**Chapter 9**);
- Climate Change (**Chapter 10**);
- Air Quality (**Chapter 11**);
- Noise and Vibration (**Chapter 12**); and
- Marine Ecology (**Chapter 13**).

2.27 The likely significant environmental effects considered within each technical topic are detailed within the relevant **Technical Chapters 6 – 13**.

Technical Topics 'Scoped Out'

2.28 As part of the iterative EIA Scoping process, there are seven technical topics and their associated environmental effects which are not considered to be significant and therefore 'scoped out' of the EIA. These are as follows:

- Built Heritage and Archaeology;
- Ground Conditions, Soils and Contamination;
- Flood Risk and Hydrology;
- Transport;
- Marine Navigation and Marine Recreational Resource;
- Lighting; and

- Waste.

2.29 The evidence base to support 'scoping out' these technical topics is presented in the EIA Scoping Report (**Appendix 2.1**).

2.30 The scope of Approved Projects for cumulative assessment was also confirmed through the Scoping process; the full list of Approved Projects can be found in **Chapter 13: Assessment of Cumulative Effects**.

Consideration of Human Health

2.31 As described in Schedule 4, Paragraphs 4 and 5, the EIA Regulations require the consideration of human health. This does not prescribe the need for a Health Impact Assessment (HIA), rather it is to ensure that due consideration of human health is fully considered within the EIA process.

2.32 The EIA Scoping Report (**Appendix 2.1**) set out the proposed approach to the consideration of human health, which was that instead of the completion of a standalone Human Health ES chapter, the ES would signpost to the relevant technical topics where human health has been duly assessed/considered. This ensures the EIA and ES remains robust but proportionate and focuses on only likely significant effects. A simple human health baseline overview is provided as part of **Chapter 9: Socio-Economics and Human Health**.

2.33 **Table 2.1** below lists all relevant effects to human health and where these are considered in the EIA. The table identifies where a specific effect has been 'scoped in' or 'scoped out' to provide a snapshot of which effects upon human health have been considered within the EIA. It should be noted that the ES only needs to assess likely significant effects and therefore an effect 'scoped out' does not mean that no such effect exists, rather that the effect is not considered significant for assessment within this ES.

Table 2.1: Human Health Effects

Effect	Where it is Considered in the EIA	Scoped In or Out	Overview of Why Effect Scoped out (if Relevant)
Ground Conditions and Contamination			
Direct effects to human health due to exposure to existing on-site contamination and the accidental release of contamination	EIA Scoping Report (**Appendix 2.1**), Chapter 5: Environmental Topics which are Not Significant	Out	During construction – tertiary mitigation (measures to protect construction workers from exposure, additional measures in the CEMP). During operation – tertiary mitigation; set out as part of a remediation strategy (will be informed by ground investigation works).
Accidental release of contamination	EIA Scoping Report (**Appendix 2.1**),	Out	During construction – tertiary mitigation (best practice measures).

Effect	Where it is Considered in the EIA	Scoped In or Out	Overview of Why Effect Scoped out (if Relevant)
	Chapter 5: Environmental Topics which are Not Significant		During operation – the processing facility will be a closed-loop system and will have tanks with appropriate bunding).
Indirect effect to human health due to potential ingress and accumulation of bulk ground gas into proposed structures	EIA Scoping Report (**Appendix 2.1**), Chapter 5: Environmental Topics which are Not Significant	Out	During construction - Will be detailed within the CEMP / Tertiary mitigation.
Direct effects to human health due to presence of UXO	EIA Scoping Report (**Appendix 2.1**), Chapter 5: Environmental Topics which are Not Significant	Out	Appropriate UXO mitigation measures will be required to be in place during construction. CEMP / Tertiary mitigation measures.
Flood Risk and Hydrology			
Flood risk (*impacting construction workers and operational users of the Site and surrounding area*)	EIA Scoping Report (**Appendix 2.1**), Chapter 5: Environmental Topics which are Not Significant	Out	Mitigation measures are not required for flood risk during construction stage (fluvial and tidal risks are only present when taking into account climate change impacts). A Flood Consequences Assessment will be completed in accordance with guidance – effects on flood risk receptors during operation of PDZ. Effects to flood risk receptors in the Unnamed Port Road Supporting Infrastructure Area of the Site – adequately mitigated by site operational procedures and flood warnings. Application of SuDS (primary mitigation) and SuDS drainage strategy – for surface water flooding. The Drainage Phasing Plan will help mitigate the risk of surface water flooding during the construction stage.

Effect	Where it is Considered in the EIA	Scoped In or Out	Overview of Why Effect Scoped out (if Relevant)
			Flood Risk from Reservoirs (Temporary Construction Area) – regulatory nature of reservoir management (Reservoirs Act 1975). Low risk of groundwater flooding – includes ground raising / no basement-level development that is vulnerable to flooding.
Transport			
Increase in fear and intimidation as a result of temporary construction traffic	EIA Scoping Report (**Appendix 2.1**), Chapter 5: Environmental Topics which are Not Significant	Out	CTMP will be prepared as part of the CEMP.
Increase in accidents and safety as a result of temporary construction traffic	EIA Scoping Report (**Appendix 2.1**), Chapter 5: Environmental Topics which are Not Significant	Out	Low accident numbers overall.
Fear and intimidation and accidents and safety as a result of operational traffic	EIA Scoping Report (**Appendix 2.1**), Chapter 5: Environmental Topics which are Not Significant	Out	Changes in operational traffic flows/composition is likely in line with the IEMA Guidance and will lead to no major increase in traffic generated. Framework Operational Transportation Management Plan will be prepared including details of safety procedures deployed to ensure safe transportation with any relevant legislation, regulation or guidance.
Lighting			
Disturbance to nearby residents due to obtrusive light during construction	EIA Scoping Report (**Appendix 2.1**), Chapter 5: Environmental	Out	Best practise measures (lighting industry standards and guidance).

Effect	Where it is Considered in the EIA	Scoped In or Out	Overview of Why Effect Scoped out (if Relevant)
	Topics which are Not Significant		
Disturbance to nearby residents due to obtrusive light during operation	EIA Scoping Report (**Appendix 2.1**), Chapter 5: Environmental Topics which are Not Significant	Out	Distances between receptors and PDZ. Primary mitigation (combination of different types of lighting).
Major Accidents and/or Disasters			
Major road traffic accident resulting in death or permanent injury to members of public (*construction*)	**Chapter 6: Major Accidents and Disasters**	Out	Low accident frequency recorded in nearby junctions. Industrial and commercial premise – already has a proportion of HGV vehicles, highway code and where dangerous loads are being transported, to be in accordance with best practice/guidance.
Major road traffic accident resulting in death or permanent injury to members of public (*operational*)	**Chapter 6: Major Accidents and Disasters**	Out	Primary transport will be via ships and will be similar to scenario set out during construction.
Extreme flooding event (including under the influence of climate change) causing risk to human life or failure of operational safety measures, indirectly resulting other forms of incidents (*operation*)	**Chapter 6: Major Accidents and Disasters**	Out	Risk of flooding controlled through primary mitigation – raising levels, drainage strategies, etc.
Operational plant/infrastructure failure (i.e. structure/building collapse, human error, explosion, non-descriptive accident)	**Chapter 6: Major Accidents and Disasters**	In	-

Effect	Where it is Considered in the EIA	Scoped In or Out	Overview of Why Effect Scoped out (if Relevant)
Fire event occurring on-site and impacting operational activities on-site, as well as consequential chain reaction events	**Chapter 6: Major Accidents and Disasters**	In	-
Fire event occurring during ship transportation of input/output material	**Chapter 6: Major Accidents and Disasters**	In	-
Natural disasters events (i.e. hurricanes and earthquakes) impacting users of the site and on-site operations (*construction and operation*)	**Chapter 6: Major Accidents and Disasters**	Out	Highly unlikely given the climatic and geological conditions of the UK. Design of the Proposed Scheme in line with current legislation and guidance.
Socio-Economics and Human Health			
Access to quality housing, healthcare services, open space and nature, and other social infrastructure	**Chapter 9: Socio-Economics and Human Health**	Out	No residential element included within the Proposed Scheme and is deemed irrelevant.
Access to healthy food	**Chapter 9: Socio-Economics and Human Health**	Out	Located within walking distance of options.
Accessibility and active travel	**Chapter 9: Socio-Economics and Human Health**	Out	Access to existing transport infrastructure. From a socio-economics and human health perspective, availability of options were considered.
Social cohesion and lifetime neighbourhoods	**Chapter 9: Socio-Economics and Human Health**	Out	This is unlikely a major consideration due to the industrial context.
Crime reduction and community safety	**Chapter 9: Socio-Economics and Human Health**	Out	Construction stage – Site will be kept secure using security measures (e.g., access gate, temporary fencing, etc.). Operation stage – Site-specific safety procedures.

Effect	Where it is Considered in the EIA	Scoped In or Out	Overview of Why Effect Scoped out (if Relevant)
Access to work and training	**Chapter 9: Socio-Economics and Human Health**	Out	Offer unlikely be of a scale to be deemed significant.
Climate Change			
Increased risk of flooding	**Chapter 10: Climate Change**	Out	Ground levels across the Site are raised to above the AEP tidal and fluvial flood level including climate change allowance. Application of SuDS – for potential surface water flood impacts. The Reservoirs Act 1975 as mitigation – as the Temporary Construction Area is at risk of reservoir flooding.
Heat stress during construction	**Chapter 10: Climate Change**	Out	Implementation of CEMP (tertiary mitigation).
Extreme weather	**Chapter 10: Climate Change**	Out	Complying with COMAH Regulations (tertiary mitigation), along with design guidance, codes and standards for the mechanical design of equipment. Protection against lightning, wind loadings, snow loadings and seismic activities – tertiary mitigation measures to be included. Risks from extreme weather events will be appropriately considered and mitigated through design.
Summertime overheating	**Chapter 10: Climate Change**	Out	Dynamic modelling for thermal comfort will take account of building design and occupation and establish if any mitigation measures are necessary to ensure suitable internal thermal conditions. Such measures may include glazing, internal / external shading, ventilation and passive / active cooling.
Air Quality			
Nuisance, disturbance and a reduction in human health as a	**Chapter 11: Air Quality**	Out	Subject to best practise methods (tertiary) and would be secured using the CEMP.

Effect	Where it is Considered in the EIA	Scoped In or Out	Overview of Why Effect Scoped out (if Relevant)
result of dust and particulate matter emissions from construction activities and Non-Road Mobile Machinery (NRMM)			
Nuisance, disturbance and a reduction in human health as a result of dust and particulate matter emissions from demolition works within TCA East	**Chapter 11: Air Quality**	Out	Subject to best practise methods (tertiary) for the management of dust from construction sites and would be secured using the CEMP.
Change to local air quality in terms of human health[e] due to on-site emissions associated with heating plant (gas fired boilers) which will be used as the main source of energy on the Site	**Chapter 11: Air Quality**	In	-
Change to local air quality in terms of human health due to on-site emissions associated with flare and emergency point sources (i.e. Change to local air quality in terms of human health due to on-site emissions associated with flare and emergency point sources (i.e. emergency diesel engines and fire water pump)	**Chapter 11: Air Quality**	In	-

[e] Particularly, but not limited to, nitrogen dioxide and particulate matter

Effect	Where it is Considered in the EIA	Scoped In or Out	Overview of Why Effect Scoped out (if Relevant)
Change to local air quality in terms of human health[e] due to transport emissions[f]	**Chapter 11: Air Quality**	In	-
Changes to local air quality due to fugitive on-site emissions	**Chapter 11: Air Quality**	Out	-
Noise and Vibration			
Operational road traffic noise impacting upon surrounding residential receptors	Chapter 12: Noise and Vibration	Out	The percentage change in traffic would fall below the generally applied 25% threshold, used to define a notable change in noise levels
Vibration from construction activities impacting upon surrounding residential receptors	Chapter 12: Noise and Vibration	Out	Nearest receptors are beyond the distances identified (distances are identified using levels of vibration noted in standards)
Generation of noise from construction activities and construction traffic on-site	Chapter 12: Noise and Vibration	In	-
Generation of noise from construction traffic off-site	Chapter 12: Noise and Vibration	In	-
Generation of noise from plant during operation	Chapter 12: Noise and Vibration	In	-

2.34 Intra-project cumulative effects (effect interactions) on human health have also been considered and provided within **Chapter 14: Assessment of Cumulative Effects**. This assessment has considered, where relevant, effects to human health that are not considered to be significant in isolation and are scoped out (**Table 2.1**) alongside those effects scoped in (**Table 2.1**). This is to ensure the potential for cumulative effective on human health across all possible effects (considered likely to be significant or not) has been considered.

[f] To include vehicles and shipping emissions (where relevant)

Pre-Application Consultation (PAC)

2.35 As set out in **Chapter 1: Introduction**, this ES has been made available as part of the PAC as required in Wales under the Planning (Wales) Act 2015. During the PAC process, specialist consultees, community consultees and owners and occupiers in the nearby area are consulted on the Proposed Scheme. This period lasts a minimum of 28 days, where draft application documents are made available to view, for comments. The comments received during this period are considered before a planning application is finalised and submitted.

2.36 Feedback received during the PAC process will be considered and detailed here within the final ES submission.

Public Engagement

2.37 **Table 2.2** outlines the environment related public feedback that was received through the consultation process and where relevant assessment and conclusions can be found within the ES. Other general comments were received during the consultation event but were either more general or not specific to environmental topics/effects.

Table 2.2: Summary of Environment Related Public Feedback

Theme	Summary of Feedback	Relevant Technical Chapter
Electricity demands	It was asked what the proposed facility's electricity demand requirement would be.	**Chapter 4: Development Specification**
Lighting Impacts on Invertebrates	One attendee asked how the impact of lighting on invertebrates had been considered. It was also raised that there were a number of animal species living on or near to the Site.	**Chapter 7: Terrestrial Ecology**
Fire risk	One attendee asked what the views of the Fire Authority were of the potential risk, and what the plans were for an emergency response to a fire.	**Chapter 6: Major Accidents and Disasters**
Process and storage of fuel	Additional information was requested on how the Alcohol-to-Jet fuel process worked. It was asked what quantity of sustainable aviation fuel would be stored on Site.	**Chapter 4: Development Specification**

Approach to Assessment

2.38 This section outlines the approach to the assessment of likely significant environment effects adopted, as reported within this ES. This aligns with the approach set out within the EIA Scoping Report (**Appendix 2.1**).

2.39 Where appropriate, **Volume 2: Technical Appendices** provides the further detail of technical topics and effects which are not considered to be significant

2.40 The exact methodology for the assessment of likely significant effects of the Proposed Scheme during the construction and operational stages varies across each of the technical topics considered within the EIA, largely due to technical specific guidance and best practice. Therefore, each of the **Technical Chapters 6 – 13** specifically sets out the relevant technical assessment methodologies.

2.41 However, there are several aspects to the approach which require consistency across the ES. Where necessary, this is discussed below with the aim to identify any nuances and how these have been accommodated within the approach.

Consideration of the Full Extent of Development

2.42 The EIA Study Area Boundary (**Figure 4.1**), referred to as the 'Site', defines the maximum extent of all temporary and permanent works (including primary mitigation) for which planning consent is sought (via the planning application or marine licence application)[g]. At this stage this includes the following key areas:

- Primary parcel of land for the location of the proposed production facility (approximately 9.1ha), comprising bare land adjacent to Crown Wharf (Port Talbot) (referred to as the '*Production Development Zone [PDZ]'*);
- Three discrete parcels of land located within the wider Port Talbot Docks, (approximately 7.44ha) (referred to as '*Temporary Construction Areas [TCA] 1, East and West*');
- Approximately 0.87km of the Unnamed Port Road, running adjacent to the northern boundary of the PDZ (referred to as '*Unnamed Port Road Supporting Infrastructure*'); and
- An extent of the marine environment of Port Talbot Docks, located to the north of the PDZ and the unnamed port road (referred to as the '*Marine Unloading/Loading Facility*'.

2.43 As identified previously (see '*Scope of ES*') TCA East and TCA West were identified following the preparation and submission of the EIA Scoping Report (**Appendix 2.1**). Therefore, the Site defined within **Figure 4.1** is larger than that considered through the EIA Scoping process. Therefore, as already identified, the implications of the additional areas on the scope of the ES have been considered (see '*Scope of ES*').

2.44 The planning application boundary is smaller than the Site used for the EIA (**Figure 4.1**). The difference is limited to the extent of the marine environment of Crown Wharf for the Marine Unloading/Loading Facility. As described above under '*Marine Licence*', this Application isn't applying for the marine licence (which is subject to a separate consenting process). However, this ES will consider and assess the 'works' required within the marine environment that

[g] As identified within **Chapter 1: Introduction**, and under '*Interaction of ES with Other Licences, Applications and Consents*' above, works within the marine environment will not be sought by the Application, rather subject to a marine license application.

require a marine licence, to ensure that the full nature of the Proposed Scheme is considered in the ES, hence the larger site boundary for the EIA.

Off-Site Ecological Mitigation

2.45 The ES has only identified the need for off-site mitigation with respect to compensation for habitat loss with the Site (see **Chapter 7: Terrestrial Ecology, Appendix 7.1: Ecological Impact Assessment,** and **'LanzaTech: Project Dragon, Net Biodiversity Benefit'** for full details).

2.46 Separate to the Proposed Scheme, Associated British Ports (ABP) is promoting proposals for the Future Ports: Port Talbot Programme (FPT) and an associated programme of ecological mitigation, including acquiring land in the vicinity of Port Talbot to ensure that mitigation is delivered for FPT and Proposed Scheme. ABP and the Applicant have reached agreement that, if required and agreed to be as a suitable site as part of the liaison process with NPTCBC, that the land it has acquired will be able to be utilised for the Proposed Scheme.

2.47 The off-site mitigation proposals are being developed in light of those programmes and in liaison with ABP and NPTBC to ensure that:

- the ecological impacts of Project Dragon are mitigated and a Net Biodiversity Benefit outcome is secured;
- the mitigation is reactive to and appropriate for the land that is able to be utilised for the purposes of delivering the off-site mitigation;
- mindful that the land is not control of Lanzatech, seeking to apply where it is possible to do so.

2.48 The proposed off-site mitigation and enhancement outcomes at the chosen off site location will address the ecological and biodiversity effects of the Proposed Scheme. Wherever possible, compensation for adverse effects on Section 7 habitats will be like for like, but where a habitat type cannot be directly compensated, alternative habitat compensation will come forward to ensure that an overall balance is positive and that NPTCBC is delivered.

2.49 It is anticipated that woodland /scrub compensation will be brought forward for the losses of low-value self-sown willow scrub, mixed species scrub, and gorse. It is also anticipated that grassland compensation will be provided off-site to fully offset unavoidable effects on coastal grassland, and naturally regenerated grassland. Off-site compensation will also address the loss of biodiversity value associated with habitat change in Temporary Construction Area 1.

2.50 It is expected that the delivery of the ecological mitigation will be subject to a suitably worded planning condition to any granting of planning permission for the Proposed Scheme, or planning obligation so that NPTCBC can ensure the mitigation occurs.

2.51 To ensure that the EIA has considered all direct and indirect environmental effects associated with the Proposed Scheme as far as reasonably possible, a high-level evaluation of the potential effects associated with the habitat creation has been provided below.

2.52 It is considered that the only receptors considered to be directly or indirectly affected by the off-Site ecology mitigation land would be existing biodiversity receptors at the off-Site ecological site. As described above, the proposed works would require some degree of

vegetation clearance removal, additional planting, and/or ground preparation works to allow for natural recolonisation. The associated effects arising from these works would only directly impact the existing habitat and associated supporting species currently present within the off-Site mitigation land. Overall, it is considered that the off-site mitigation works would improve biodiversity value, directly benefiting protected species.

Off-Site Utilities Infrastructure

2.53 In addition to the above, the Proposed Scheme will require new utilities connections which may require 'upgrade' works within the wider utilities network or entirely new infrastructure. Details of all proposed utilities connections are set out in **Chapter 4: Development Specification**. However, at this time it has been identified that for electricity and gas, there will be a requirement for the installation of new infrastructure and/or upgrade works to the corresponding utilities network.

2.54 At this time the need for such works is limited to the electricity and mains gas supply to the Site, which will comprise a new 33kV cable from Pyle primary substation (see **Chapter 4: Development Specification** for more details) and a new connection to the nearby high pressure mains gas network. Such works would be carried out by National Grid Energy Distributions (NGED) and Wales and West Utilities (WWU) respectively, as the statutory undertaker responsible for the relevant utility networks in the area. NGED and WWU are the bodies with the relevant expertise to design and carry out the work, and the owner and operator of the primary substation to which the electric cabling will need to connect and high-pressure main has network. Given the controls exerted by NGED and WWU on system upgrades, it is understood that it will be more appropriate and efficient for project delivery for this to be taken forward by NGED and WWU.

2.55 It is noted that whilst the high-level routing of the electrical connection is confirmed (see **Chapter 4: Development Specification** for more details) and a formal connection request accepted, the full technical details as to how it will be carried out are to be agreed. This will take some time to be agreed with NGED, as is the case for most major developments in the UK. Furthermore, engagement with WWU is ongoing to identify the proposed point of connection to the high-pressure network and corresponding connection back to the Site (i.e., routing of connection). Technical studies are to be undertaken by WWU across August 2023.

2.56 As such, any consent that may be necessary for the electrical or mains gas connection will not form part of the Application. However, from initial discussions with NGED and WWU, it is understood that the works for the connections would likely take place in and within highway land or under private streets. On this basis, it is not a requirement for the utility connection to be included within the Application and have also not form part of the Proposed Scheme considered within **Technical Chapters 6 – 13**.

2.57 Nonetheless, the EIA has considered these works/activities cumulatively with the Proposed Scheme, as part of **Chapter 14: Assessment of Cumulative Effects**, as far as reasonably possible to identify any potential cumulative effects.

Approach to the Assessment against a Consistent Baseline

2.58 Schedule 4, Paragraph 3 of the EIA Regulations, states that an ES should include:

"A description of the relevant aspects of the current state of the environment (baseline scenario)…".

2.59 Likely significant effects as a result of the Proposed Scheme have been described in the ES in relation to the deviation from the baseline environment within the Site and relevant technical study areas. Therefore, it is necessary to establish the existing baseline environmental condition of the Site and study area.

2.60 The 'baseline environment' comprises the prevailing existing environmental characteristics and conditions of the Site and relevant technical study areas, based upon (where relevant and required):

- Site visits and surveys;
- Desk-based studies;
- Review of existing site-specific information or public literature;
- Modelling;
- Review of relevant national and local planning policies; and
- Consultation with the relevant statutory consultees through the EIA process.

2.61 As previously identified, the Site (**Figure 4.1**) for the purpose of assessment within the ES was extended following the submission of the EIA Scoping Report. The inclusion of the additional parcels of land has meant that 'baseline' data for several technical topics does not encapsulate the entire Site, especially for those topics where site specific surveys are necessary. For some topics, additional baseline data for the additional parcels of land have been obtained, either through third party data sets or from desk-based review. Further clarity is provided within **Table 2.3**.

2.62 The baseline conditions for the purpose of the ES vary across **Technical Chapters 6 – 13**, being dependent on the timing of the survey or the date when data sources will have been accessed. All baseline conditions are based upon data accessed or surveys in 2022-23, as summarised in **Table 2.3**.

Table 2.3: Summary of Baseline Adopted within Technical Chapters 6 – 13

Topic	Baseline Data	Baseline Data Coverage				
		PDZ	TCA1	TCAW	TCAE	Docks
Major Accidents and/or Disasters (**Chapter 6**)	HSE search completed in January 2023.	Y	Y			Y
	HSE search completed in June 2023.			Y	Y	
Terrestrial Ecology (**Chapter 7**)[h]	Baseline habitat survey undertaken in June and July 2021 and supplemented in summer 2022.	Y	Y			Y

[h] At the time of PAC submission, ecological baseline surveys for TCA East and West are pending.

Topic	Baseline Data	Baseline Data Coverage				
		PDZ	TCA1	TCAW	TCAE	Docks
	Bat activity surveys – May to September 2022. Reptile presence / absence surveys – June to October 2022. Otter presence / absence surveys – September 2022 and January 2023. Byrophyte survey – October 2022. Overwintering bird survey – winter 2021/2022.					
	Targeted surveys for badger – June and July 2022.	Y	Y	Y		Y
Landscape and Visual (**Chapter 8**)	Site visit undertaken in November 2022.	Y	Y	Y*	Y*	Y
Socio-Economics and Human Health (**Chapter 9**)	Desk based search completed in 2022. Public data sources dated from 2011 – 2022.	Y	Y	Y*	Y*	Y
Climate Change (**Chapter 10**)	Desk based search completed in 2022. Public data sources dated from 1981 – 2010.	Y	Y	Y*	Y*	Y
Air Quality (**Chapter 11**)	Desk based search completed in 2022. Public data sources dated from 2020.	Y	Y	Y*	Y*	Y
Noise and Vibration (**Chapter 12**)	Noise survey undertaken August – September 2022.	Y	Y	Y*	Y*	Y
Marine Ecology (**Chapter 13**)	Drop down video marine ecology survey completed in September 2022.	N/A	N/A	N/A	N/A	Y

* The original baseline work is considered representative for these areas.

2.63 The origin of all third-party data, the dates of surveys and the dates when data sources have been accessed are clearly outlined within the relevant **Technical Chapters 6 – 13**, alongside any limitations or assumptions.

2.64 As was noted within the EIA Scoping Report (**Appendix 2.1**), it is understood that the Site is subject to on-going land management practices, including the management of Japanese Knotweed present within the PDZ. Although management activities would directly influence the 'baseline' of the Site, and thus assessments for some technical topics (i.e., Terrestrial

Ecology) for the purpose of the EIA (and ES) the assessment has been based on the 'baseline' as defined through the technical baseline studies / surveys and does not consider an alternative / future baseline that may have arisen from the land management activities.

2.65 This approach is considered robust as the proposed management of the Site, especially in relation to Japanese Knotweed, would likely result in the loss / removal of some sensitive receptors (i.e., reptile habitat – see **Chapter 7: Terrestrial Ecology** for more details) and thus the removal of a potential likely significant effect. As such, the assessment within the EIA is considered to represent a 'worst case' scenario.

Consideration of the Future Baseline

2.66 Schedule 4, Paragraph 3 of the EIA Regulations states that an ES should include:

"…an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge"

2.67 The future baseline scenario is addressed within each of the **Technical Chapters 6 – 13.** The discussion under the future baseline section in **Technical Chapters 6 – 13** is associated with how the Site, and where applicable a wider study area, may change assuming the Site was not developed further, and the existing management regime was maintained.

2.68 The assessments presented in the ES are based on the deviation from the existing baseline scenario. **Technical Chapters 6 – 13** present a future baseline condition for information only.

Identification of Sensitive Receptors

2.69 Schedule 4, Paragraph 4 of the EIA Regulations states that an ES should include:

"*A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape*"

2.70 Consistent with the EIA Regulations, the aspects of the environment likely to be significantly affected by the Proposed Scheme has been identified and set out within the '*Sensitive Receptors*' section of each **Technical Chapters 6 – 13**. These are also summarised in **Table 3.1** in **Chapter 3: Site Context**.

Development Specification and Plans

2.71 As indicated in **Chapter 1: Introduction**, the Application is detailed in nature.

2.72 The ES is required to provide sufficient information about the Proposed Scheme to meet the requirements of the EIA Regulations and to ensure that NPTCBC can reasonably be satisfied that they have sufficient information on the likely significant environmental effects of the Proposed Scheme.

2.73 The assessments undertaken as part of the EIA and reported in this ES are based on **Chapter 4: Development Specification** and plans provided as **Figure 4.1 – 4.14**), together they contain all information required to inform the EIA in a single location.

2.74 During the pre-application consultation with NPTCBC regarding the EIA Scoping process (see '*EIA Scoping and Consultation'*) it was understood that the engineering design of the Proposed Scheme would continue to evolve up to the point of submission and therefore the use of general arrangement plans was the most suitable approach, whilst still ensuring the EIA and ES assessment are realistic and reasonable. It was agreed with NPTCBC that as part the ES, any differences between the plans utilised for the EIA (i.e., **Figure 4.1 – 4.14**) and the final detailed plans submitted as part of the Application (i.e., submitted for approval) would be clearly set out. However, there was not a need to do this, as there was no evolution of the plans.

Layout, Extent and Heights

2.75 The location, extent (i.e., footprint) and heights of all plant, equipment and/or buildings included as part of the Proposed Scheme are defined within **Figures 4.1 – 4.14** and described in **Chapter 4: Development Specification**. Together they form the key aspects used for the assessments in the ES, presented across **Technical Chapters 6 – 13**.

2.76 Given the industrial nature of the Proposed Scheme consideration of 'materials' has been limited to the administrative facilities buildings, rather than the proposed plant / equipment, which by necessity will be industrial in appearance. The proposed materials have been considered within **Chapter 8: Landscape and Visual**.

Inputs / Outputs

2.77 Another primary aspect of the Proposed Scheme to be used to inform the assessment is the inputs and outputs of the Proposed Scheme. All inputs / outputs associated with the Proposed Scheme have been set out within **Chapter 4: Development Specification**, and where possible, linked to specific plant, equipment and/or buildings.

2.78 For the purpose of assessment within **Chapter 11: Air Quality** and **Chapter 12: Noise and Vibration**, it has been necessary to define specific 'point-source' emissions within the Site. The emissions points utilised have been clearly identified with **Chapter 11: Air Quality** and **Chapter 12: Noise and Vibration** and align with the plant / equipment data set out within **Figure 4.8: Proposed PDZ Layout**. It should be noted that the point source emissions utilised for the EIA are the same as those used for the environmental permits to NRW, ensuring continuity and consistency across both consenting processes.

2.79 With respect to the emissions, both for air quality and noise, the project team have worked alongside the Applicant and plant/equipment suppliers in order to define the specific emissions and/or levels at each point source. As the Proposed Scheme is the first facility of this type in the UK, there is no existing data resources to draw upon to inform the assumptions, beyond those provided by equipment / plant suppliers or from the Applicant themselves. Furthermore, for each type of emissions source there may be multiple scenarios in which emissions occur (i.e., normal operation, maintenance/testing, emergency, etc.). To this end, and to ensure both proportionality and assessment of a reasonable worst-case scenario, the 'scenarios' tested by **Chapter 11: Air Quality** and **Chapter 12: Noise and Vibration** have been clearly defined within the respective chapters. As above, these assumed scenarios are the same as those used for the environmental permit application to NRW, ensuring continuity across both consenting processes.

2.80 In line with the EIA Regulations any limitations or assumptions associated with the assessment within the ES are clearly defined within **Technical Chapters 6 – 13**.

Assessment of Greenhouse Gas Emissions

2.81 The assessment of GHG emissions within the ES (presented in **Chapter 10: Climate Change**) has considered the full life cycle of GHG emissions associated with the Proposed Scheme, include GHG emissions associated with the ethanol feedstock (its production and transportation to the Site), GHG emissions from the operational processes within the Site (including those associated with energy needs), and GHG emissions savings realised from the use of the sustainable aviation fuel (SAF)) when compared to the use of regular fossil fuel kerosene jet fuel (effectively the current baseline scenario).

2.82 Furthermore, GHG emissions savings realised from the use of the Sustainable Diesel (ATJ-RD), an additional product of the Proposed Scheme (see **Chapter 4: Development Specification** for more details), relative to existing fossil diesel fuel have also been considered in the calculations.

2.83 In undertaking the assessment, the Applicant has been mindful of recent case law in response of carbon assessments, scoped of assessments, and the role of the IEMA's EIA Guide to: Assessing GHGs and Evaluating their Significance (2022) *('IEMA's climate guidance'*), in particular Boswell, R (On the Application Of) v Secretary of State for Transport [2023] EWHC 1710 (Admin)Bristol Airport Action Network Co-Ordinating Committee v Secretary of State for Levelling Up, Housing and Communities [2023] EWHC 171 (Admin), Ashchurch Rural Parish Council, R (On the Application Of) v Tewksbury Borough Council [2023] EWCA Civ 101, Goesa Ltd, R (On the Application Of) v Eastleigh Borough Council [2022] EWHC 1221 (Admin) and Finch On Behalf of the Weald Action Group, R (On the Application Of) v Surrey County Council & Ors [2022] EWCA Civ 18.

2.84 As such, the assessment of GHG emissions reports the 'net' GHG emissions associated with the Proposed Scheme over an assumed 20 year operational lifetime[i], rather than just the direct GHG emissions from the Proposed Scheme itself, albeit for completeness the GHG emissions associated with each 'element' has been reported for transparency purpose and understanding of direct and indirect effects (i.e. GHG emissions during project construction, GHG emissions during project operation, GHG savings from SAF and Sustainable Diesel use, and the project's net GHG effect as a result of these emissions and savings).

2.85 Such an approach is considered appropriate as it balances the recommended methodology set out within IEMA's climate guidance, the Proposed Scheme, and the ultimate focus of the Proposed Scheme, in terms of its contribution to UK targets to reduce GHG emissions. The key GHG quantification principles of the IEMA climate guidance states:

- GHG quantification within EIA should follow the principles outlined in key guidance such as the GHG Protocol Corporate Standard, BS EN ISO 14064-2 and PAS 2080 in terms of relevance, completeness, consistency, transparency and accuracy;
- The assessment should quantify the difference in GHG emissions between the proposed project and the baseline scenario (the alternative project/solution in place of the proposed project e.g. no development) with assessment results reflecting the difference in whole life net GHG emissions between the two options; and

[i] Used and applied to compare net GHG emissions against future carbon budgets for Neath Port Talbot, Wales and United Kingdom. Further details are provided within **Chapter 10: Climate Change**.

- The assessment must include all material emissions (defined by magnitude), direct or indirect during the whole life of the proposed project.

2.86 GHG emission and associated calculations within **Chapter 10: Climate Change** has been informed by a Life Cycle Assessment (LCA) undertaken by the Applicant as part of their application for funding from the Department of Transport (DfT) as part of the Advanced Fuels Fund (AFF). The DfT application process required the Applicant to set out GHG emissions across the life cycle of the proposed SAF product and demonstrate that it achieves a minimum reduction in lifecycle GHG emissions when compared to standard fossil fuel kerosene, of 70%. The calculations required the consideration of the ethanol feedstock and upstream emissions associated with it, with specific eligibility rules regarding the ethanol feedstock as follows:

(i) If using a biofuels feedstock (including the original feedstocks used to derive any intermediate fuels) it should have the potential to qualify as a 'development fuel' feedstock under the Renewable Transport Fuel Obligation (RTFO). The AFF sets a GHG emissions threshold for biofuel feedstocks of 31 grams of CO_2 equivalent per mega joule (gCO_2e/MJ) compared with 94 gCO_2e/MJ for the fossil fuel comparator (kerosene), i.e. a minimum 67% lifecycle GHG saving to quality as a Sustainable Aviation Fuel (SAF).

(ii) If utilising a recycled carbon fuel (RCF), they are permitted so long as from fossil fraction of Refuse Derived Fuel (RDF) and waste industrial fossil gases. The AFF sets a GHG emissions threshold for RCF feedstocks in 2027 (first year of operation) of 39.6 gCO_2e/MJ, i.e. a minimum 58% lifecycle reduction compared with 94 gCO_2e/MJ for the fossil fuel comparator (kerosene).

(iii) Where a non-renewable fuel(s) of non-biological origin (RFNBOs) is to be used, it must follow RTFO guidance on CO_2 sourcing.

2.87 With respect to (i) and (ii) above, the DfT Guidance for the Advanced Fuels Fund is also clear that the feedstocks derived from 'waste' sources must comply with the definition of 'waste' within the guidance[j] and with the waste hierarchy[k].

2.88 Given the above, when considering the feedstock for the Proposed Scheme, for the project to comply with the guidance from DfT and associated funding, it is required to meet specific standards which ultimately ensure that it is derived from a sustainable source, as defined by DfT and the UK Government. On this basis, for the purpose of the assessment of GHG emissions within **Chapter 10: Climate Change**, the potential iterations of multiple combined sources of ethanol feedstock that could be utilised by the Proposed Scheme has not been completed, rather the assessment of GHG emissions associated with the ethanol feedstock has considered the two primary options that where considered through the LCA by the

[j] "*If the feedstock is claimed to be a waste, evidence is provided that this is a material which the holder discards, intends to discard, or is required to discard, and has not been purposefully mixed with other materials in order to become a waste, nor have any existing processes been modified to generate more of the feedstock*."

[k] *"i.e. not taking feedstock supplies from existing more environmentally beneficial uses. This requires consideration of how the waste material could not have been prevented, re-used or recycled, and hence the only alternatives available are energy recovery or disposal."*

Applicant as part of their submission to the DfT Advanced Fuel Fund, they comprise the following:

- Option 1 – Ethanol from starch/wheat waste.
- Option 2 – Ethanol from waste off-gases.

2.89 These options are considered to represent the most likely sources of ethanol or be representative of typical sources of ethanol that could be utilised within the process of the Proposed Scheme.

2.90 Within the LCA, GHG emission associated with Option 1 was informed by information obtained from a UK based ethanol producer, who operates a biorefinery that processes 'grain' and waste materials into ethanol. As part of their needs to comply with RTFO, as well as the European Union Renewable Energy Directive (2018/2001/EU), and therefore obtain a certification that their product meets the RTFO and other standards, they are required to derive the GHG emissions associated with their own production of ethanol, which is verified in line with the RTFO. The certificate utilised in this assessment was for ethanol produced from waste materials. On this basis, for the purpose of assessment within **Chapter 10: Climate Change**, it is considered suitable and robust to utilise the emission data from the UK ethanol producer for emissions for the ethanol feedstock for Option 1.

Assessment Scenarios

2.91 The EIA has assessed the likely effects arising from the Proposed Scheme, taking account of the demolition, site preparation, earthworks and construction (referred to collectively as 'construction stage') and operational stage of the Proposed Scheme.

2.92 The following scenarios have been assessed where relevant to the environmental topic (and likely significant effects):

- **Peak Construction** – this varies across technical topics and will not be attributed to a specific year, rather it will be determined on a topic by topic basis at what point the worst case effect could occur. Each assessment has clearly defined this within their respective technical assessment; and
- **Operation (2026)** – this considers effects associated with the completion of the Proposed Scheme and its operation as set out in **Chapter 4: Development Specification**.

2.93 For some technical topics, especially where modelling works have been undertaken, it has been necessary to establish sub-scenarios for construction and operation to ensure all potential environmental effects are understood or contextualised, and where necessary reporting the worst case effects. Where this has been necessary this is full established within **Technical Chapters 6 – 13**.

2.94 All scenarios have been considered against the existing baseline as defined above (see '*Approach to the Assessment Against a Consistent Baseline'*).

2.95 As set out within the EIA Scoping Report (**Appendix 2.1**), decommissioning of the Proposed Scheme would include the shutdown of plant and equipment and removal of above ground structures at the end of its operating life. Decommissioning would be controlled by a

Decommissioning Environmental Management Plan prepared at the point of such stage coming forward.

2.96 At this time, it is not proposed to consider the decommissioning stage of the Proposed Scheme in this ES (as set out within the EIA Scoping Repot (**Appendix 2.1**)). This is because at this stage there is insufficient information about this process and its exact timing after the initial 25 year operating life of the Proposed Scheme. Furthermore it is considered that potential effects would be comparable to the construction stage effects, which are reported in this ES where they are likely and significant.

Implementation of Mitigation and Monitoring

2.97 Schedule 4, Paragraph 7 of the EIA Regulations states that an ES should include:

"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, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases."

2.98 Regulation 25(1)(d) states that when determining an application consideration should be given to '*whether it is appropriate to impose monitoring measures*' including the parameters to be monitored and the duration of the monitoring.

2.99 In accordance with IEMA Guidance and the EIA Scoping Report (**Appendix 2.1**), three types of mitigation have been identified and used within the ES, comprising;

- **Primary:** modifications to the location or design of the Proposed Scheme made during the pre-application stage that are an inherent part of the project;
- **Secondary:** actions that will require further activity in order to achieve the anticipated outcome. These would be included within the ES following the assessment of effect, under the 'Secondary Mitigation or Enhancement' section, before the reporting of the 'residual' effects. It is anticipated that such measures would be secured by condition; and
- **Tertiary:** actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects.

2.100 At the EIA Scoping stage, the primary and tertiary mitigation identified was documented in the Preliminary Environmental Management Plan presented in the EIA Scoping Repot (**Appendix 2.1**). All of these measures have been transposed into the Environmental Management Plan as part of this ES (**Volume 3**, see below).

2.101 The design process has been informed by extensive studies/surveys/modelling so that potential effects are well understood and primary mitigation has been identified and developed. The Proposed Scheme has evolved to take account of the environmental constraints and opportunities within the Site and study area. Such evolution, as defined above, constitutes primary mitigation and therefore for the purpose of the EIA such

measures are considered as part of the Proposed Scheme and therefore set out in **Chapter 4: Development Specification** and on the Plans (**Figure 4.1 – 4.13**).

2.102 Those measures considered to constitute tertiary mitigation are also considered part of the Proposed Scheme and set out in **Chapter 4: Development Specification.**

2.103 Therefore, **Technical Chapters 6 – 13** have considered relevant primary and tertiary mitigation for both the construction and operational stages prior to undertaking their assessment of likely significant effects. Following the conclusion of effects based on the Proposed Scheme (inclusive of primary and tertiary mitigation) any further mitigation measures or monitoring arrangements have been identified (i.e. secondary mitigation).

2.104 The application of secondary and tertiary mitigation is only considered appropriate if there is a high level of confidence in the mechanism for implementation (by the Applicant or third party).

2.105 Consideration is then also given to any indirect effects of the secondary mitigation alongside the likelihood and confidence of implementation which is evaluated when determining the residual effect.

2.106 The primary, tertiary and secondary mitigation detailed within **Technical Chapters 6 – 13** are summarised in **Volume 3: Environmental Management Plan**. The Environmental Management Plan sets out how the mitigation will be secured and who is responsible for this. This also makes it clear what mitigation is new since that set out within the Preliminary Environmental Management Plan presented in the EIA Scoping Report (**Appendix 2.1**).

Determining Level of Effect and Significance Criteria

2.107 A four-step approach has been adopted to define effects as outlined below.

2.108 The method for assessing the level of effect has varied between technical topics but in principle has been based on:

- **The environmental sensitivity (or value / importance) of a receptor** – including aspects such as adaptability, tolerance to change or recoverability from a change; and
- **The magnitude of change (or impact) from the baseline conditions** – including aspects such as probability / likelihood of occurrence, geographical extent, complexity, duration, frequency and reversibility (i.e. temporary or permanent).

2.109 Sensitivity (or value/importance etc.) has been assessed on a scale of high, medium, low and negligible and magnitude of change (or impact) on a scale of large, medium, small and negligible. Where deviations from these scales is required to meet specific technical guidance this is outlined, where relevant, in **Technical Chapters 6 – 13**.

2.110 Where relevant, other factors such as feedback from stakeholders, relevant legislation, international / national / regional / local standards and guidance and the inter-relationship between effects have been considered.

2.111 The assignment of the level of effect will be based on professional judgement with the support of the matrix below (**Table 2.4**), which is seen as a tool to assist with the process.

Whilst the matrix at **Table 2.4** provides ranges, this is to guide the competent expert and a definitive level of effect will be provided, where possible, for each effect.

Table 2.4: Matrix to support determining the level of effect

		Sensitivity (or value / importance)			
		High	Medium	Low	Negligible
Magnitude of Change	Large	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

2.112 The following terms have been used to define the level of the effects identified and these can be 'beneficial' or 'adverse':

- **Major effect**: Where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
- **Moderate effect**: Where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;
- **Minor effect**: Where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity or a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change and / or can recover from the change; and
- **Negligible**: Where the Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

2.113 For some environmental topics, relevant guidance requires that differing criteria or scales are used for determining the level of effect. For consistency within the ES, the final 'level of effect' has been reported using the terminology and conclusions set out above. This enables the conclusions of assessments across all environmental topics to be understood and factored into decision-making on a consistent basis. It also allows for a consistent and robust analysis and assessment of cumulative effects.

2.114 For each effect, a binary judgement has been made as to whether the effect is 'Significant' or 'Not Significant'. This determination has been based on professional judgment and / or relevant guidance and standards, where applicable. A Significance determination has only

been made for residual effects (i.e. the effects of the Proposed Scheme accounting for identified secondary mitigation or enhancement).

2.115 Effects have also been described in line with the requirements of the EIA Regulations (i.e. as direct or indirect; short, medium or long-term[l]; permanent or temporary).

2.116 **Technical Chapters 6 – 13** provide a summary of effects table, which outlines the effects assessed, associated sensitive receptors, residual effects and whether the effect is 'Significant' or 'Not Significant'.

2.117 Cumulative effects have been considered collectively in a single chapter (**Chapter 14: Assessment of Cumulative Effects**).

Limitations and Assumptions

2.118 Schedule 4, Paragraph 6 of the EIA Regulations state that an ES should include:

"...details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved"

2.119 Where the assessments undertaken in connection with **Technical Chapters 6 – 13** have encountered difficulties in compiling the required information or are based on assumptions these difficulties and assumptions and the main uncertainties involved have been clearly identified within the relevant chapter.

EIA Requirements at Later Stages

2.120 The ES has identified and assessed likely significant effects based on the information outlined above. This has ensured that all likely significant effects have been assessed and that such effects and any necessary mitigation will inform the determination of the Application.

2.121 Should there be a change to the information upon which the EIA and ES are based on (i.e., extent, massing, etc.), there may be a requirement to Screen any subsequent application to determine any likely significant effects on the environment not previously identified. Any EIA Screening Report and associated assessments will then be undertaken as required, at that stage.

2.122 Should a Section 73 application be required to carry out the Proposed Scheme otherwise than in accordance with conditions originally imposed, this would be considered in the same way as a new planning application. It is likely that an EIA Scoping Report would be required to 'scope' the likely significant effects of the proposed change(s) which would enable an 'ES Supplement' to be submitted alongside this ES where necessary. The duration of time between the preparation of this ES and any Section 73 application may be relevant to ascertaining the need for such an ES supplement.

[l] Duration of effect (short - up to 1 year, medium - 1 to 10 years, or long-term - over 10 years)

References

[1] IEMA, Environmental Impact Assessment Guide to: Shaping Quality Development, November, 2015.
[2] IEMA, Environmental Impact Assessment Guide to: Delivering Quality Development, July, 2016.
[3] The Marine and Coastal Access Act 2009 Available at: Marine and Coastal Access Act 2009 (legislation.gov.uk) [Accessed 25/05/2023]
[4] The Environmental Permitting Regulations (England and Wales) 2016 (as amended) (2016 No. 1154). Available at: The Environmental Permitting (England and Wales) Regulations 2016 (legislation.gov.uk)
[5] Planning (Hazardous Substances) (Wales) Regulations 2015 (2015 No. 1597 (W. 196)). Available at: The Planning (Hazardous Substances) (Wales) Regulations 2015 (legislation.gov.uk)
[6] Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.