

Project DRAGON, Port Talbot
Environmental Impact Assessment (EIA)
Scoping Report

May 2023

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Michael Browne
michael.browne@turley.co.uk

Client

LanzaTech UK Ltd

Our reference

LANT3006

May 2023

Chloe Patel
chloe.patel@turley.co.uk

Figures and Appendices

*Note – Within several accompanying figures and appendices, as set out below, a larger red line boundary that that defined within **Figure 4.1: EIA Study Area Boundary** may have been used. This reflects an early, much larger boundary considered at the initial stage of technical baseline studies and investigations and should therefore not be taken as representative of the EIA Study Area Boundary or the final planning application boundary. The use of the large boundary does not impact the assumed scope within the EIA Scoping Report, which has been informed by **Figure 4.1**.*

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1. Introduction

- 1.1 LanzaTech UK Ltd (hereafter referred to as the 'Applicant') are working with a project team to design an industrial development (hereafter referred to as the 'Proposed Scheme') on land adjacent to Phoenix Wharf (Port Talbot Docks). The Proposed Scheme will comprise a new facility for the production of sustainable aviation fuel (SAF) in the form of Alcohol to Jet Synthetic Paraffinic Kerosene (ATJ SPK), and Renewable Diesel (ATJ-RD), using technology and processes developed and licenced by the Applicant. The Proposed Scheme will be the Applicants first commercial facility of this nature within the UK.
- 1.2 The EIA Study Area Boundary (hereafter referred to as the 'Site') is shown in **Figure 4.1**. At this stage, the Site (for the purpose of the EIA Scoping Report) is considered to comprise the maximum extent of all temporary and permanent works currently anticipated as part of the Proposed Scheme at this time. The Site is approximately 19.1 hectares (ha) and includes land adjacent to Phoenix Wharf (Port Talbot Docks); a discrete parcel of land within the wider Port Talbot Docks; unnamed port road; and an extent of the marine environment of Phoenix Wharf.
- 1.3 The Applicant is working towards the submission of a detailed planning application (hereafter referred to as the 'Application') to Neath Port Talbot County Borough Council (NPTCBC), as the Local Planning Authority.
- 1.4 The Applicant has instructed Turley to lead, manage and control the Environmental Impact Assessment (EIA) process in line with the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017¹ (as amended) (hereafter referred to as the EIA Regulations). The project team have developed a description of the Proposed Scheme, which is outlined in **Chapter 4: High Level Development Specification**. Whilst the detailed design of the Proposed Scheme continues to be developed this description provides factual and sufficient information to inform the EIA Scoping process and the preparation of this EIA Scoping Report.
- 1.5 As noted above, the Site includes an extent of the marine environment of Phoenix Wharf as the Proposed Scheme includes the need for a temporary jetty and the Phoenix Wharf Loading/Unloading Facility, to support the import and export of materials to the Site via ship (see **Chapter 4: High Level Development Specification** for more details). As such, there is a requirement for 'works' within the marine environment that requires a marine license under the Marine and Coastal Access Act 2009 (as amended)². Associated British Ports (ABP), as the harbour authority for Port Talbot Docks, will be seeking the necessary marine license from Natural Resources Wales (NRW). The marine licence application will not form part of this Application (as it is dealt with through a separate consenting regime). However, the EIA for the Proposed

¹ The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 No. 567. (W. 136) Available at: [The Town and Country Planning \(Environmental Impact Assessment\) \(Wales\) Regulations 2017 \(legislation.gov.uk\)](https://www.legislation.gov.uk/uksi/2017/567/contents/made) [Accessed 25/05/2022].

² The Marine and Coastal Access Act 2009 Available at: [Marine and Coastal Access Act 2009 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2009/23/contents) [Accessed 25/05/2023]

Scheme will consider and assess the ‘works’ required within the marine environment that require a marine licence, to ensure that the full nature of the Proposed Scheme is considered in the ES. Further details are set out within **Chapter 2: Approach to EIA**. For the avoidance of doubt, the Application will include any aspects of the Phoenix Wharf Loading/Unloading Facility that do not require a marine licence.

- 1.6 In accordance with Regulation 14 of the EIA Regulations, Turley request a Scoping Opinion from NPTCBC, informed by this EIA Scoping Report.

Definition and Requirements of EIA

- 1.7 The term ‘EIA’ has the meaning given by Regulation 4 of the EIA Regulations, as “a process consisting of-
- (a) the preparation of an environmental statement by the person seeking or initiating planning permission;*
 - (b) any consultation, publication and notification required by Parts 5, 9 and where relevant, Part 12 of these Regulations, the 2012 Order or the 2016 Order in respect of EIA development; and*
 - (c) the steps required under regulation 25(1)³.*
- 1.8 This describes a procedure that must be followed for certain types of projects before they can be given ‘consent’. The procedure is a means of drawing together, in a systematic way, an assessment of a project’s likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for reducing or mitigating them are properly understood by the public and the relevant local planning authority before it makes its decision.
- 1.9 The understanding of the Proposed Scheme has been compared to descriptions of development set out within Schedule 1 and Schedule 2 of the EIA Regulations. This indicates that the Proposed Scheme could be classified under either *Schedule 1.6a – Integrated chemical installations for the production of basic organic chemicals* or alternatively *Schedule 2.6a – Chemical industry, treatment of intermediate products and production of chemicals*.
- 1.10 Whilst there is some ambiguity over the scheduling of the Proposed Scheme, at this stage, a number of potential likely significant effects have been identified (see **Chapters 6 – 13**) and an EIA is to be used as a tool to identify and manage the environmental impacts. The Applicant confirms it intends to prepare and submit an environmental statement with the Application.
- 1.11 As noted within **Paragraph 1.5** proposed works within the marine environment will require a marine license from NRW. Where necessary through the marine license the requirements of the Marine Works (Environmental Impact Assessment) Regulations

³ Regulation 25(1) sets out provisions related to the consideration of whether planning permission or subsequent consent should be granted.

2007⁴ will be set out and followed. These aspects will be dealt with through the marine license application process. However, the ES for the Application will consider the marine ecology impacts of these marine works as part of the wider Proposed Scheme.

Objectives of EIA Scoping and Next Steps

- 1.12 This EIA Scoping Report supports a formal request for a Scoping Opinion from NPTCBC as to the scope and methodology for assessment to be adopted in the EIA and reported in the ES. It aims to ensure that there is a clear and agreed scope for the EIA.
- 1.13 The EIA Scoping Opinion is sought on the technical breadth of the topics considered within the EIA, and also the specific environmental effects within each of these environmental topics (**Chapters 6 – 13**).
- 1.14 The Institute of Environmental Management and Assessment (IEMA) has issued guidance on the interaction of design and EIA as part of ‘Shaping Quality Development’⁵ and ‘Delivering Quality Development’⁶. The principles of these documents have been adopted for the EIA.
- 1.15 In accordance with Regulation 14(2) of the EIA Regulations, this EIA Scoping Report contains the following:
 - A plan sufficient to identify the land (**Figure 4.1**);
 - A brief description of the Proposed Scheme, including its nature, purpose, location and technical capacity (**Chapter 4: High Level Development Specification**). This includes an overview of site preparation, earthworks, remediation and construction (referred to collectively as ‘construction’), development principles and timescales;
 - An explanation of the likely significant effects of the development on the environment (**Chapters 6 – 13**); and
 - Such other information or representations as the person making the request may wish to provide or make.
- 1.16 As noted within **Paragraph 1.11** a separate marine license application will be sought for the works within the marine environment. Where necessary through the marine license the requirements of the Marine Works (Environmental Impact Assessment) Regulations 2007 will be set out and followed.
- 1.17 Based on your receipt of the EIA Scoping Report and in accordance with Regulation 14 of the EIA Regulations, we are anticipating that the statutory timescales will be met

⁴ The Marine Works (Environmental Impact Assessment) Regulations 2007, No. 1518. Available at: (legislation.gov.uk) [Accessed: 25/05/2023]

⁵ IEMA (2015). Environmental Impact Assessment Guide to: Shaping Quality Development.

⁶ IEMA (2016). Environmental Impact Assessment Guide to: Delivering Quality Development.

and that Turley will be in receipt of a Scoping Opinion no later than five weeks from the date of receipt of this request.

Stakeholder Engagement

1.18 Consultation is an important part of the EIA process. It is the responsibility of NPTCBC to undertake the appropriate level of consultation, including the identification of relevant statutory and non-statutory consultees, required to inform their Scoping Opinion.

1.19 It is anticipated that the following key stakeholders (not an exhaustive list) will be consulted as part of the EIA:

- NPTCBC (including relevant officers⁷);
- Natural Resources Wales (NRW);
- Cadw;
- Associated British Ports (ABP);
- Glamorgan-Gwent Archaeological Trust (GGAT);
- Port Health Authority;
- Public Health Wales; and
- Health and Safety Executive.

1.20 A summary of the project consultation undertaken prior to or during the preparation of the EIA Scoping Report is provided in **Appendix 1.1**.

Structure of EIA Scoping Report

1.21 The structure of this EIA Scoping Report is outlined in **Table 1.1**.

Table 1.1: Structure of EIA Scoping Report

Chapter No.	Topic	Description
1	Introduction	Outlines the context in which Turley request a Scoping Opinion; provides an overview of the structure of the report; outlines our understanding of the requirements for EIA; and the stakeholder engagement proposed.
2	Approach to EIA	Outlines the objectives and strategy for the EIA to ensure consistency and clarity across the process. Also provides an overview of the methodology and skills adopted within the EIA and the anticipated format of the

⁷ Including appointed third party consultants.

Chapter No.	Topic	Description
		Environmental Statement (ES). Outlines the interaction with other documentation to be submitted in support of the Application.
3	Site Context	Provides a high level description of the Site and the surrounding environment. Further details of the topic specific baseline environment are set out in Chapter 5 and Chapters 6 – 13 .
4	High Level Development Specification	Outlines the Proposed Scheme as currently understood by the project team. It is this description upon which this EIA Scoping Report is based.
5	Environmental Topics which are Not Significant	Outlines the environmental topics for which no likely significant effects are anticipated to arise from the Proposed Scheme. It is these environmental topics which will not be subject to assessment as part of the EIA.
6 - 13	Likely Significant Environmental Topics	Presents a number of likely significant effects across the following environmental topics: major accidents and disasters; terrestrial ecology; landscape and visual; socio-economics and human health; climate change; air quality; noise and vibration; and marine ecology. A separate Chapter is provided for each environmental topic as they will be taken forward for further assessment in the ES. The Chapters also provides detail on particular effects within each of the environmental topics for which no likely significant effects are anticipated to arise from the Proposed Scheme. It is these effects which will not be subject to assessment as part of the EIA.
14	Methodology for Assessment of Cumulative Effects	Outlines the proposed methodology for the assessment of cumulative effects, comprising both effect interactions and in-combination effects.
15	Summary	Provides a tabular summary of the effects which are not significant and the likely significant environmental effects identified at this stage of the EIA process.

2. Approach to EIA

2.1 This Chapter outlines the following:

- Iterative approach to scoping;
- Approach to assessment and consideration of alternatives;
- Study boundary for data collection
- The baseline scenario for use in the EIA;
- Identification of sensitive receptors;
- Defining mitigation and how this will be controlled;
- Information to inform the final assessments within the ES;
- Assessment scenarios;
- Level of effect and consideration of significance;
- Consideration of human health;
- Consideration of transboundary effects;
- Climate change resilience
- Format of the ES;
- Competent expertise;
- Interaction of the ES with other planning application documents;
- Interaction of the ES with other permitting applications;
- Habitat Regulations Assessment (HRA); and
- Water Framework Directive (WFD) and Flood Consequences Assessment (FCA).

Iterative Approach to Scoping

2.2 Whilst this EIA Scoping Report seeks to establish the overall framework for the EIA in relation to the environmental topics and associated likely significant effects that will be subject to detailed assessment, iterative 're-scoping' will continue as the design and strategy are refined, plans and principles are developed, and additional technical work is completed.

2.3 This iterative 're-scoping' process will continue up until the point when the assessments within the ES are in their first draft, in advance of submission. It is

requested that such an approach is clearly established within the EIA Scoping Opinion issued by NPTBC

- 2.4 Any deviation between the scope of effects considered within this EIA Scoping Report and the ES will be clearly communicated in the ES.

Approach to Assessment and Consideration of Alternatives

- 2.5 Schedule 4, Paragraph 2 of the EIA Regulations states that an ES should include:

“A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the applicant or appellant which are relevant to the proposed development and its specific characteristics and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”.

- 2.6 The EIA Regulations do not identify a specific methodology for the assessment of alternatives nor the criteria to be used to inform the assessment of reasonable alternatives. Therefore, the methodology to be adopted for the purpose of the EIA is based on professional experience of similar projects and an understanding of the Proposed Scheme and its characteristics (**Chapter 4: High Level Development Specification**), as well as a focus on delivery of a proportionate assessment.

- 2.7 The consideration of alternatives has followed a two-step approach, with Step 1 completed as part of this EIA Scoping Report:

- **Step 1** - Consideration of ‘factors’⁸ that constitute alternatives and justification / discussion of their inclusion / exclusion from further assessment; and
- **Step 2** - Qualitative appraisal of the ‘factors’ brought forward from Step 1 and, where appropriate, a comparison of environmental effects.

Step 1 – Consideration of Factors

- 2.8 The relevant factors have been considered to determine the need for further assessment:

- **Alternative Sites** – at the outset the Applicant considered a number of potential sites for the Proposed Scheme, both geographically within the UK and at Phoenix Wharf, with a number of key factors driving the preliminary site identification and selection process;
- **Alternative Design**⁹ – due to the industrial nature of the Proposed Scheme, there are limited ‘alternative design’ aspects to consider. The primary consideration under alternative design has been in respect to layout/arrangement, which has been responsive to the overall Site area, requirements for operational plant for the production of ATJ SPK and ATJ-RD to be located together (i.e., in sequence)

⁸ These are likely to consider alternative sites, alternative technology, alternative design, and a ‘do nothing’ scenario.

⁹ Interpreted as layout/arrangement, scale (in terms of massing) and land use/quantum.

and result in a safe working environment (i.e. suitable stand-off distance from the flare and storage tanks etc.). Furthermore, the location of the jetty and access road has meant these aspects have needed to be factored into layout/arrangement to ensure a sensible processing flow within the Site. Locations for the proposed temporary and permanent jetty have been subject to some degree of 'alternative' siting, in terms of various points along Phoenix Wharf, including the 're-use' of some former abandoned jetty's (which would require works to reinstate to a suitable and safe standard). Nonetheless, the location of the temporary jetty has been dictated by the most efficient route between offloading location to the final location of plant/equipment being transported to Site via barge. The permanent jetty location has largely been determined by the size requirements of the ships in relation to the appropriate navigation to and from the jetty, whilst maintaining safe operations in the port. Overall, although possible alternative layout/arrangements could have been devised for the majority of aspects of the Proposed Scheme, the environmental effects would likely be the same given the general industrial setting of the Site and the geographical extent of nearby receptors. On this basis, alternative designs will not be considered further in the ES;

- **Alternative Technology** – the industrial nature of the Proposed Scheme will require the use of a range of 'technologies', with respect to the operational plant deployed at the Site. Therefore, alternative technology will be considered in Step 2 in the ES, in as far as suitable alternatives have been considered by the Applicant and engineering design team, whilst ensuring the operational focus of the Proposed Scheme is maintained¹⁰;and
- **The 'Do Nothing' Scenario** – The EIA, as reported within the ES, will assess the likely significant effects of the Proposed Scheme, based on the deviation from the baseline environment. In addition, it will consider and report on the future baseline scenario¹¹, which is considered to be representative of the 'do nothing' scenario, where the likely significant effects (both beneficial and adverse) identified within the EIA (and reported in the ES) would not occur. On this basis, there will be further consideration of the 'do nothing' scenario in the ES.

2.9 As shown from Step 1 above, alternative sites, alternative technology and the 'do nothing' scenario will be taken forward into Step 2 in the ES.

Study Boundary for Data Collection

2.10 The boundary upon which baseline data has been collected to date, and for which it is proposed to collect on-going data for the ES, is defined by the EIA Study Area Boundary (**Figure 4.1**). This is considered the maximum extent of all temporary and permanent

¹⁰ It is noted that The Environmental Permitting Regulations (England and Wales) 2016 (as amended), which transposed European Directive 2010/75/EU into Welsh Law, does include the need to consider 'Best Available Technology (BAT)' (Article 13 of European Directive 2010/75/EU). Such aspects will be addressed through the applicable permitting process.

¹¹ Defined by the EIA Regulations (Schedule 4, Paragraph 3) as the natural evolution of the baseline in the absence of the Proposed Scheme.

works (including primary mitigation) for which planning consent is sought. At this stage this includes the following areas:

- Primary parcel of land for the location of the proposed production facility (approximately 9.1 hectares), comprising bare land adjacent to Phoenix Wharf (Port Talbot) (referred to as the '*Production Development Zone [PDZ]*');
- A discrete parcel of land located within the wider Port Talbot Docks at the eastern boundary of Phoenix Wharf (approximately 2.6ha) (referred to as '*Temporary Construction Area*');
- Approximately 0.87km of the unnamed port road, running adjacent to the northern boundary of the production development zone (referred to as '*Unnamed Port Road Supporting Infrastructure*'); and
- An extent of the marine environment of Phoenix Wharf, located to the north of the PDZ and the unnamed port road (referred to as the '*Phoenix Wharf Marine Unloading/Loading Facility*').

2.11 Where required, technical specific study areas (informed by relevant best practice and guidance) will relate to the Site and their distance(s) from the Site will be discussed in each topic.

2.12 Off-site mitigation, if and where required (to be identified through the EIA and reported in the ES), will be considered as 'secondary mitigation' (see '*Defining Mitigation and how this will be Controlled*'). Where appropriate, the EIA will consider such works as far as reasonably possible to identify any potential indirect / direct effects (to be reported within the ES). This approach ensures that the EIA has considered all direct and indirect environmental effects associated with the Proposed Scheme as far as reasonably possible.

2.13 The Proposed Scheme will require new utilities connections (see **Chapter 4: High Level Development Specification** for more details), some of which will include 'upgrade' works within the wider utilities network or entirely new infrastructure. Works, up to the Site boundary, have not been considered within the EIA Study Area Boundary (**Figure 4.1**) at this time, as they would be undertaken by the respective network operators and therefore subject to further investigations and studies by the respective network operators to establish the specifics of these works, including any routing. Furthermore, it is assumed that any works would be secured through the most relevant and appropriate consenting process, by the network operators themselves. The EIA will consider the in-combination impacts of such aspects as far as reasonably possible to identify any potential indirect / direct effects (to be reported within the ES).

Baseline Scenario for Use in the EIA

2.14 Likely significant effects as a result of the Proposed Scheme will be described in the ES in relation to the deviation from the baseline environment within the Site and/or relevant technical study areas. The baseline environment will comprise the existing environmental characteristics and conditions, based upon surveys undertaken and information/data available at the time of the technical assessment.

2.15 The data used to inform the baseline conditions for the purpose of the ES (for those environmental topics scoped in, see **Chapters 6 – 13** for more details) will vary depending upon the timing of surveys or the date when data sources will have been accessed. For the following environmental topics, the baseline conditions will be based upon surveys completed or information/data accessed in 2022/23 (**Table 2.1**).

Table 2.1: Baseline Data

Topic	Baseline Data
Major Accidents and/or Disasters (Chapter 6)	HSE search completed in 2023.
Terrestrial Ecology (Chapter 7)	Baseline habitat survey undertaken in June and July 2021, and supplemented in summer 2022. Bat activity surveys – May to September 2022. Reptile presence / absence surveys – June to October 2022. Targeted surveys for badger – June and July 2022. Otter presence / absence surveys – September 2022 and January 2023. Byrophyte survey – October 2022. Overwintering bird survey – winter 2021/2022.
Landscape and Visual (Chapter 8)	Site visit undertaken in November 2022.
Socio-Economics and Human Health (Chapter 9)	Desk based search completed in 2022. Public data sources dated from 2011 – 2022.
Climate Change (Chapter 10)	Desk based search completed in 2022. Public data sources dated from 1981 – 2010.
Air Quality (Chapter 11)	Desk based search completed in 2022. Public data sources dated from 2020.
Noise and Vibration (Chapter 12)	Noise survey undertaken August – September 2022.
Marine Ecology (Chapter 13)	Drop down video marine ecology survey completed in September 2022.

2.16 Some data obtained from third parties in respect to the environmental topics noted above may be older, though may still be relevant to the baseline scenario if there have been no significant changes. The origin of all third party data, the dates of surveys and

the dates when data sources have been accessed will be clearly outlined within the ES alongside any limitations and assumptions.

- 2.17 It is understood that the Site will be subject to on-going land management practices, including the management of Japanese Knotweed present within the Site. 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) any assessment will be based on the 'baseline' as defined through the technical baseline studies / surveys and will not consider an alternative / future baseline.
- 2.18 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, any assessment within the EIA would be considered to represent a 'worst case' scenario.

Identification of Sensitive Receptors

- 2.19 Based on baseline information and data, a series of receptors or receptor groups are identified, which are subject to likely significant effects arising from a project. These receptors are then subject to detailed assessment within the EIA.
- 2.20 Details of the receptors which are considered likely to be affected at this stage are set out in **Chapters 6 – 13**.

Defining Mitigation and how this will be Controlled

- 2.21 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'*.
- 2.22 Through the EIA process, including the preparation of the EIA Scoping Report different types of mitigation have been / will be identified and developed and these are defined as:
- **Primary mitigation** - modifications to the location or design of the Proposed Scheme made during the pre-application phase that are an inherent part of the project;
 - **Secondary mitigation** - actions that will require further activity in order to achieve the anticipated outcome and secured by condition and/or planning obligation; and

- **Tertiary mitigation** - 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 practice and used to manage commonly occurring environmental effects.
- 2.23 The design process has been and will continue to be informed by baseline surveys and desktop reviews so that effects are well understood, and primary and tertiary mitigation developed where possible.
- 2.24 The assessment of effects of the Proposed Scheme within the ES will be based on the information contained within a 'Development Specification' (see '*Information to Inform the final Assessment with the ES*') which will include primary and tertiary mitigation measures. Examples of primary mitigation measures may include the surface water drainage strategy. Examples of tertiary mitigation measures may include the adoption of best practice measures that can be controlled via a Construction Environmental Management Plan (CEMP) or other established legislative requirements (i.e., health and safety).
- 2.25 Primary and tertiary mitigation known at this stage have been considered within **Chapter 4: High Level Development Specification**. These measures are also summarised in the Preliminary Environmental Management Plan (PEMP) in **Appendix 2.1** (see further details below).
- 2.26 Within the ES, following the conclusion of the likely significant effects based on the Proposed Scheme (inclusive of primary and tertiary mitigation), any further mitigation (secondary mitigation) to further reduce an adverse effect or enhance a beneficial one will be identified.
- 2.27 Secondary or tertiary mitigation are only likely to avoid, reduce or enhance the residual effect if there is a high level of confidence in their mechanism for implementation (by the Applicant or third party).
- 2.28 An Environmental Management Plan (EMP) will detail all mitigation identified within the EIA process, including from the PEMP, and will form **Volume 3** of the ES (see '*Format of the ES*'). This document will define all the environmental requirements of the Proposed Scheme to ensure that the impacts concluded through the EIA process can be relied upon. The intention is that the EMP can be extracted by NPTCBC to support the preparation of appropriate planning conditions / obligations attached to any planning permission, where necessary.
- 2.29 As noted above, a Preliminary EMP has been developed as part of this EIA Scoping Report to capture all primary and tertiary mitigation identified at this stage and is provided in **Appendix 2.1**. Where primary and tertiary mitigation is referred to throughout this EIA Scoping Report, a referencing system has been used (e.g. **[P1]**, **[T1]**, etc) to link this to the summary of the mitigation in the Preliminary EMP in **Appendix 2.1**.

Information to Inform the Final Assessments within the ES

- 2.30 The ES will be based on a series of plans and overarching description of the Proposed Scheme, including an overview of the proposed operational processes, captured as part of a 'Development Specification', to be provided as part of the ES. The Development Specification will provide sufficient information to meet the requirements of the EIA Regulations and to inform the technical assessments undertaken as part of the EIA and reported in the ES.
- 2.31 Given the nature of the Proposed Scheme the exact design of the process plant and equipment required will continue to evolve up to the point of submission of the Application, whilst the EIA and associated assessments are progressed. This is largely in response to needs for the facility to operate in line with relevant Health and Safety regulations, restrictions/requirements of permitting process, the need to utilise Best Available Technology (BAT) and suppliers' restrictions. With this in mind, the EIA will be informed by a series of 'general arrangement plans' that establish:
- Maximum extent (i.e., footprint) of on-site plant, equipment, and structures within a series of general arrangement blocks; and
 - Maximum heights of on-site plant, equipment, and structures within each general arrangement block.
- 2.32 Other aspects relevant to assessment will be set out in combination with the above (i.e., finished ground levels) or detailed as part of the Development Specification within the ES. Although the design is expected to evolve, where technical data pertaining to plant / equipment is required to inform specific technical assessments (i.e., emission to air, or noise emissions), such details will be 'fixed' where possible, or any required flexibility assessed accordingly. Any limitations or necessary assumptions will be set out as part of the ES, in line with the EIA Regulations.
- 2.33 This approach ensures that the EIA will be based on a worst-case scenario and as much detail as possible, whilst allowing for the detailed engineering design to evolve up to the point of submission of the Application. The evolution of the detailed plans for engineering purposes will be continuously monitored and this process will be reported with the ES where possible, to ensure there is no deviation in the assessment outputs presented in the ES.

Assessment Scenarios

- 2.34 The EIA will assess the likely effects arising from the Proposed Scheme, taking account of the site preparation, earthworks and construction (referred to collectively as 'construction stage') and operational stage of the Proposed Scheme.
- 2.35 The following scenarios will be assessed where relevant to the environmental topic (and likely significant effects):
- **Peak Construction** – this will vary 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 will clearly define this within their respective technical assessment within the ES; and

- **Operation (2026)** – this will consider effects associated with the completion of the Proposed Scheme and its operation as set out in **Chapter 4: Development Specification**.

- 2.36 All scenarios will be considered against the existing baseline as defined above (see ‘*Baseline Scenario for Use in the EIA*’).
- 2.37 Decommissioning of the Proposed Scheme would include the shut down of plant and equipment and removal of above ground structures at the end of its operating life. The materials from this demolition would be recycled where possible, disposed of or sold, as appropriate. Any requirements to remediate the Site would be carried out to ensure the Site is restored. This would be controlled by a Decommissioning Environmental Management Plan prepared at the point of such stage coming forward. Such a plan would also set out the necessary environmental management practices required to limited or removal environmental effects associated with such, similar to that adopted for construction stage activities (i.e., CEMP).
- 2.38 There would be a level of traffic generated as part of the decommissioning activities, though it is assumed this will be at a similar level to that generated during construction (which is not considered to be significant and is scoped out (see **Chapter 5**)). Overall, the decommissioning impacts are considered to be comparative to those that will arise during construction.
- 2.39 At this time, it is not proposed to consider decommissioning stage of the Proposed Scheme in the ES. This is because at this stage there is insufficient information about this process, it is not clear of the exact intended lifetime of the Proposed Scheme and its operational processes, and effects are considered to be comparative to the construction stage effects, which will be reported in the ES where they are likely significant.
- 2.40 It should be noted that the assessment scenarios set out above are for purposes of the EIA only.

Assessment of Greenhouse Gas Emissions

- 2.41 The assessment of Greenhouse Gas (GHG) emissions will consider the whole lifecycle of emissions (i.e., from the generation of consumed electricity) associated with both the construction and operational stage of the Proposed Scheme, as far as reasonably possible (see **Chapter 10: Climate Change** for more detail). GHG savings from use of the ATJ SPK and Renewable Diesel (ATJ-RD) resulting from the facility relative to standard fossil fuel aviation fuel will also be considered. The assessment will draw upon the lifecycle assessment (LCA) work undertaken by the Applicant using Department of Transport (DfT) methodology to assess its GHG benefit.
- 2.42 This approach will enable the net GHG effect of the Proposed Scheme to be established in accordance with the latest IEMA guidance on assessing GHGs in EIA and establishing their significance and reflects the transboundary nature of climate change.

2.43 The stepped approach in determining the overall net emissions (set out in more detail within **Chapter 10: Climate Change**) will report direct and some indirect emissions from the construction and operational activity of the Proposed Scheme, and these emissions compared with baseline emissions targets as well as to future local and national carbon budgets (set out in more detail within **Chapter 10: Climate Change**). However, the overall level of effect and significance will be reported for the net GHG emissions effect only.

Level of Effect and Consideration of Significance

2.44 A stepped approach will be adopted to define effects for the construction and / or operational stages of the Proposed Scheme, as outlined below.

2.45 The method for assessing the level of effect varies between environmental topics but in principle will be 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).

2.46 Sensitivity (or value / importance) will be assessed on a scale of high, medium, low and negligible and the magnitude of change (or impact) will be assessed on a scale of large, medium, small and negligible.

2.47 Where relevant, other factors such as feedback from stakeholders, relevant legislation, international / national / regional / local standards and guidance and the inter-relationship between effects will also be considered.

2.48 The interpretation and use of the above criteria / factors will be set out within each Technical Chapter of the ES.

2.49 The assignment of the level of effect will be based on professional judgement with the support of the matrix below (**Table 2.2**), which is seen as a tool to assist with the process. Whilst the matrix within **Table 2.2** provides ranges, this is to guide the competent expert and a definitive level of effect will be provided, where possible, for each effect.

Table 2.2: Matrix to Support Determining 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

2.50 As noted in **Table 2.2**, the following terms will be used to define the level of effect 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 or/and 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.

2.51 For some environmental topics, relevant guidance or the nature of the effect requires that differing criteria or scales for determining level of effect are to be used. For consistency within the ES, the final ‘level of effect’ will be reported using the terminology and conclusions set out above. This enables the conclusions of assessments across all environmental topics to be understood for the decision-making process, along with allowing robust analysis and appraisal as part of the assessment of cumulative effects.

2.52 For each effect, a binary judgement will be made as to whether the effect is ‘Significant’ or ‘Not Significant’. This determination will be based on professional judgement and / or relevant guidance and standards, where applicable. Significance

will only be concluded for residual effects (i.e. following the identification of secondary mitigation or enhancement).

- 2.53 Effects will also be described in line with the requirements of the EIA Regulations (i.e. as direct or indirect; short, medium or long-term¹²; permanent or temporary).
- 2.54 Summary of effect tables that outline the likely significant effects, receptors, residual level of effect and whether this is considered to be 'Significant' or 'Not Significant' will be provided at the end of each Technical Chapter within the ES.
- 2.55 Cumulative effects will be considered as a single co-ordinated assessment as outlined in **Chapter 14**.

Consideration of Human Health

- 2.56 As described in Schedule 4, Paragraphs 4 and 5, the EIA Regulations require the consideration of human health. Albeit this does not prescribe the need for a Health Impact Assessment (HIA), rather it is to ensure that due consideration of human health is accounted for within the EIA process.
- 2.57 'Human health' is a broad receptor (or receptor category) where there are a wide range of potential effects that could impact upon it. Furthermore, in most instances the assessment within individual technical topics across an ES often consider 'humans' as receptors (i.e. changes to air quality pollutant concentrations). Therefore, any standalone assessment of Human Health would essentially reiterate/repeat assessment from elsewhere. On this basis, it is considered that instead of the completion of a standalone Human Health ES chapter, this EIA Scoping Report and the forthcoming ES will sign-post to the relevant technical topics where human health has been duly assessed/considered. This will ensure the EIA remains proportionate and focused on only likely significant effects. A simple human health baseline overview is provided as part of **Chapter 9: Socio-Economics and Human Health**.
- 2.58 **Table 2.3** below lists all of the relevant effects to human health and where these are considered in this EIA Scoping Report. The table identifies where a specific effect has been 'scoped in' or 'scoped out' to provide a snapshot of which effects upon human health are being 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 the ES.
- 2.59 As noted in **Chapter 14**, the ES will present an assessment of effect interactions. Where relevant, effects to human health that are not considered to be significant in isolation and are scoped out (**Table 2.3**) will be considered within the discussion of the assessment of effect interactions on human health in line with the methodology set out in **Chapter 14** to ensure a complete assessment.

¹² Duration of effect (short - up to 1 year, medium - 1 to 10 years, or long-term - over 10 years)

Table 2.3: Human Health Effects

Effect	Where it is Considered in this EIA Scoping Report	Scoped In or Out
Ground Conditions and Contamination		
Direct effects to human health due to exposure to existing on-site contamination and the accidental release of contamination	Chapter 5: Environmental Topics which are Not Significant	Out
Accidental release of contamination	Chapter 5: Environmental Topics which are Not Significant	Out
Indirect effect to human health due to potential ingress and accumulation of bulk ground gas into proposed structures	Chapter 5: Environmental Topics which are Not Significant	Out
Direct effects to human health due to presence of UXO	Chapter 5: Environmental Topics which are Not Significant	Out
Flood Risk and Hydrology		
Flood risk (<i>impacting construction workers and operational users of the Site and surrounding area</i>)	Chapter 5: Environmental Topics which are Not Significant	Out
Transport		
Increase in fear and intimidation as a result of temporary construction traffic	Chapter 5: Environmental Topics which are Not Significant	Out
Increase in accidents and safety as a result of temporary construction traffic	Chapter 5: Environmental Topics which are Not Significant	Out
Fear and intimidation and accidents and safety as a result of operational traffic	Chapter 5: Environmental Topics which are Not Significant	Out
Lighting		
Disturbance to nearby residents due to obtrusive light during construction	Chapter 5: Environmental Topics which are Not Significant	Out
Disturbance to nearby residents due to obtrusive light during operation	Chapter 5: Environmental Topics which are Not Significant	Out
Major Accidents and/or Disasters		

Effect	Where it is Considered in this EIA Scoping Report	Scoped In or Out
Major road traffic accident resulting in death or permanent injury to members of public (<i>construction</i>)	Chapter 6: Major Accidents and Disasters	Out
Major road traffic accident resulting in death or permanent injury to members of public (<i>operational</i>)	Chapter 6: Major Accidents and Disasters	Out
Pollution event / migration of existing contamination from the Site to controlled waterbody (<i>construction</i>)	Chapter 6: Major Accidents and Disasters	Out
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 (<i>operation</i>)	Chapter 6: Major Accidents and Disasters	Out
Pollution event occurring during ship transportation of input/output material	Chapter 6: Major Accidents and Disasters	Out
Operational plant/infrastructure failure (i.e. structure/building collapse, human error, explosion, non-descriptive accident)	Chapter 6: Major Accidents and Disasters	In
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 (<i>construction and operation</i>)	Chapter 6: Major Accidents and Disasters	Out
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
Access to healthy food	Chapter 9: Socio-Economics and Human Health	Out

Effect	Where it is Considered in this EIA Scoping Report	Scoped In or Out
Accessibility and active travel	Chapter 9: Socio-Economics and Human Health	Out
Social cohesion and lifetime neighbourhoods	Chapter 9: Socio-Economics and Human Health	Out
Crime reduction and community safety	Chapter 9: Socio-Economics and Human Health	Out
Access to work and training	Chapter 9: Socio-Economics and Human Health	Out
Climate Change		
Increased risk of flooding	Chapter 10: Climate Change	Out
Heat stress during construction	Chapter 10: Climate Change	Out
Extreme weather	Chapter 10: Climate Change	Out
Water availability	Chapter 10: Climate Change	In
Summer overheating	Chapter 10: Climate Change	In
Air Quality		
Nuisance, disturbance and a reduction in human health as a result of dust and particulate matter emissions from construction activities and Non-Road Mobile Machinery (NRMM)	Chapter 11: Air Quality	Out
Change to local air quality in terms of human health ¹³ 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 ¹³ due to on-Site emissions associated with flare	Chapter 11: Air Quality	In
Change to local air quality in terms of human health ¹³ due to transport emissions ¹⁴	Chapter 11: Air Quality	In
Changes to local air quality due to fugitive on-site emissions (dust, odour, gas emissions)	Chapter 11: Air Quality	In

¹³ Particularly, but not limited to, nitrogen dioxide and particulate matter

¹⁴ To include vehicles and shipping emissions (where relevant)

Effect	Where it is Considered in this EIA Scoping Report	Scoped In or Out
Noise and Vibration		
Operational road traffic noise impacting upon surrounding residential receptors	Chapter 12: Noise and Vibration	Out
Vibration from construction activities impacting upon surrounding residential receptors	Chapter 12: Noise and Vibration	Out
Generation of noise from construction activities and construction traffic	Chapter 12: Noise and Vibration	In
Generation of noise from plant during operation	Chapter 12: Noise and Vibration	In

Consideration of Transboundary Effects

- 2.60 Schedule 4, Regulations 5 of the EIA Regulations includes reference to the need to consider ‘transboundary’ effects, normally to define effects between European Economic Area (EEA) states. The Proposed Scheme (**Chapter 4: High Level Development Specification**) is geographically contained to Port Talbot Docks and immediate surrounds, with no element of it extending to any other EEA states or features under the jurisdiction of an EEA state.
- 2.61 **Chapter 7: Terrestrial Ecology** has identified the absence of any international statutory designated ecological sites within 5km of the EIA Study Area Boundary. However, the Kenfig SSSI/NNR/SAC (located 5.3km to the south of the PDZ), Crymlyn Bog and Pant y Sais SSSI/NNR/SAC (located 7km to the north of the Site) and Glaswelltiroedd Cefn Cribwr SSSI/SAC (9.7km to the south-east of the PDZ) are within 10km of the Site. Nonetheless, **Chapter 7: Terrestrial Ecology** has identified a singular effect from the Proposed Scheme with respect to habitat(s) present within the ecological designated site, rather than specific species that might be migratory to other EEA states.
- 2.62 **Chapter 7: Terrestrial Ecology** and **Chapter 13: Marine Ecology** have identified possible impacts from the Proposed Scheme on species that are migratory. However, the nature of effects are considered to be localised and small scale (and in some instances temporary) that they would not materially impact upon such species from a ‘transboundary perspective’.
- 2.63 As such, there are no perceived transboundary effects that requires further consideration as part of the EIA or require reporting through the ES.

Climate Change Resilience

- 2.64 In accordance with climate change resilience guidance, the impacts of climate change on the Proposed Scheme (termed resilience) have been and will be considered throughout the EIA. The current approach has been to incorporate all climate change resilience measures into the design of the Proposed Scheme where possible, therefore

being considered as part of **Chapter 4: High Level Development Specification** or final 'Development Specification' within the ES. These measures will be set out as primary mitigation measures within the PEMP (at this time where relevant) or the Environmental Management Plan (EMP) submitted with the ES.

2.65 At this time, the specific climate resilience measures incorporated into the Proposed Scheme are as follows:

- Development of an on-site flood risk strategy prepared in line with Welsh Government Technical Advice Note 15¹⁵ (TAN15), inclusive of an allowance for climate change in line with Flood Consequences Assessments: Climate change Allowances¹⁶.
- All future buildings, structures and process equipment/plant will be designed and installed in line with current legislation and guidance, as well as being cognisant of The COMAH Design Codes for buildings / structures¹⁷.

Format of the ES

2.66 The ES will comprise four volumes:

- Volume 1: Primary Report and Supporting Graphics;
- Volume 2: Technical Appendices;
- Volume 3: Environmental Management Plan; and
- Volume 4: Non-Technical Summary.

2.67 The proposed format and structure of the ES is provided in **Appendix 2.2: Structure of the Environmental Statement**.

Competent Expertise

2.68 Regulation 17, Paragraph 4(a) of the EIA Regulations requires the ES to be prepared by competent experts.

2.69 The EIA will be led by Turley. The IEMA has awarded Turley the EIA Quality Mark in recognition of our technical quality and commitment to improvement in practice.



2.70 All technical assessments in the EIA will be undertaken by a suitably qualified project team, inclusive of a thorough technical review to ensure technical credibility, followed

¹⁵ <https://gov.wales/technical-advice-note-tan-15-development-and-flood-risk-2004>

¹⁶ GOV Wales (2021). Flood Consequences Assessments: Climate change Allowances. Available at: https://gov.wales/sites/default/files/publications/2021-09/climate-change-allowances-andflood-consequence-assessments_0.pdf [Accessed 01/07/2022].

¹⁷ HSE. The COMAH Design Codes for buildings / structures. Available at: [Design codes - buildings / structures \(hse.gov.uk\)](https://www.hse.gov.uk/design-codes-buildings-structures/) [Accessed 01/07/2022].

by a subsequent procedural review by the EIA co-ordination team and EIA Project Director.

- 2.71 In line with the EIA Regulations, all contributors to the EIA are competent experts in EIA and this will be demonstrated in the ES with an overview of each key expert's qualifications, professional accreditations and experience.

Interaction of the ES with Other Planning Application Documents

- 2.72 The Application will be accompanied by a number of documents, some of which will inform the ES and be appended to the ES as supporting technical evidence (included as part of **Volume 2**), whilst others will form standalone 'Application Documents' which provide a greater level of detail of how the Proposed Scheme is likely to come forward or how it complies with policy.

- 2.73 At this stage, the following reports are anticipated to be included as appendices to the ES in **Volume 2**:

- Landscape and Visual Impact Assessment;
- Ecological Impact Assessment, Maintenance Plan, Mitigation and Enhancement Strategy;
- Air Quality Assessment;
- Operational Noise Impact Assessment;
- Framework Construction Environmental Management Plan (CEMP) / Method Statement;
- Marine Ecology Surveys and Report.

- 2.74 As explained above, other documents will provide a greater level of detail on how the Proposed Scheme is likely to come forward, how the Proposed Scheme complies with policy or provide assessments for technical topics for which no likely significant effects are considered to arise (i.e., 'scoped out' of the ES). Where information from these documents will inform the Proposed Scheme upon which the ES will be based (see Information to '*Inform the Final Assessment within the ES*'), this will be clearly stated within **Chapter 4: Development Specification**. However, they will not inform the assessment of likely significant effects and so they will not feature in the ES.

- 2.75 These documents are therefore submitted as standalone Application Reports as part of the planning application. At this stage, the following are anticipated to be Application Reports that do not form part of the ES:

- Planning Statement;
- Design and Access Statement;
- Pre-application Consultation (PAC) Report;

- Site Investigation/Ground Conditions Report;
- Remediation Method Statement, as required;
- Travel Plan;
- Transport Assessment;
- Flood Consequence Assessment;
- Drainage Strategy;
- Landscape Strategy;
- Arboricultural Assessment;
- Topographical Survey;
- Utilities Survey and Report;
- Sustainability and Climate Change Resilience Statement;
- Socio-Economic and Human Health Statement;
- Archaeology and Heritage Assessment;
- Preliminary Waste Management Strategy;
- Preliminary Lighting Strategy;
- Shipping Report.

Interaction of ES with Permitting Applications and Consents

- 2.76 Given the industrial nature of the Proposed Scheme, a series of permits and/or additional application consents will be necessary and sought in order to allow the operation of the Proposed Scheme. These consenting regimes sit outside of the Town and Country Planning Act and, in some cases, the EIA Regulations, however, there will be some overlap between the assessment work undertaken to inform the ES (and wider Application) and the various permitting / consenting process. As such, the existing understanding of the necessary permits /consents for the Proposed Scheme (informed by **Chapter 4**) has been provided below.
- 2.77 The necessary permitting and consents set out below will be sought alongside the Application and thus the EIA. As such, at the point of submission of the Application (including the ES) the appropriate corresponding submission under the permitting and/or consenting process will also occur.
- 2.78 Where there is commonality between the effects being assessed through the EIA and corresponding requirements of permits/consents, coordinated assessments will be undertaken (i.e., emissions to air dispersion modelling). This approach ensures that the

environmental information submitted on behalf of the Proposed Scheme is consistent. Where coordinated assessments have been undertaken and utilised as part of the EIA these will be identified appropriately within the ES.

Environmental Permitting

- 2.79 In accordance with The Environmental Permitting Regulations (England and Wales) 2016 (as amended), an environmental permit will be required from Natural Resources Wales (NRW) for the main production activity¹⁸ and the associated plant and equipment that forms part of the wider processing operations. The new plant will be designed in accordance with Best Available Techniques.
- 2.80 Additional permits that fall outside of the Environmental Permitting Regulations will also likely be required, for example a greenhouse gas permit in accordance with the Greenhouse Gas Emissions Trading Scheme Regulations 2012 and a 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 Substances Consent

- 2.81 The Proposed Scheme will require the handling of hazardous substances in quantities exceeding the controlled quantities in the Planning (Hazardous Substances) (Wales) Regulations 2015 and therefore requires Hazardous Substance Consent. This application will be determined by NPTCBC in consultation with the Health and Safety Executive and NRW.

Control of Major Accident Hazards (COMAH)

- 2.82 The Proposed Scheme will require the handling of hazardous substances exceeding the Upper - Tier COMAH threshold, which means it must comply with the following:
- Notify the Health and Safety Executive and Natural Resources Wales before the start of construction;
 - Prepare a major accident prevention policy;
 - Prepare a Pre-Construction Safety Report;
 - Prepare a Pre-Operation Safety Report; and
 - Make arrangements for emergency planning through provision of effective on-site emergency planning and response arrangements and where necessary, dovetailing with the off-site emergency plans prepared by the local authorities under COMAH.

¹⁸ The main activity of SAF production will be a Schedule 1 Part (A) activity falling under Refineries and/or the production Large Volume Organic Chemicals (LVOC). There is associated plant and equipment that forms part of the wider processing operations (i.e., effluent treatment, hydrogen production, combustion plants (boilers) etc.) that will likely be their own listed activities and will need to be included on the environmental permit for the main activity.

Habitat Regulations Assessment (HRA)

2.83 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.'

2.84 As identified within **Chapter 7: Terrestrial Ecology** several ecological designated sites¹⁹ have been identified within a 10km study area of the Site. Emissions modelling will be undertaken to inform **Chapter 11: Air Quality** and will then define air pollution concentration of each relevant emission from the Proposed Scheme. This data will be reviewed against the relevant UK Air Pollution Information System (APIS) datasets. The review will specifically screen if there is any potential for a likely significant effect (LSE) on any designated sites. Where there is potential for a likely significant effect, a shadow HRA would be prepared and submitted to NPTBC to inform an Appropriate Assessment. A corresponding assessment of any likely significant effects will also be reported as part of the ES, in line with Regulation 26.

¹⁹ 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.

3. Site Context

- 3.1 This Chapter summarises the general location and setting of the Site. Technical baseline information is provided for each environmental topic in **Chapter 5** (for those topics for which no likely significant effects are identified) or in **Chapters 6 – 13**.

Location and Setting

- 3.2 The Site is located within Port Talbot in the Tata Steel industrial area. Given the extent of the Site, it has been split into a number of parcels (linked to their proposed function), as follows:
- Primary parcel of land for the location of the proposed production facility (approximately 9.1ha), comprising bare land adjacent to Phoenix Wharf (Port Talbot) (referred to as the '*Production Development Zone [PDZ]*');
 - A discrete parcel of land located within the wider Port Talbot at the eastern boundary of Phoenix Wharf (approximately 2.6ha) (referred to as '*Temporary Construction Area*');
 - 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 marine environment of Phoenix Wharf, located to the north of the PDZ and the unnamed port road (referred to as the '*Phoenix Wharf Marine Unloading/Loading Facility*').
- 3.3 The above terms have been used throughout the remainder of the EIA Scoping Report when discussing the Site and how the various elements of the Proposed Scheme would influence the potential for likely significant effects.
- 3.4 The Site is currently unused and vacant, and, especially at the PDZ, has been colonised by vegetation.
- 3.5 Historical mapping shows the PDZ has previously been used for industrial use, including a metal refinery works; steel ceilings factory and wagon repair shop. All buildings on the PDZ appeared to have been demolished as of 2009.
- 3.6 Phoenix Wharf is located to the north/west of the PDZ. The main industrial area is located to the south. In the surrounding area there is further industrial facilities to the south, residential dwellings to the east and agricultural land beyond that, residential dwellings to the north west, and Swansea Bay to the west.
- 3.7 A topographical survey of the Production Development Zone (PDZ) has been completed and shows higher ground in the southern portion of the site, with ground elevations ranging mostly between 8 – 9mAOD, with a maximum of 9.35mAOD in the south-western portion. Along the northern boundary of the PDZ levels are lower, ranging between 7 - 8mAOD with a low of 6.86mAOD at the central northern boundary of the

PDZ, closest to the Unnamed Port Road and Phoenix Wharf Ship Unloading/Loading Facility. NRW 1m Light Detection and Ranging (LiDAR) data shows that the Temporary Construction Area has relatively flat topography with ground levels ranging from 7.3 – 8.1mAOD at their maximum extents.

4. High Level Development Specification

- 4.1 In line with **Chapter 2: Approach to EIA**, specifically '*Defining mitigation and how this will be controlled*', where primary and/or tertiary mitigation has been identified or assumed within this Chapter, a referencing system has been used (e.g. **[P1]**, **[T1]**, etc) that link to the schedule of mitigation defined within the Preliminary EMP (**Appendix 2.1**) which will ensure such mitigation is transferred to the ES as part of the EMP. Further details of the PEMP and EMP can be found in **Chapter 2: Approach to EIA**.

Site

- 4.2 All temporary and permanent works will take place within the EIA Study Area Boundary, as illustrated on **Figure 4.1**, and referred to as the 'Site' (approximately 20.1 hectares).
- 4.3 As identified within **Figure 4.2** the Site comprises the primary parcel of land for the location of the proposed production facility (approximately 9.1 hectares), comprising land adjacent to Phoenix Wharf (Port Talbot). Hereafter referred to as the 'Production Development Zone' (PDZ).
- 4.4 In addition to this parcel of land, the Site also includes:
- A discrete parcel of land located within the wider Port Talbot at the eastern boundary of Phoenix Wharf (approximately 2.6ha) (referred to as '*Temporary Construction Area*');
 - 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 marine environment of Phoenix Wharf, located to the north of the PDZ and the unnamed port road (referred to as the '*Phoenix Wharf Marine Unloading/Loading Facility*').
- 4.5 Therefore, given the above, the following spatial areas will be referenced which will assist the identification of impacts that are only relevant to specific spatial zones:
- Production Development Zone (PDZ);
 - Temporary Construction Area;
 - Unnamed Port Road Supporting Infrastructure; and
 - Phoenix Wharf Marine Unloading/Loading Facility.

Overview of Site Preparation

- 4.6 Site preparation works will vary across the spatial zones of the Site, given the specific nature of each element. Therefore, the overview of site preparation works has been

set out for each spatial zone. More general overarching construction information is set out in the first instance.

- 4.7 A principal construction compound will be located within the Temporary Construction Area, with associated amenity facilities for construction workers. Within the PDZ, a smaller satellite construction compound will be set up and fenced off. This will be made available to the main contractor for subcontractor facilities and workers.
- 4.8 It is assumed that the main contractor will provide a temporary power generator to provide power to the contractor compound(s) to support the site construction activities.
- 4.9 Operational production plant/equipment (i.e., process modules and oversized equipment) required within the PDZ will be brought to Site via barge (due to their size and weight). The barges will utilise a temporary constructed loading jetty, approximately 20m by 50m, installed at Phoenix Wharf. The exact location of this loading jetty is to be finalised but will align with the main construction access point to the PDZ for ease of off-loading. To facilitate this loading jetty, an area of the quay at Phoenix Wharf will be specially reinforced to accommodate the unloading of the heavy plant/equipment.
- 4.10 Construction traffic is anticipated to comprise up to 120 daily HGV movements (240 two-way daily HGV movements) which equates to an average of circa 12 HGV movements per hour (24 two-way HGV movements per hour) at peak construction, although the contractor currently estimates up to 52 two-way HGV movements in the AM peak hour²⁰. Furthermore, it is expected that during peak construction period there will be circa 450 construction workers on-site, generating additional LGV trips associated with the construction workforce. The appointed transport consultant has determined Passage Car Units (PCU) for both HGV and construction workforce movements during peak construction, as summarised in **Table 4.1**, and set out in full within **Appendix 4.1: Transport Scoping Note**. Parking provision for construction workers will be located within the temporary construction area and PDZ as required and in line with the expected construction traffic.

Table 4.1: HGV and LGV construction trip generation estimates

PCU Component	AM Arrivals	AM Departures	PM Arrivals	PM Departures
HGV	52	52	24	24
Workforce	153	0	0	153

*Temporal distribution of construction worker arrivals and departures has been informed based on the anticipated site opening time, working hours and delivery hours. Specific assumptions are provided within **Appendix 4.1**.*

²⁰ The exact number per day across the entire construction period will vary, however, the peak construction is expected to represent the absolute worst case at any given period within the construction stage.

Travel via minibus will be heavily encouraged with circa 152 construction workers anticipated to arrive/depart by bus.

HGV movements are inclusive of all movements required for site preparation (including any requirements for removal/import of soil/fill material), site establishment, delivery of construction equipment, delivery of materials, and removal of waste.

*Full details of estimated construction trips and assumptions are set out in **Appendix 4.1**.*

- 4.11 All other forms of construction equipment, materials and any waste arising from the construction of the Proposed Scheme (including materials arising from earthworks – see **Paragraph 4.19** for more details) will be transported to/from the temporary construction area and PDZ via road, which has been factored into the assumed construction traffic discussed above. The construction of the Proposed Scheme will utilise off-site pre-construction where possible, as well as an element of pre-fabrication occurring within the temporary construction area as required. As such, the construction of the Proposed Scheme may require over-sized vehicle movements. Where necessary such movements will be arranged with the relevant authorities to ensure appropriate transportation.
- 4.12 Given the nature of the surrounding area (i.e., an industrial complex), construction working hours will not be restricted. Generally, construction would be expected to take place during normal working hours, Monday to Friday. However, there may be occasions when teams will work either extended hours or in a shift pattern 24 hours a day for activities that cannot reasonably be paused during their installation and cannot be completed in a normal shift. In the event of delays and in order to maintain overall progress it may also be necessary to work extended hours, multiple shifts (24hrs) or weekends in addition to the normal working pattern.

Production Development Zone (PDZ)

- 4.13 Prior to any on-site works, temporary fencing / hoarding will be installed around the perimeter of the PDZ as required, restricting access and creating a secure area for the purpose of health and safety and general security purposes.
- 4.14 Construction access will be taken from the unnamed port road to the north of the PDZ, either via the existing hardstanding 'lay-by' (approximately central along the northern boundary) or via a new access point aligning with the proposed final access, coinciding with the construction of a new access and internal access road(s) (see **Paragraph 4.23**).
- 4.15 The PDZ comprises previously developed land that has been unmanaged and as such has become colonised by vegetation, comprising mainly willow scrub and Japanese Knotweed, as well as naturally regenerated grassland. In addition, there are areas of hardstanding and bare ground, associated with previously developed areas (i.e., buildings, etc.).
- 4.16 All vegetation within the Site will be cleared and removed, including invasive species such as Japanese Knotweed, which will be subject to a specific remediation methodology undertaken by an appropriately qualified contractor. All materials arising from clearance (including the Japanese Knotweed) will be identified, screened (where applicable), handled and removed in line with appropriate standards and guidance and

undertaken by a qualified specialist where necessary [T7]. It is understood that the Site will be subject to on-going land management practices, including the long-term management of Japanese Knotweed present within the Site [T15].

- 4.17 The areas of existing hardstanding, and any below ground features that require removal (i.e., former foundations) will be ‘scrubbed out’ and associated hard core material crushed and where appropriated retained on-site for future use (i.e., for site levelling or surface dressing). Any material recovered from Site for the purpose of re-use will be subject to screening to ensure absence of contamination or hazardous materials associated with historic uses. Where necessary all contaminated / hazardous material will be handled, removed, and disposed in line with relevant national regulations / legislation [T7].
- 4.18 A preliminary land contamination and geotechnical assessment, inclusive of a preliminary conceptual model, for the PDZ was completed in May 2022 (**Appendix 5.8 and 5.9**). The reports identify potential for contamination associated with made ground and former historic land uses (including in the surrounding area). Further investigations will be necessary to determine / validate the presence / absence of contamination across the Site [T11]. The construction of the Proposed Scheme includes the creation of development platforms and foundation bases/pads for the proposed operational plant, which will in part ‘cap’ some extent of existing contamination within the Site. However, outside of such areas (i.e., in areas of proposed landscaping) or where more specification contamination requires remediation (i.e., where asbestos is identified), remedial activities will be established within a Remediation Strategy, which will be submitted and agreed with NPTCBC and other relevant consultees in advance of any construction works taking place [T11].
- 4.19 The Site will be required to be flood free in the 0.1% AEP + climate change event (for fluvial and tidal flooding). To achieve this, ground levels need to be no less than 7.5mAOD [P2]. The existing levels within the Site range mostly between 8 – 9mAOD, with a small area of the Site below 7.5mAOD (see **Paragraph 3.7**). Therefore, during the construction stage earthworks will be undertaken across the PDZ to create a singular level development platform at approximately 8mAOD, within areas required for operational plant/equipment, buildings and associated key infrastructure. This will be achieved using a cut and fill exercise across the Site with some areas subject to cut and others fill. Currently it is expected there will be an overall cut and fill balance within the Site, or, at worst, an excess of material from cuttings to be exported off site. However, any material to be exported off-site is expected to be limited and subject to the necessary handling and disposal in line with relevant national regulations / legislation [P5].
- 4.20 Information regarding the exact foundations has not been finalised²¹ and will be subject to final building design and underlying ground conditions. Nevertheless, it is anticipated that a combination piled foundations will be required for the proposed buildings and process plant/equipment within the production development zone. All proposed buildings, structures and process plant/equipment will be built in line with

²¹ Subject to further intrusive ground investigations works to fully understand the structural capacities associated with the below ground geology.

national standards and guidance, including being cognisant of The COMAH Design Codes for buildings / structures²² [T14].

Temporary Construction Area

- 4.21** As the name suggests the temporary construction area will be solely used to facilitate the construction of the Proposed Scheme. The area will be used for the purpose of primary construction compound (including associated welfare facilities), an element of car parking, temporary storage of materials prior to use or installation within the PDZ. The area may also be used for pre-fabrication of specific elements of the production plant (i.e., skid mounted units may be prepared and assembled for installation or/and structural steel may be prepared, and part assembled before installation).
- 4.22** Prior to use, a site conditions assessment will be undertaken, to determine the existing nature and condition of the temporary construction area to ensure their return to pre-use conditions, or appropriate condition agreed in advance²³. Given the intended use, works during the construction stage will include clearance of vegetation (where present) and securing of the area with appropriate fencing or hoarding as required. Following initial preparation appropriate construction protective measures will be implemented (i.e., ground barrier or storage facilities) to ensure no potential accidental release of contamination associated with construction related activities, or disturbance/mobilisation of existing contamination [T2, T6]. There will be no permanent works within these areas and following completion of construction activities, these parcels of land will be returned to bare ground.

Unnamed Port Road Supporting Infrastructure

- 4.23** The extent of this zone within the Site is to facilitate new access points to the PDZ and linkages back to the wider road network to the east. At this time the exact location of the proposed access points from unnamed port road is not fully known and will be reflective of the internal access road arrangement within the PDZ, once the internal layout of plant is finalised. It is expected that up to two access points will be created and comprise simple priority turning junction(s) into the Site. As such, an element of temporary works will be required along the unnamed port road to facilitate the construction of the access points. This is expected to include the partial removal of road surface layers within the existing carriageway, followed by the preparation of sub-surface for the new access junction and associated top dressing, integrating into the existing carriageway. It may also include the need for some partial widening of the unnamed port road.

Phoenix Wharf Marine Unloading/Loading Facility

- 4.24** Both the ethanol primary feedstock used within the production facility and the resulting SAF (i.e., ATJ SPK product) will be transported to/from the Site via ship²⁴. Therefore, a new jetty and associated unloading/loading facility will be constructed adjacent to Phoenix Wharf within the marine environment with Port Talbot Docks. The new jetty will comprise a jetty extending from the existing port wall at Phoenix Wharf,

²² HSE. The COMAH Design Codes for buildings / structures. Available at: [Design codes - buildings / structures \(hse.gov.uk\)](https://www.hse.gov.uk/design-codes-buildings-structures/) [Accessed 01/07/2022].

²³ To be agreed with ABP as land owner.

²⁴ Renewable Diesel (ATJ-RD) will be transported from the Site via road tanker.

out into Port Talbot Docks a suitable distance to align with Health and Safety Executive (HSE) requirements, given the flammable nature of ethanol and SAF, as well as to extend into an appropriate area of Port Talbot Docks where the depth is suitable for the ships being used. Breasting and/or mooring dolphins (or a combination) will be utilised at the end of the jetty for mooring. The jetty will be a suitable width to accommodate the transfer pipe work connecting the ship unloading/loading arms to the onshore pipeline infrastructure associated with the PDZ (i.e., to connect to the ethanol storage tanks).

- 4.25 The exact requirements of the jetty are yet to be established and subject to further investigation works. However, construction of the jetty is likely to include some form of pilling to anchor the jetty within the port, partial refurbishment of the port wall at the point where the jetty will extend from, and the installation of the breasting and/or mooring dolphins at the end of the jetty for the purpose of mooring the transport ships. No other forms of works (i.e., dredging) are expected.
- 4.26 As set out in **Chapter 1: introduction**, proposed works within the marine environment will require a marine license from NRW. Where necessary the requirements of the Marine Works (Environmental Impact Assessment) Regulations 2007 will be set out and followed. These aspects will be dealt with through the marine license application process. However, the ES for the Application will consider the impacts of these marine works as part of the wider Proposed Scheme, as set out within **Chapters 5 – 13**.

The Proposed Scheme

- 4.27 In simple terms the Proposed Scheme comprises a new sustainable aviation fuel production facility, which utilises liquid ethanol as the primary feedstock, passed through a series of processes to generate the sustainable aviation fuel (ATJ SPK) and a renewable diesel(ATJ-RD). It is understood that the Proposed Scheme will produce over 100 million litres per year of ATJ SPK²⁵. The facility will also produce Renewable Diesel (ATJ-RD). The facility will allow for the flexibility to produce more or less of one of the products (i.e., producing more ATJ SPK or more ATJ-RD) to meet market demand/needs, however, the primary focus will be the ATJ SPK. Regardless of the principle product generated the process adopted is the same and therefore the resulting environmental effects the same.
- 4.28 The bulk of the facility will comprise processing plant/equipment comprising multiple modules arranged in sequence, replicating the overall chemical process required in the production of the ATJ SPK and ATJ-RD. Alongside which will be other process infrastructure including storage vessels/tanks for various input and output products (i.e., ethanol, ATJ SPK, ATJ-RD, etc.); process utilities (i.e., cooling water, steam, liquid nitrogen, hydrogen generation package²⁶, etc.); internal road system (including loading

²⁵ This will then be utilised by a third party fuel distribution/supplier who will blend the ATJ-SPK with fossil kerosene, at the premises of the third party fuel distributor/supplier, to generate a drop-in, fully certified blend of Sustainable Aviation Fuel (SAF) for use in commercial aviation.

²⁶ Hydrogen required for the process will be produced on-site using electrolysis.

and unloading facility); industrial grade pipe and racking system; and flare stack with associated sterile area.

- 4.29 To support the production process, a series of associated operating facilities (i.e., process control room(s), electrical substation, laboratory, administration/office(s), welfare facilities, warehouses, etc.) are required, which will also be located within the PDZ.
- 4.30 All inputs and outputs required for the process will be handled through either the ship unloading / loading facility (as described in **Paragraph 4.24 – 4.26**), or a road loading facility. The ship facility will be located outside of the PDZ within the marine environment of Port Talbot Docks. The primary ethanol feedstock and resulting ATJ SPK will be transported to / from the Site (respectively) by ship²⁷. All other inputs / outputs requiring transportation (i.e., not provided as direct utilises or extractions) will utilise road transport (i.e., tankers or HGVs).
- 4.31 An overview of the key inputs and outputs associated with the Proposed Scheme is set out within **Extract 1**. Primary inputs and outputs are identified in orange (i.e., larger quantities), whilst additional or secondary inputs / outputs are identified in yellow. The Proposed Scheme will generate additional inputs and outputs, especially in relation to the operation of the associated operational facilities (i.e., process control room(s), laboratory, administration/office(s), welfare facilities, warehouses, etc.) but these have not been identified within **Extract 1** as they are likely to be nominal and/or common (i.e., utilities²⁸ required for the operation of buildings). Specific ‘quantities’ associated with each input/output will be fully defined within the ES for completeness.
- 4.32 The overall layout of the production facility is still subject to finalisation; however, a general layout is understood based on available space, location of the Phoenix Wharf and unnamed port road. As such, the PDZ can generally be demarcated into five zones – Processing, Storage, Utilities, Flare and Administration (**Figure 4.2**).
- 4.33 The Proposed Scheme will require a single enclosed ground flare which will be in the western extent of the Site. The enclosed ground flare is expected to extend up to no more than 45 metres in height from the proposed ground level (i.e., in line with other equipment located within the processing, storage and utilise zones) **[P1]**. The flare is provided for essential operational safety purposes or the ‘venting/clearing’ of material during ‘start-up’ and ‘shut-down’ stages, which would largely occur when catalytic material in the process is to be renewed (approximately every 2 years) and for other maintenance activities. As such, intense use of the flare is expected to be limited and not common practice. The flare will have a continuous a pilot flame²⁹.
- 4.34 The processing, storage and utilities zones will be located centrally within the PDZ and will include all the processing/production plant as well as the storage of inputs and

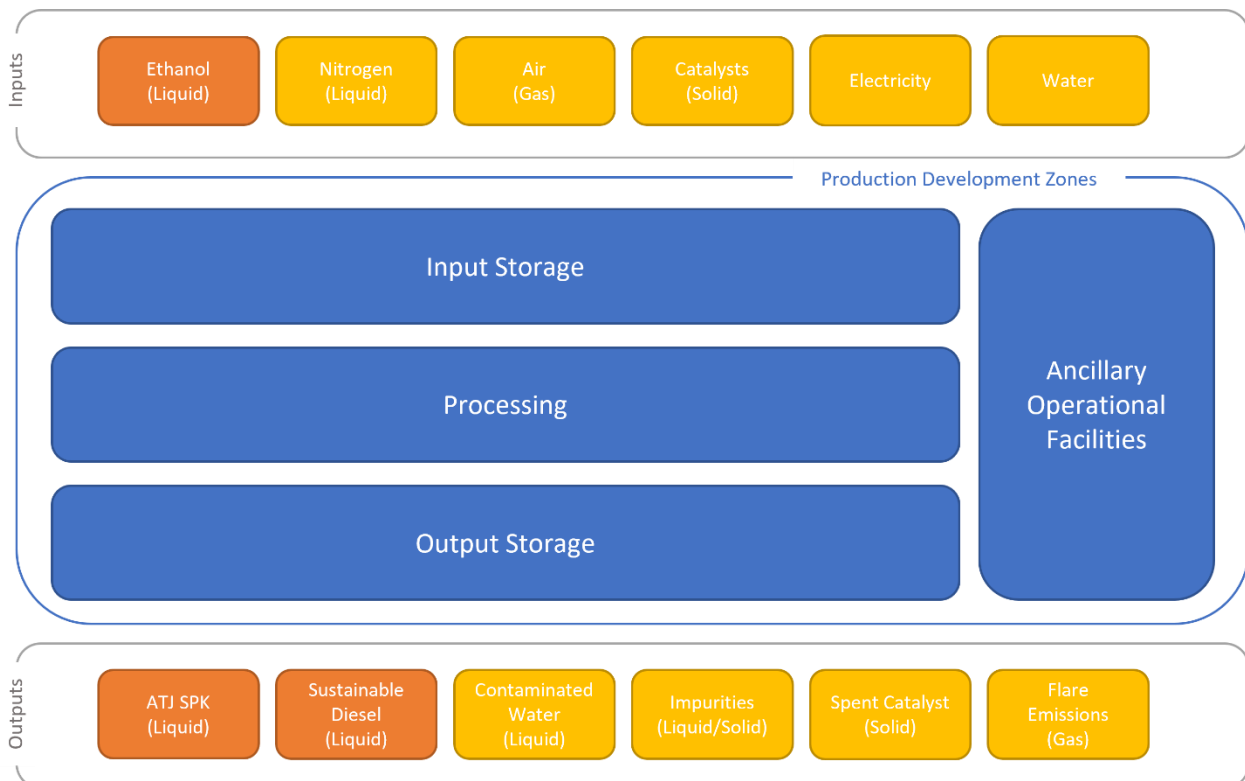
²⁷ In the event that ship movements can not occur, then the ethanol feedstock and ATJ SPK will require transportation to and from site via road tanker. However, this would not occur under normal operational conditions.

²⁸ Electricity, gas, potable water, foul water.

²⁹ A pilot flame (with its ignition system) that burns all the time so that it is available to ignite relieved gases when needed

outputs. As such, heights of the various elements will vary, with heights expected to range from approximately 20 metres up to approximately 45 metres in height, from the proposed ground level.

- 4.35 The administration zone will comprise the associated operational facilities as described in **Paragraph 4.31**. The various functions within this zone will mean heights will vary, with a maximum height of 20 meters above the proposed ground level.
- 4.36 Landscaping will be provided as part of the Proposed Scheme, focused principally at the perimeter of the Site, owing to the requirements for clear and safe working spaces in and around the production plant and facility. Amenity space for future users (i.e., staff) will be incorporated in and around the operational facilities where possible, again whilst maintaining appropriate health and safety requirements.
- 4.37 Access to the production facility will be from the north from the Unnamed Port Road. At this time, it is likely that two points of access will be created, one to serve the associated operational facilities (including accompanying car parking) as well as for deliveries³⁰, maintenance and collections. This access will also provide access for pedestrians and cyclists as required.
- 4.38 A second access will be utilised by HGVs associated with the delivery and collection of additional/secondary input and output materials required within the overall process. This approach will allow appropriate segregation of vehicles accessing and utilising the



Extract 1 - Summary of Primary and Secondary Inputs and Outputs

³⁰ With respect to delivery of materials required to support the process plant, rather than input and output products.

Site. Internal access roads will be provided to facilitate the operation of the Site, the specific of which will reflect the final layout and the points at which access is required.

- 4.39 As an industrial process the Proposed Scheme requires a number of utilities, including electricity, natural gas and water (for process purposes and potable water), albeit the Proposed Scheme design will include the ability to reuse water in the process to reduce demand. The energy demand required to operate the Proposed Scheme is notable, and is expected that the electricity demand of the Proposed Scheme would be approximately 30MW. Exact requirement for natural gas and water are to be defined once the detailed engineering design has been completed and therefore will be reported within the ES, including specifying w proposed connection points (or options) and associated demand.
- 4.40 As already noted, the operation of the Proposed Scheme will include road and ship movements. It is currently expected that the following operational model trips would occur (**Table 4.2**).

Table 4.2: Anticipated Operational Modal Trips

Transport Mode	Expected Weekly Trip Rate	Notes
Road	36-152 (HGV/Tanker) two-way movements	Required for road imports / exports.
	840 (LGV) two-way movements	Comprising operational staff and contractors.
Ship	Up to 2 two-way movement ³¹	Inclusion of ship movements to bring Ethanol to the Site, and separate ship movements for the export of the SAF to end users (as required).

Trips associated with ships have been expressed as weekly for ease of comparison with road trips. However, in practice the frequency of ship movements will fluctuate across the year and the 2 two-way movements are a 'average' across the year.

- 4.41 The outline drainage strategy includes two main surface water drainage systems across the Site. In ancillary areas, where contamination risk is low, SuDS will be used for water quality treatment of runoff. This includes hardstanding around operational buildings, the flare, roads, amenity spaces and all areas outside of bunded storage. Following SuDS water quality treatment, the site surface water will be discharged to the Afan Estuary at Phoenix Wharf. The required water quality treatment processes have been designed to meet the Welsh Government Statutory Standards for Sustainable Drainage Systems and The SuDS Manual (C753) as appropriate for the industrial nature of the Site. In areas where contamination is anticipated, surface water shall be directed to the on-site wastewater treatment works **[P3]**.

³¹ Currently an average of eight vessels per month transit through the seaward lock gates.

4.42 The Proposed Scheme will be operational 24hrs a day.

Timescales

4.43 Site preparation is expected to commence in 2024 and require up to 2.5 years to construct, inclusive of commissioning of the processing plant and overall facility. As such, the Proposed Scheme is expected to be operational by 2026.

5. Environmental Topics which are Not Significant

Site Terminology

- 5.1 As outlined in **Chapter 2, 3 and 4**, the Site is split into a number of parcels/zones (**Figure 4.2**). This Chapter refers to both the Site as a whole, and individual parcels/zones. The individual parcels are referred to as follows:
- Primary parcel of land for the location of the proposed production facility (approximately 9.1ha), comprising bare land adjacent to Phoenix Wharf (Port Talbot) (referred to as the '*Production Development Zone [PDZ]*');
 - A discrete parcel of land located within the wider Port Talbot at the eastern boundary of Phoenix Wharf (approximately 2.6ha) (referred to as '*Temporary Construction Area*');
 - 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 marine environment of Phoenix Wharf, located to the north of the PDZ and the unnamed port road (referred to as the '*Phoenix Wharf Marine Unloading/Loading Facility*').
- 5.2 Note that where primary and tertiary mitigation is referred to throughout this Chapter, a referencing system has been used (e.g. **[P1]**, **[T1]**, etc) to link this to the summary of the mitigation in the Preliminary EMP in **Appendix 2.1**.

Overview

- 5.3 As part of the EIA process and based on the information available to date, there are a number of environmental topics for which an assessment is not justified and these topics will not be considered within the EIA or reported within the ES. For some technical topics a standalone application report will be prepared and submitted with the Application, as set out in **Table 2.4**.
- 5.4 The environmental topics for which no likely significant environmental effects have been identified are:
- Built Heritage and Archaeology;
 - Ground Conditions and Contamination;
 - Flood Risk and Hydrology;
 - Transport;
 - Lighting; and

- Waste.
- 5.5 In some cases, the evidence to justify scoping the above topics out has been informed by detailed assessment (that would often be required at the EIA stage) being deployed early in the process to resolve significant effects.
- 5.6 The other environmental topics outlined within this EIA Scoping Report also identify effects which are not likely to be significant. Where relevant, this is reported in **Chapters 6 – 13**.

Built Heritage and Archaeology

Technical Baseline

- 5.7 The heritage and archaeology baseline position for the Site has been informed by the draft Archaeology and Heritage Assessment (AHA) produced by EDP in August 2022³². This draft report, which is focused on the PDZ and 3km study area³³, is included as **Appendix 5.1**³⁴. This EIA scoping report also considers the additional areas of the Site as set out in **Paragraph 5.1**.
- 5.8 The AHA defines the methodology employed to undertake the initial assessment of potential impacts upon historic assets which could be affected through changes within their setting resulting from the Proposed Scheme. The AHA was undertaken in line with relevant guidance³⁵ and information on historic assets obtained from Cadw (for national designations); Glamorgan-Gwent Archaeological Trust (GGAT) (for Historic Landscapes); and the Royal Commission on the Ancient and Historic Monuments of Wales (RCAHMW) (via the NMRW).
- 5.9 The Site does not contain any ‘designated’ historic assets, such as scheduled monuments or listed buildings. At the same time, it is not located within the boundary of a more extensive designated historic asset such as a conservation area or an Historic Park and Garden; neither does it include any part of a heritage designation such as this within its boundary.
- 5.10 A number of designated historic assets are located in the wider surroundings of the Site. These assets include the Former Harbour House (Grade II listed building) across the Port of Port Talbot c.300m to the north of the Site and the Harbour Watch-tower c.1.1km to the west of the Site (also a Grade II listed building), but also small clusters of listed buildings east of the Site within the settlement of Taibach, approximately 250m from the Site (c.700m from the PDZ), and further north around the Port Talbot Parkway railway station, approximately 800m from the Site. The locations of these designated assets are shown on **Plan EDP 2** within **Appendix 5.1**. A review of **Plan EDP 2** within

³² EDP, 2022a. *Phoenix Wharf, Port Talbot: Archaeological and Heritage Assessment* DRAFT.

³³ Informed by a Zone of Theoretical Visibility (ZTV) for the Proposed Scheme (**Plan EDP 8** within **Appendix 5.1**).

³⁴ Note this relates only to the Production Development Zone.

³⁵ Cadw 2011 Conservation Principles, Policies and Guidance for the Sustainable management of the Historic Environment in Wales (Cardiff); Cadw 2017a Heritage Impact Assessment in Wales (Cardiff); Cadw 2017b Setting of Historic Assets in Wales (Cardiff); and Cadw 2017c Managing Conservation Areas in Wales (Cardiff).

Appendix 5.1 alongside **Figure 4.1** indicates that the identified designated heritage assets do not intersect with the parcels of the Site.

- 5.11 The PDZ itself is not identified as containing any ‘non-designated’ historic assets of recognised significance, with the Glamorgan-Gwent Archaeological Trust (GGAT) Historic Environment Record (HER) not recording any known archaeological sites, features, deposits or standing structures within its boundaries.
- 5.12 However, a single ‘non-designated’ historic asset is within the Site as a whole, located within the ‘Phoenix Wharf Marine Unloading/Loading Facility’, immediately north of the PDZ. This record comprises a Jetty, located within the Old Dock at Port Talbot (GGAT08808w). The Jetty is depicted on the 2nd edition OS map of 1899, although remodelling of the Dock indicated on the 3rd edition OS map of 1919 shows that the jetty was replaced by a new linear structure, and no visible elements of the jetty remain. However, there is some slight possibility that some elements of its basal structure may survive. Given the nature and condition of this feature, if indeed it does survive, it is unlikely to be of greater than very low, local interest.
- 5.13 There is relatively limited evidence for archaeological activity in the general surroundings of the Site and in the main these focus on former dockside features to the north and historic features such as rifle ranges to the south. These HER records are illustrated on **Plan EDP 3** within **Appendix 5.1**. A review of **Plan EDP 3** within **Appendix 5.1** alongside **Figure 4.1** indicates that there is no interface between the wider parcels of the Site and HER events. It is considered unlikely that the Site is of any particular archaeological interest.
- 5.14 Within the wider surroundings of the site, the non-designated asset ‘Margam Mountain Landscape of Special Historic Interest’, as defined by GGAT, is located circa 700m to the east of the Site’s eastern boundary at its nearest point (c.1.1km from the PDZ), and rises up the steep slopes to the east of the M4 motorway. This non-designated asset is illustrated on **Plan EDP 5** within **Appendix 5.1**.

Effects Unlikely to be Significant

- 5.15 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the Preliminary EMP provided in **Appendix 2.1**.
- 5.16 All effects upon designated heritage assets will be covered in an expanded AHA, which brings together the baseline position outlined by the AHA, and addresses all of the Proposed Scheme’s impacts on the historic environment in one comprehensive evidence based report, upon finalisation of the scheme design. This report will be submitted as a stand alone report (**Table 2.4**) with the Application in accordance with Section 6.1.9 of PPW “Any decisions made through the planning system must fully consider the impact on the historic environment” and the advice given by Section 1.5 – 1.6 of supplementary document TAN 24, regarding the production of Heritage Impact Assessments. The expanded AHA will also consider all impacts upon non-designated

heritage assets to satisfy the requirements of National Policy outlined within PPW and the advice given in supplementary document TAN 24.

Direct impacts upon designated historic assets

- 5.17 The Site does not contain any 'designated' historic assets and therefore the Proposed Scheme would not have a direct impact on a designated historic asset. In fact any impacts on designated assets would be limited to 'indirect' impacts and arise as a result of changes within their setting and any change to the significance of the designated historic asset. Such impacts are discussed in full below (**Paragraphs 5.19 – 5.24**).
- 5.18 Therefore, direct impacts upon designated historic assets are considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Indirect impacts upon designated historic assets through changes to setting

- 5.19 Impacts on designated assets would be limited to 'indirect' impacts and arise as a result of changes within their setting resulting from the operation of built form within the PDZ, and any change to the significance of the designated historic asset. There would be no effects upon the assets through changes to their setting during the construction period, as such effects would be temporary. Thus, this section focuses on the PDZ, rather than the areas which form the wider Site.
- 5.20 The outcome of the AHA and associated site visits/walkovers is that it is highly unlikely that any of the designated historic assets located within the wider surroundings would experience a significant indirect effect as a result of the Proposed Scheme.
- 5.21 This assessment is reached on the basis that the historic assets are (i) generally distant from the Site, with the closest being c.300m from PDZ and the majority being over 700m from the PDZ, (ii) typically screened to at least some extent by existing built form adjoining the Site or located in its immediate environs, as is evidenced by the results of the ZTV (**Plan EDP8 in Appendix 5.1**) and (iii) do not possess relationships with the land within the Site that make any particular contribution to their significance, as assessed in full within the AHA (**Appendix 5.1**).
- 5.22 So, whilst the completed Proposed Scheme would to some extent be visible from several of the listed buildings located in the wider surroundings, it would not represent a change to their setting which would change the significance of the designated historic asset.
- 5.23 Taking into account the baseline position around the Site, which already includes substantial modern industrial buildings and associated tall structures such as chimney stacks, and the fact the Proposed Scheme would assimilate into the general context of such setting (including in terms of height), it is considered to be highly unlikely that, any of the listed buildings in the Site's wider surroundings would experience a loss of (heritage) significance as a result of their relationships with the site being diminished.
- 5.24 Therefore, effects to designated historic assets are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Direct impacts upon non-designated historic assets

- 5.25 Consultation of the GGAT HER, the West Glamorgan Archives and online sources; checked and augmented through the completion of a visit and walkover of the Site and its surroundings in the summer of 2022; has demonstrated that (i) the Site contains only one known and recorded non-designated historic assets of actual or potential significance, this being the potential remains of a 19th Century Jetty of very low significance located within the Unloading/Loading Facility and (ii) the Site is assessed to comprise a very low potential for any hitherto unknown/unrecorded non-designated historic assets (such as archaeological remains) of any greater than low or limited significance. This assessment of the archaeological potential is detailed in full within the AHA, (**Appendix 5.1**).
- 5.26 Whilst it is likely that any non-designated historic assets within the Site, such as below ground archaeological features, deposits and remains; would be totally destroyed by the construction of the Proposed Scheme through activities such as the insertion of foundations and the installation of services etc, namely within the PDZ, as well as ground works for the Port Road and 'Temporary Construction Area', it is unlikely that this would generate an impact of sufficient severity to be considered significant. Therefore, direct impacts upon non-designated historic assets is considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.
- 5.27 The predicted nature of the impact is sufficiently insignificant that it is assessed that no further archaeological mitigation is warranted. However, if the application process finds mitigation is deemed necessary (by NPTCBC on a precautionary basis) this could be adequately dealt with through the implementation of a condition requiring a Written Scheme of Investigation to allow adequate recording prior to or during construction [**T10**].

Indirect impacts upon non-designated historic assets through changes to setting

- 5.28 As above, indirect impacts as a result of changes to setting are focused upon the operation of built form within the PDZ, rather than the Site as a whole, as it is established that there would be no effects resulting from the temporary construction of the Proposed Scheme.
- 5.29 The Proposed Scheme's potential impact upon the Margam Mountain Landscape of Special Historic Interest, the nearest (westernmost) elements of which are located circa 1.1km to the east of the PDZ's eastern boundary and rise up the steep slopes to the east of the M4 motorway, is also considered with regard to potential indirect impacts as a result of changes to its setting.
- 5.30 The completion of the AHA and associated site visits/walkovers has demonstrated that there are views of the PDZ looking west from the elevated ground of the Special Landscape, these are from an area of medieval and later field systems which possess no inter-relationships with the land at the PDZ contributing to their significance.
- 5.31 Therefore, whilst the PDZ forms part of the surroundings in which the asset is experienced, insofar as there are visual inter-relationships between the PDZ and the Special Landscape, there is no indication that this area of derelict and overgrown former industrial development represents an element of its setting that contributes to its significance. Hence, it is considered to be highly unlikely that the implementation of

the Proposed Scheme would give rise to a change in the significance of non-designated asset.

- 5.32 Therefore, effects on non-designated historic assets are unlikely to be considered significant and will not be considered further within the EIA or reported in the ES.

Limitations and Assumptions

- 5.33 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- The archaeological and historic data maintained by the GGAT HER is reasonably accurate and up to date in terms of its use to define the baseline position at the Site regarding non-designated historic assets such as archaeological remains.

Ground Conditions, Soils and Contamination

Technical Baseline

- 5.34 The baseline conditions for this Site have been determined largely from the following reports undertaken for accessible areas of the PDZ. The details for these reports are as follows:

- *'Phoenix Wharf, Port Talbot: Desk Study'* by TEC, prepared for LanzaTech. Dated May 2022, report reference: 2111006.002.01A (**Appendix 5.8**); and
- *'Phoenix Wharf, Port Talbot: Ground Investigation Report'* by TEC, prepared for LanzaTech. Dated June 2022, report reference: 2111006.003.01 (**Appendix 5.9**).

- 5.35 The PDZ is recorded by the British Geological Survey (BGS)^{36,37} to be underlain by Landscaped Ground (described as mainly redeveloped areas and other where extensive earth moving has occurred). The BGS recorded geology of the Site comprises superficial Tidal Flat Deposits and Blown Sands; underlain by the bedrock geology of the South Wales Middle Coal Measures Formation. NRW³⁸ has designated the superficial deposits as a Secondary (Undifferentiated) Aquifer of medium groundwater vulnerability; whilst the bedrock is designated as a Secondary A Aquifer of medium vulnerability. The nearest surface water features are the small ponds located on Site within the PDZ, followed by Port Talbot Docks.

- 5.36 The available historic mapping (Envirocheck® Report) indicates the PDZ has comprised numerous industrial land uses/processes since at least 1917, as well as a large pond and a number of heaped areas of unknown constituents formerly present in the west.

³⁶ On-line geological mapping and historic borehole logs. Available at:
https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.75809813.146837851.1657281718-1121376046.1657281718

³⁷ Envirocheck® Report for the Production Development Zone, referenced 293349570_1_1, date March 2022.

³⁸ On-line interactive map viewer. Available at:
https://maps.cyfoethnaturiolcymru.gov.uk/Html5Viewer210/Index.html?configBase=https://maps.cyfoethnaturiolcymru.gov.uk/Geocortex/Essentials/REST/sites/External_Map_Browser/viewers/EMB_Address/virtualdirectory/Resources/Config/Default&locale=en-gb

Historic on-site processes included coal works, railway lines, copper works, metal refinery works/steel ceilings factory, wagon repair shop and associated warehouses, depots and factory buildings. All buildings within the PDZ were recorded to have been demolished by 2009. Further detailed baseline information with regards to contamination, including an Envirocheck® Report and historic mapping is provided within a Desk Study undertaken by TEC (**Appendix 5.8**).

- 5.37 The Site as a whole, lies within an industrial area with multiple surrounding current and historic industrial land uses and processes, including coal mining, copper works, iron and steel works, docks, warehouses, factories, depots, engineering works and railway sidings/mineral tramways.
- 5.38 Given the historic nature of the Site and surrounding area, the preliminary investigation works has identified a number of potential on-site contaminants that are risk to both human receptors and controlled waters, detailed in full within the Ground Investigation Report prepared by TEC.
- 5.39 Exploratory ground investigation works within accessible areas³⁹ of the PDZ, encountered made ground across the Site to a maximum observed depth of >5.0mbgl, generally comprising dark brown silty gravelly sand with gravel of vesicular slag and concrete, rare clinker, brick and mudstone. Superficial Blown Sand deposits were encountered in localised areas to depths of between 1.2m to >6.5mbgl. Tidal Flat Deposits of variable depth and composition (including organic soils and peat deposits) were observed across the site up to 14.2mbgl, underlain by superficial granular Alluvial Fan Deposits to depths of between 19.6m and 24.5mbgl. Sandstone of the South Wales Middle Coal Measures was encountered locally between 17.7m and >20.35mbgl. Perched groundwater was recorded within the made ground materials across the Production Development Zone, with a shallow groundwater body recorded within the superficial Tidal Flat Deposits as well as a deeper groundwater body encountered within the granular Alluvial Fan Deposits.
- 5.40 An Unexploded Ordinance (UXO) Pre-Desk Study Assessment (PDSA) has been undertaken, in order to assess the risk of UXO within the Site, given the historic uses present within the Port Talbot Docks and its apparent strategic value during World War II (WWII). The report identifies the risk from UXO cannot be discounted.

Effects Unlikely to be Significant

- 5.41 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the Preliminary EMP provided in **Appendix 2.1**.

³⁹ Japanese Knotweed is present across much of the Production Development Zone and this, together with other ecological constraints, limited the scope of the initial investigation, as set out within TEC Report titled '*Phoenix Wharf, Port Talbot: Ground Investigation Report*' prepared for LanzaTech and referenced 2111006.003.01 and dated June 2022.

Impacts upon Soils and soil resources

- 5.42 As identified above (**Paragraph 5.35**) the below ground soil is derived from Landscaped Ground (described as mainly redeveloped areas and other where extensive earth moving has occurred), with superficial Tidal Flat Deposits and Blown Sands. Furthermore, the Site was 'created' as part of the development of Port Talbot Docks, with the focus of utilisation as a working dock and the Site has been subject to previous development. As such, the soils below the Site and their perceived resource value is considered to be limited. On this basis any potential impacts from the Proposed Scheme are considered to be minimal and therefore not significant and will not be considered further within the EIA or reported within the ES.

Direct effects to human health due to existing on-site contamination (construction and operation)

- 5.43 Through the preliminary investigation works, the following Contaminants of Potential Concern (CoPC), in relation to the anticipated commercial end users of the Site and construction workers, have been identified within the sampled made ground materials:
- PAHs – benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, and dibenz(a,h)anthracene;
 - Crocidolite, chrysotile and amosite loose fibres and loose fibrous debris (i.e. asbestos); and
 - Leachable CoPCs (heavy metals).
- 5.44 As such, unmitigated there is a potential risk to human health (both future end users and construction workers) from potential exposure to the identified CoPCs and asbestos within the shallow made ground, either through ingestion, inhalation and/or dermal contact pathways.
- 5.45 Measures to protect construction workers from exposure to any contaminated material which is encountered will be required of the appointed contractor under the Construction (Design and Management) Regulations 2015 and other health and safety legislation. Appropriate strategies / protocols will be put in place in line with relevant legislation (such as the Control of Asbestos Regulations⁴⁰) and best practice (CIRIA 733 Asbestos in Soil and Made Ground⁴¹) [**T1, T6**]. Additionally, measures will be incorporated into the CEMP, including the use of Personal Protective Equipment (PPE), the preparation of method statements and provision of environmental awareness training, in order to ensure that construction activities are undertaken in line with best practice measures (such as CIRIA Handbook C741 Environmental Good Practice on Site, 2015) accounting for the identified CoPCs [**T1, T6**]. Although there is limited understanding of the potential for contamination within the temporary construction area, in line with **Paragraph 4.22**, a site conditions assessment will be undertaken, to determine the existing nature and condition of the temporary construction area to ensure their return to pre-use conditions, or appropriate condition agreed in

⁴⁰ Control of Asbestos Regulations 2012 No. 632. Available at: <https://www.legislation.gov.uk/uksi/2012/632/contents/made>.

⁴¹ CIRIA (2014). Asbestos in soil and made ground: a guide to understanding and managing risks (C733).

advance⁴². Furthermore appropriate construction protective measures will be implemented (i.e., ground barrier or storage facilities) to ensure no potential accidental release of contamination associated with construction related activities, or disturbance/mobilisation of existing contamination **[T6]**. As such, impacts to construction workers in these areas is limited and suitably controlled. At worst the need for additional measures to be adopted will be set out as part of the CEMP.

- 5.46 Operationally, it is anticipated that much of the PDZ will be laid to hardstanding or within the footprint of proposed structures, which will mitigate the potential pollution pathways to future users of the Site (i.e., effectively capping any remaining contamination). Within areas of soft landscaping (although such areas are limited) or where made ground remains once finished site levels have been achieved, a suitable cover system will be implemented to remove potential exposure to contamination. Such aspects will be set out as part of a remediation strategy **[T11]**, submitted to NPTCBC for approval prior to commencement of works on-site and/or occupation of the Site. The remediation strategy will be informed by the existing and supplementary ground investigation works to understand exact extent and nature of existing contamination in relation to the developable areas **[T11]**. As noted above, where required appropriate cover systems will be specified and these will be implemented during the construction stage.
- 5.47 Therefore, direct effects to human health due to existing on-site contamination during construction and operation are considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Accidental release of contamination (construction and operation)

- 5.48 During the construction stage of the Proposed Scheme, there is a potential for spillages (such as oil, fuel, cement, chemicals etc.), soil erosion or the generation of suspended solids during construction activities (including excavations and plant/wheel washing).
- 5.49 Such effects can be controlled through best practice measures, including (where applicable): bunded storage; designated wheel washing areas; settling basins; screening stockpiles of materials; dampening exposed soils as appropriate; and set out requirements for ongoing monitoring and liaison (with the local community, the Environment Agency and NPTCBC as appropriate), as set out in the PEMP **[T6]**. Such measures will be defined within the CEMP for submission and approval by RBC in advance of construction activities commencing on Site.
- 5.50 During operation, the processing facility will be a closed loop system, so any potential accidental release of contamination will be in relation to the storage of chemicals. All storage tanks will be industry standard tanks with appropriate bunding **[T13]**.
- 5.51 Therefore, accidental release of contamination is considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

⁴² The temporary construction area is known to contain Japanese Knotweed which will be subject to an existing management strategy by the existing land owner ABP. Therefore, post-use conditions will likely reflect the need for these areas to be clear of Japanese Knotweed.

Direct effects to Controlled Waters (Secondary Aquifer and docks) due to migration of existing leachable contamination (construction)

- 5.52 In addition to the CoPCs noted above, the preliminary investigations have identified elevated leachable CoPCs (heavy metals) within made ground, as well as elevated CoPCs (heavy metals, PAHs, TPHs and sulphate) within perched water (made ground) and upper groundwater (superficial Tidal Flat Deposits). Notwithstanding this, no petroleum hydrocarbon concentrations (including TPHs, PAHs, VOCs and SVOCs) were recorded within the sampled deeper groundwater (Alluvial Fan Deposits and South Wales Middle Coal Measures), with concentrations for hydrocarbons recorded below limits of detection for all samples of the deeper groundwater. Localised, marginal exceedances of limited heavy metals were recorded within the deeper groundwater sampled, in relation to conservative Environmental Quality Standards (EQS) values.
- 5.53 Based on the limited data obtained to date, there is no evidence of gross or dissolved phase hydrocarbon contamination migration to the deeper groundwater body. Furthermore, given the generally cohesive nature of the superficial tidal flat deposits, significant vertical and horizontal contaminant migration is currently considered likely to be limited. However, it is recognised that additional ground investigation, monitoring and assessment would be required to fully characterise the Site.
- 5.54 Unchecked there is the potential risk to controlled waters through potential vertical and horizontal migration of leachable contaminants. The CEMP will use best practice guidance such as the Pollution Prevention Guidelines (Environment Agency) and Control of Water Pollution from Construction Sites (CIRIA), and incorporate on-going monitoring by the environmental clerk of works throughout the construction stage [T1, T6]. Through the implementation of best practice measures as part of the construction process and detailed within the CEMP, such risks can be appropriately managed so as to not result in a significant effect.
- 5.55 Therefore, direct effects to controlled waters due to migration of existing leachable contamination during construction is considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Indirect effect to human health due to potential ingress and accumulation of bulk ground gas (construction and operation)

- 5.56 Potential sources of bulk ground gas have been identified as part of this preliminary assessment which include made ground, observed to a maximum depth of 5.0mbgl, and organic soils/peat layers within the superficial Tidal Flat Deposits and potentially off-site historic coal mining activities. Initial investigation and ground gas monitoring indicate the Site may potentially be considered as Characteristic Situation 3, although further investigation and monitoring in accordance with BS8485:2015+A1:2019 is required to confirm this.
- 5.57 Therefore, there is the potential for risk to human health (end users and construction workers) and proposed structures through the potential ingress and accumulation of bulk ground gas. Nonetheless, such risks can be mitigated through the adoption of best practice measures as part of the construction stage (being implemented as part of the CEMP) and ensuring all proposed structures are designed in accordance with BS8485: Ground gas membranes and CIRIA C735 Good practice on the testing and verification

of protection systems for buildings against hazardous ground gases (where required), as well as CIRIA Report C572: Treated ground engineering properties and performance; British Research Establishment document FB75: Building on Fill – Geotechnical Aspects and BS 6031:2009: Code of Practice for Earthworks [T1, T6]. Adherence to such measures should mitigation effects sufficiently that they would not be considered significant.

- 5.58 Therefore, indirect effects to human health due to potential ingress and accumulation of bulk ground gas during construction and operation is considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Direct effects to human health due to presence of UXO

- 5.59 The Detailed UXO Risk Assessment report (**Appendix 5.10**) concluded that a moderate risk from UXO exists for the area of the PDZ and appropriate UXO mitigation measures will be required to be in place during the investigation/construction phases of the works [T9]:

Risk Mitigation Measure	Recommendation
UXO Safety Awareness Briefings	Prior to all intrusive works commencing
Non-Intrusive Magnetometer Probe Survey	Open excavations on greenfield land within the Moderate Risk zone
Intrusive Magnetometer Probe Survey	Of all pile positions within the Moderate Risk zone
EOD Engineer - On Site Supervision	Watching brief of all open excavations and magnetometer survey of exactions within the Moderate Risk zone.

- 5.60 Prior to the start of construction, a non-intrusive magnetometer survey will be undertaken across the PDZ and, in particular, with the areas of undeveloped open ground identified within the WWII mapping [T9]. While potentially inhibited by the recorded presence of slag materials within the ground, where anomalies are recorded there would be the need for further investigation to confirm/remove the risk.
- 5.61 Once a piling layout has been finalised, an intrusive magnetometer survey would be completed, comprising CPT testing at 2m centres to depth of 12m within the purposed pile layout [T9]. Again, where anomalies are recorded there would be the need for further investigation to confirm/remove the risk.
- 5.62 The temporary construction area is classified as low risk from UXO and therefore no specific mitigation measures are required within this area.
- 5.63 Adoption of such measures will ensure any risk associated with encountering UXO is as low as possible. Therefore, direct effects to human health due to presence of UXO during construction is considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Flood Risk and Hydrology

- 5.64 Extensive preliminary works in relation to flood risk and hydrology have been undertaken and therefore informed the understanding of the technical baseline and likelihood of significant effects associated with the Proposed Scheme. As such, this section is supported by the following documents, which form technical appendices to the EIA Scoping Report:
- *Project Dragon Flood Consequences Assessment (FCA) V1.0* (29 Jul 2022), prepared by JBA Consulting in July 2022 included in **Appendix 5.3**, prepared in accordance with Planning Policy Wales requirements to assess flood risk from all sources both to and from the proposed scheme. Herein referred to as the FCA;
 - *Project Dragon - Flood risk and drainage Candidate Site Supporting Statement* (14 Oct 22) included in **Appendix 5.4**, prepared as a Candidate Site submission supporting technical information for inclusion of the proposed development site into the upcoming update to the Neath Port Talbot Local Development Plan; and
 - *Project Dragon - Flood risk and drainage briefing note* (12 Aug 22) included in **Appendix 5.5**, prepared as a briefing note to NPTC SuDS Approval Body, outlining the principles of the site drainage strategy.
- 5.65 These documents should be read in conjunction with the summary information provided in this section. Furthermore, it should be noted that the above documents will be updated and submitted as part of the Application, albeit the general conclusions of the reporting are expected to remain the same.

Technical Baseline

- 5.66 There are no formal waterbodies, rivers, ordinary watercourses or connected surface water drainage assets within the PDZ and Temporary Construction Area of the Site. Topographic survey has identified a shallow pond within the lowest area of scrubland in the PDZ, which is not hydrologically linked to any other water features. Historical uses of the PDZ may result in some disused drainage artefacts on-site, but these are assumed to be redundant. Similarly, the Site is not currently serviced by connected foul drainage infrastructure. It is likely that the 0.3km portion of Unnamed Port Road Supporting Infrastructure to the north of the PDZ is served by highway drainage assets connected to the wider dock road system, most likely discharging into the Port Talbot Docks.
- 5.67 Two Natural Resources Wales (NRW) designated Main Rivers are located in close proximity to the Site, as shown in **Figure 5.1**. The River Afan is located 740m to the north west of the PDZ and the Ffrwd Wyllt is located 80m north of the Temporary Construction Area. The Ffrwd Wyllt flows into the Port Talbot Docks approximately 200m from the proposed Phoenix Wharf Ship Unloading/Loading Facility. The Afan Estuary is approximately 25m to the north of the PDZ and 15m west of the Temporary Construction Area. The new Phoenix Wharf Ship Unloading/Loading Facility will be located within the Port Talbot Dock, which currently forms part of the Afan Estuary. The Site does not benefit from the presence of existing flood defences.

- 5.68 Topographical survey⁴³ of the PDZ indicates that the Site topography therefore naturally drains northwards towards the Unnamed Port Road and Phoenix Wharf. NRW 1m Light Detection and Ranging (LiDAR) data shows that ground levels for the Temporary Construction Area naturally drain towards the dock road system and the Port Talbot Docks.
- 5.69 The *Phoenix Wharf, Port Talbot: Desk Study* by TEC⁴⁴ completed in May 2022 indicates that the superficial geological deposits at the Site are recorded as a Secondary (Undifferentiated) Aquifer and the underlying solid geology is designated as a Secondary A Aquifer. Both are classified to be of medium groundwater vulnerability. The underlying ground conditions therefore permit the infiltration of pluvial surface water into the groundwater body. The Envirocheck Report included as part of the geotechnical desk study reports that there are no groundwater abstractions and two discharge consents to groundwater are located within 500m of the Site. There are 19 surface water abstractions within 500m of the Site and 27 discharge consents to surface water within 250m of the Site.

Flood Risk

- 5.70 The Phoenix Wharf FCA⁴⁵ and Candidate Site Supporting Statement (located in **Appendix 5.3** and **5.4**, respectively) provides a detailed description of the baseline flood risk from all sources at the PDZ. The FCA uses a combination of sources, including the current TAN-15 Development Advice Map (DAM), the Flood Map for Planning (FMfP) which supports the updated TAN-15 due for release in June 2023, NRW Flood Risk Assessment Wales (FRAW) mapping and detailed site-specific hydraulic modelling based upon NRW's Port Talbot Tuflow Hydraulic Model.
- 5.71 The flood risk to the Temporary Construction Area and the Unnamed Port Road Supporting Infrastructure is not included within the scope of the FCA report. The baseline flood risk to these areas from all sources has been considered separately using the same sources that informed the FCA for the PDZ and is briefly outlined in the sections below.
- 5.72 **Figure 5.3** shows the results from the NRW Flood Map for Planning for Rivers (fluvial) and **Figure 5.4** shows the NRW Flood Map for Planning from the Sea (tidal). The FMfP results are considered to apply the most precautionary indicator of flood risk from the available evidence base. Such precautionary flood outlines result from a number of reasons, including: the generic modelling methods used to create the mapping; an allowance for 100 years of climate change; and by not including the operation of flood defences in the modelling process.
- 5.73 The FMfP indicates that a small portion in the north of the PDZ, where the ground levels are lower, is located within Flood Zone 2 for flooding from rivers, this equates to between a 0.1% and 1% Annual Exceedance Probability (AEP). The rest of the site is located in Flood Zone 1 with very low risk of flooding from rivers (less than a 0.1% AEP). With regards to flood risk from the sea, a larger section of the north of the PDZ is

⁴³ AP Land Surveys, APLS-1174 Harbourside Port Talbot, Survey Control & Topographic Survey Report, December 2021.

⁴⁴ Tweedie Evans Consulting Ltd (2022). *Phoenix Wharf, Port Talbot Desk Study*.

⁴⁵ P&C Project Dragon FCA 29Jul2022 V1.

located in Flood Zone 2 (with between 0.5 and 0.1% AEP) and Flood Zone 3 (more than 0.5% AEP), with the rest of the Site at very low risk of flooding from the sea.

- 5.74 The Temporary Construction Area, as shown in the FMfP, is mostly located in Flood Zone 3 for flooding from rivers (more than 1% AEP for flooding) and Flood Zone 2 for flooding from the sea.
- 5.75 Approximately one third of the Unnamed Port Road Supporting Infrastructure located on the northern boundary of the PDZ is within Flood Zone 2 for flooding from rivers and Flood Zone 3 for flooding from the sea.
- 5.76 As mentioned above, the FMfP includes a cautious approach to the representation of flood risk. Detailed baseline flood modelling was carried out to inform the FCA for the PDZ, which uses more sophisticated modelling approaches to represent flood mechanisms around the Site, applying a much smaller spatial scale to the model calculations, using updated hydrology inputs, Welsh Government's latest climate change guidance⁴⁶.
- 5.77 The results of this modelling show that many of the areas identified to be at risk in the FMfP are flood free in the baseline up to the 0.1% AEP fluvial event⁴⁷ and the 0.1% AEP tidal event, both with the application of climate change, and therefore at very low flood risk. This includes the Temporary Construction Area. Furthermore, the detailed baseline flood modelling shows that the PDZ and Unnamed Port Road Supporting Infrastructure are flood free in the 1% AEP fluvial event with climate change and in the 0.5% AEP tidal event with climate change and shows a vastly smaller area of flooding experienced in the 0.1% AEP fluvial event with climate change and 0.1% AEP tidal event with climate change. Detailed flood modelling results for the 0.1% AEP fluvial event with climate change and the 0.1% AEP tidal event with climate change have been provided in **Figure 5.6** and **Figure 5.7**.
- 5.78 **Figure 5.5** shows the NRW Flood Map for Planning from Surface Water. Baseline flood risk is not considered to be significant for all areas within the Site. Small isolated pockets of Flood Zone 3 are identified within the PDZ and the Temporary Construction Area. However, these correspond to localised depressions in ground elevation and ponds across the present sites. These areas are not linked to any surface water drainage pathways.
- 5.79 The Envirocheck Report included as part of the *Phoenix Wharf, Port Talbot: Desk Study* by TEC identifies that the Site has the potential for groundwater flooding for the Proposed Scheme situated below ground level with some of the Site having the potential for groundwater to occur at the surface. Overall the baseline groundwater flood risk is classified as low.

⁴⁶ Flood Consequences Assessments: Climate change allowances. Available at: https://gov.wales/sites/default/files/publications/2021-09/climate-change-allowances-and-flood-consequence-assessments_0.pdf

⁴⁷ Climate change is not required to be assessed for the 0.1% AEP fluvial event in accordance with Welsh Government guidance as outlined in TAN-15, Available at: <https://gov.wales/technical-advice-note-tan-15-development-and-flood-risk-2004>

- 5.80 The NRW Flood Map for Planning⁴⁸ for Flood Risk from Reservoirs identifies that approximately 50% of the Temporary Construction Area is located within an area at risk from reservoir flooding. The rest of the Site, including the PDZ, is not identified to be at risk of reservoir flooding. The source of the reservoir risk is the Cwmwernderi Reservoir, owned by Dŵr Cymru Welsh Water (DCWW) and situated approximately 6km from the Site. The regulatory nature of reservoir management means that the likelihood of a reservoir failure and overall reservoir flood risk is very low.
- 5.81 The NPTCBC Flood Risk Management Plan does not contain evidence of historic sewer flooding on or close to the Site. It can therefore be concluded that the risk of sewer flooding at the Site is very low.

Water Quality - Water Framework Directive (WFD)

- 5.82 The nearest WFD water bodies and their WFD status are listed in **Table 5.1** below and shown on **Figure 5.2**.

Table 5.1: Cycle 3 Status of WFD Waterbodies

WFD Waterbody	WFD reference	Distance from Site (m)	Description	Cycle 3 2021 Overall Status	Cycle 3 2021 Ecological Status	Cycle 3 2021 Chemical Status
Afan Estuary including Docks	GB 541005800600	0	Transitional - Heavily Modified Waterbody	Moderate	Moderate	Good
Ffrwd Wylt - headwaters to tidal limit	GB 110058026100	80	River - Heavily Modified Waterbody	Moderate	Moderate	High
Afan - confluence with Pelenna to tidal limit	GB 110058026110	740	River - Natural	Good	Good	High
Swansea Carboniferous Coal Measures	GB 41002G201000	0	Groundwater - Natural	Poor	Good	Poor

- 5.83 The 'Ffrwd Wylt - headwaters to tidal limit' and 'Afan - confluence with Pelenna to tidal limit' waterbodies are both upstream of the Site, prior to the two rivers discharging into Port Talbot Docks. They are therefore not considered to be hydrologically linked to the Site.

⁴⁸ Flood Map for Planning. Available at: <https://flood-map-for-planning.naturalresources.wales/>

- 5.84 The Afan Estuary including Docks waterbody is immediately adjacent to the permanent and temporary development areas and downstream of the Site's overland flow pathway. The waterbody is therefore identified as a water quality receptor to the impacts of the Proposed Scheme. The element driving the overall 'Moderate' WFD classification for the 'Afan Estuary including the Docks' waterbody is hydromorphology. This relates to the impact of the controlled hydrological regime of the dock and feeder watercourses and their ecological functioning. The hydrological controls are located upstream of the Proposed Scheme and are not influenced by the Site activities.
- 5.85 The 'Swansea Carboniferous Coal Measures' WFD Groundwater body is hydrologically linked to the Site as a result of the potential for infiltration of surface runoff into the superficial and bedrock aquifers. This groundwater body is therefore identified as a water quality receptor to the impacts of the Proposed Scheme.
- 5.86 The Proposed Scheme would require discharge connection to DCWW assets. As such, the DCWW assets and resultant receptors to DCWW controlled discharge become indirect receptors to the water quality impacts associated with the process and foul water discharges from the Proposed Scheme.

Effects Unlikely / Not Significant

- 5.87 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the Preliminary Environmental Management Plan (EMP) provided in **Appendix 2.1**.

Flood risk

- 5.88 The baseline conditions indicate that a portion of the PDZ and Unnamed Port Road Supporting Infrastructure is at risk of flooding from fluvial and tidal sources as a result of climate change. As such, the Proposed Scheme could have the potential to impact flood risk receptors, including site users, assets and infrastructure, during the permanent site operations, if mitigation measures are not in place. The risk from fluvial and tidal sources is only present when climate change impacts are taken into account, and therefore mitigation measures are not required for flood risk during the construction stage.
- 5.89 The permanent site operations that form part of the PDZ are required to complete a Flood Consequence Assessment (FCA) to demonstrate how the development proposals will manage the risk of flooding on Site and the potential for detrimental impacts off-site for the lifetime of the Proposed Scheme, in accordance with the requirements of Welsh Government Technical Advice Note 15⁴⁹ (TAN15) **[P3]**. This has been outlined in the JBA Consulting Phoenix Wharf FCA⁵⁰, and Candidate Site Supporting Statement. To manage residual flood risk and provide a higher standard of protection than required under TAN-15, it is proposed that ground levels across the Site will be raised to above the 0.1% AEP tidal flood level with a climate change allowance, and 0.1% AEP fluvial flood event with a climate change allowance, in accordance with the Welsh

⁴⁹ <https://gov.wales/technical-advice-note-tan-15-development-and-flood-risk-2004>

⁵⁰ P&C Project Dragon FCA 29Jul2022 V1.

Government climate change guidance⁵¹ [P2]. This equates to a minimum ground level of 7.5mAOD, which much of the Site already exceeds, except for isolated low lying areas in the centre, and the north of the Site. An assessment of third-party impacts as a result of ground raising has also been undertaken using detailed flood modelling. The results reported in the FCA demonstrate that ground raising across the Site has a negligible impact on flood depths off-site. In view of the mitigation proposed [P2, P3] and to be delivered as part of the Proposed Scheme, effects on flood risk receptors from the operational stage of the PDZ are considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

5.90 The scheme proposals for the Unnamed Port Road Supporting Infrastructure include the construction of road access points to the PDZ and vehicle turning circles. The detailed post-development flood modelling shows the road is flood free in the 0.5% AEP tidal event with climate change and a small portion of this road (approximately 500m²) experiences flood depths up to 0.25m in the 0.1% AEP tidal event with climate change. The flood extents and depths in the 0.1% AEP tidal event with climate change are presented in **Figure 5.8**, with the flood extents and depths in the 0.1% AEP fluvial event with climate change presented in **Figure 5.9**. Welsh Government TAN15 Acceptability Criteria (TAN15 A1.14) states that sites should be flood free in the 0.5% AEP tidal event with an allowance for climate change and the 1% AEP fluvial event with an allowance climate change. Residual flood risk during the 0.1% AEP tidal event with climate change and 0.1% AEP present day fluvial event should not exceed 0.6m (TAN15 A1.15). With the update to TAN-15 from June 2023, the 0.1% AEP fluvial event with climate change should be considered. The detailed flood modelling results for the Unnamed Port Road Supporting Infrastructure show that the site meets these flooding criteria. Significant effects to flood risk receptors in the Unnamed Port Road Supporting Infrastructure area of the Site are therefore considered unlikely for the following reasons:

- Flood extent and depths meets the Acceptability Criteria as stated in TAN-15;
- Predicted flooding during the 0.1% AEP tidal event with climate change and 0.1% AEP fluvial event with climate change covers a very small area of the access road to shallow depths; and
- Site use is ancillary road operations, with no buildings or production areas impacted. Therefore, the risk of flood impacts to site users, operations and assets could be adequately mitigated by site operational procedures and flood warnings as required under the Environmental Permit operational management procedures and associated Environmental Management System (EMS).

5.91 The introduction of significant areas of hardstanding across the Site results in the potential for surface water flood impacts and likely significant effects to on-site users and adjacent developments during permanent operations if not appropriately mitigated. The Proposed Scheme includes the application of Sustainable Drainage Systems (SuDS) [P3]. The SuDS drainage strategy shall be required to demonstrate how the Proposed Scheme meets the requirements of the Welsh Government Statutory

⁵¹ https://gov.wales/sites/default/files/publications/2021-09/climate-change-allowances-and-flood-consequence-assessments_0.pdf

Standards for Sustainable Drainage Systems and will manage surface water runoff quantities to mitigate the risk of flooding impacts. Approval of the drainage strategy is required by NPTCBC SuDS Approval Body (SAB). The SAB approved drainage strategy is considered to form a primary mitigation measure **[P3]**, with a high degree of confidence assigned to the design and implementation of the measures detailed within. Therefore, effects from surface water flooding are considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

- 5.92 During the construction stage, the risk of surface water flooding will also be mitigated. A 'Drainage Phasing Plan' for construction of the Site shall be required to indicate early implementation of drainage features across the Site and shall form part of the full SAB application for surface water drainage approval by the SAB. The importance of the sequencing of the drainage features will also inform the CEMP, so as to ensure the mitigation is implemented **[T2]**. The implementation of the drainage strategy at the earliest stage will mitigate the risk of increased overland flows and impediments to runoff pathways on site causing a localised increase in flood risk.
- 5.93 The baseline conditions identified that the Temporary Construction Area is at risk of reservoir flooding. The Reservoirs Act 1975 requires that all reservoirs as defined under the Act are inspected for safety by a suitably qualified reservoir engineers on a routine basis and Section 10 reports submitted to the appropriate authority. Where steps to maintain or remediate the reservoir are required, these are recorded in Section 12 reports with a fixed timescale for remediation. This legislative instrument provides a high degree of certainty that the risk from reservoir flooding is suitably managed and significant effects are unlikely.
- 5.94 The baseline conditions also identified a low risk of groundwater flooding across the Site. The Proposed Scheme includes ground raising (**Paragraph 4.19**) **[P2]** and do not incorporate any basement level development that would be particularly vulnerable to the impacts of basement flooding. Consequently, groundwater flooding is considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Water quality

- 5.95 The 'Afan Estuary including Docks' waterbody and the 'Swansea Carboniferous Coal Measures' groundwater are identified to be the primary potential receptors for water quality impacts arising from the Proposed Scheme. The Proposed Scheme involves industrial operations which, if unmanaged, have the potential to cause indirect diffuse pollution from contaminated site surface water, indirect diffuse pollution from controlled discharges, and acute pollution from uncontrolled releases/spillages of polluting substances on site. These impacts could cause pollution to the groundwater body receptor via direct infiltration to ground, or pollution to the Afan Estuary via surface water drainage routes and discharge points. Such impacts would likely to cause significant effects on the water quality receptor if not appropriately mitigated.
- 5.96 The Proposed Scheme will include measures to control or mitigate these measures as outlined in the site drainage strategy **[P3]** (see **Chapter 4** and **Appendix 5.5**). The outline drainage strategy includes two main surface water drainage systems across the Site **[P3]**. In ancillary areas, where contamination risk is low, SuDS will be used for

water quality treatment of runoff. This includes hardstanding around operational buildings, the flare, roads, amenity spaces and all areas outside of bunded storage. Following SuDS water quality treatment, the site surface water will be discharged to the Afan Estuary at Phoenix Wharf. The required water quality treatment processes have been designed to meet the Welsh Government Statutory Standards for Sustainable Drainage Systems and The SuDS Manual (C753) as appropriate for the industrial nature of the Site [P3]. In areas where contamination is anticipated, surface water shall be directed to the on-site wastewater treatment works.

- 5.97 Water with the potential to be significantly contaminated by process operations will be treated as process water requiring treatment via an on-site wastewater treatment works, and will not be discharged as surface water into the SuDS surface water drainage system. The Proposed Scheme will include pollution prevention and control measures to mitigate the risk of acute water pollution from spillage events [T12]. In particular, these include bunding of hydrocarbon tanks and storage equipment used for potentially contaminating substances and the use of sumps or bunds for all equipment with the potential for leaks. In addition, there shall be an atmospheric storage tank for the purposes of storing firefighting water. These mitigation measures will form a regulatory requirement within the corresponding Environmental Permit and therefore considered to be tertiary mitigation for the risk of pollution to surface water discharge [T12]. Surface water from these areas shall flow directly to the wastewater treatment works prior to being discharged to Port Talbot Docks.
- 5.98 The Site is located in the immediate vicinity of a combined public sewerage system which drains to Afan New Works Wastewater Treatment Works (WwTW). DCWW have been consulted to consider the strategic impact of the Proposed Scheme on the wider capacity of DCWW water resource assets for both water supply and foul/effluent drainage disposal. DCWW have confirmed that *“No problems are envisaged with the Waste Water Treatment Works for the treatment of domestic discharges from this site”*. The option of discharging process effluent to the DCWW system is unlikely at this stage and has not been investigated in any detail, which will be documented clearly in the ES and supporting reporting for clarity purposes. If process effluent were to be sent to DCWW’s system it would need to be treated and discharged in compliance with their existing Environmental Permit and therefore considered to be tertiary mitigation for the risk of pollution to surface water discharge [T12]. DCWW have advised that reinforcement works will be required to the portable water supply to serve the Site. As part of the formal planning consultation process, DCWW will seek to ensure that an appropriate hydraulic assessment (and any associated reinforcement works) is completed in advance of the determination of the application or controlled by way of planning condition.
- 5.99 With the mitigation measures outlined for the control of diffuse and acute water pollution impacts, the potential for significant effects on water quality receptors during the operational stage of the Proposed Scheme is not considered to be significant.
- 5.100 During the construction stage, impacts on site drainage could have significant effects on water quality receptors if unmitigated. The impacts during construction are expected to be temporary and would relate to the following activities:

- Material export and import;
- Temporary storage of materials;
- Groundworks for foundations and services;
- Construction of hard standing across the site, process infrastructure and buildings; and
- Increased vehicle movements with the potential to track polluting materials.

- 5.101 During these activities, there will be considerable disturbance to the existing ground and the creation of dust and silt. This could lead to increased sediment loads and leaching of existing contaminants into surface runoff prior to the construction of the formalised SuDS drainage system. There is also a risk of uncontrolled discharge of oils, hydrocarbons, cementitious or chemical pollutants from construction operations that could impact the water quality of receptors.
- 5.102 The compaction of ground materials, temporary stockpiling and creation of hardstanding prior to fully operational drainage infrastructure could give rise to increased overland flows and impediments to runoff pathways on site. These impacts could cause changes to existing drainage conditions and localised surface water flooding. Such impacts are thought to be constrained within the Site and are not anticipated to affect off-site flood risk receptors.
- 5.103 Mitigation measures for the impacts listed above will be implemented by adherence to strict protocols relating to the method of construction. A CEMP will be in place as agreed in advance of construction works occurring **[T1]**. The CEMP will use best practice guidance such as the Pollution Prevention Guidelines (Environment Agency) and Control of Water Pollution from Construction Sites (CIRIA), and incorporate on-going monitoring by the environmental clerk of works throughout the construction stage **[T1, T2]**. The CEMP and measures contained within can be regarded as tertiary mitigation as these must be approved by NRW as the relevant authorising body, and the SAB as part of their statutory duties under the SuDS legislation. The adoption of appropriate pollution prevention measures and good construction practices as defined in the approved CEMP **[T1, T2]** should ensure that significant effects are unlikely during the construction stage.
- 5.104 The proposed drainage strategy for the Site does not include any controlled discharge to groundwater as all site surface water will either be discharged to the Afan Estuary at Phoenix Wharf, re-used in site processing, or discharged to DCWW assets for treatment. All SuDS assets shall be lined to reduce the risk of downward infiltration of water into underlying soils, which would increase the risk of mobilisation of existing contaminants **[P3]**. Furthermore, the risk of groundwater pollution from infiltration of polluted surface water or spillages of polluting substances is adequately managed by the proposed mitigation measures outlined above **[P3]**. Therefore, effects on existing groundwater abstractions and discharges are considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

5.105 A Water Framework Directive assessment is therefore also not required for the direct effects generated by the Proposed Scheme (as reported above).

Summary of Effects

5.106 **Table 5.2** below summarises the potential impacts for each identified receptor, their likely significant effects, mitigation measures to be implemented and residual effects.

Table 5.2: Summary of Impacts and Significant Effects

Potential impacts	Receptor	Nature of effect	Mitigation measures	Residual significant effects
Construction stage				
Flood risk - from surface water	Less vulnerable development and site users on site (Proposed Scheme) and off-site adjacent developments.	Direct, temporary, short term Moderate	SAB compliant drainage strategy Approved CEMP	Not significant
Water quality impacts - sedimentation and pollution events	WFD water body - Afan Estuary including Docks WFD groundwater body - Swansea Carboniferous Coal Measures	Direct and indirect, permanent, short term Moderate/Major	Approved CEMP Environmental Permit conditions	Not significant
Operational stage				
Flood risk – fluvial	Less vulnerable development and site users on site (Proposed Scheme) and off-site adjacent developments.	Direct, Permanent, Long term Moderate	Production Development Zone site raising to 7.5mAOD as defined in FCA SAB compliant drainage strategy	Not significant
Flood risk – surface water				
Water quality impacts - sedimentation	WFD water body - Afan	Direct and indirect,	SAB compliant drainage strategy	Not significant

Potential impacts	Receptor	Nature of effect	Mitigation measures	Residual significant effects
and pollution events	Estuary including Docks	permanent, short term Moderate/ Major	NRW Environmental Permit conditions	

5.107 Effects of the Proposed Scheme with regards to flood risk and drainage are not considered to be Significant as a result of planned tertiary mitigation measures. In particular, this includes implementation of:

- A robust and monitored CEMP to mitigate potential impacts during construction; and
- A SuDS site drainage strategy (including discharge license if necessary) approved by the SAB in accordance with the industry best practice outlined in CIRIA C753 SuDS Manual for management of runoff volumes, rate and water quality treatment.

Limitations and Assumptions

5.108 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- The Proposed Scheme will be implemented and constructed in accordance with the proposed layout, ground levels and drainage features;
- The Proposed Scheme will be implemented and constructed as per the details of an approved SAB compliant drainage strategy in accordance with the Welsh Government Statutory Standards for Sustainable Drainage Systems⁵² and The SuDS Manual (C753);
- All environmental regulatory consents and an Environmental Permit will be obtained from NRW prior to construction (where necessary) and adhered to throughout construction and operation. The site Environmental Permit will identify all discharges to controlled waters;
- The outcomes of the JBA Consulting Phoenix Wharf Flood Consequence Assessment are accepted by NRW and represent the most likely scenario for flood risk to and from the Site;
- A CEMP will be developed that adequately incorporates measures to prevent the risk of pollution to surface water from construction activities, as approved by NRW. Construction mitigation measures will follow standard industry best

⁵² Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems. Available at: <https://gov.wales/sites/default/files/publications/2019-06/statutory-national-standards-for-sustainable-drainage-systems.pdf>

practice for CEMP, for example with reference to the following standards and requirements:

- CIRIA Report C532 2001: Control of water pollution from construction sites – guidance for consultants and contractors;
 - CIRIA Report C624, 2004: Development and Flood Risk – guidance for the construction industry);
 - CIRIA Report C741 2015: Environmental good practice on site; and
 - Environment Agency: Pollution prevention guidance⁵³ for business.
- The WFD Cycle 3 information for the relevant waterbodies is the latest information available regarding water quality data; and
 - DCWW will manage the necessary mitigation measures for water supply and sewerage discharge in association with the facilities required for the proposed site activities. DCWW requirements will be identified through consultation and newly constructed assets and discharges to DCWW services will meet DCWW consenting requirements. Further clarification will be provided through the ES, in terms of the specifics to be adopted as part of the Proposed Scheme.

Transport

Technical Baseline

5.109 With respect to transport an appropriate technical study area has been identified which is considered to cover all potential road links where a significant effect could be likely, and engagement with NPTCBC, and includes the following key junctions on route to and from the M4:

- M4 Junction 41;
- A48 Heilbronn Way / Car Park Access / A4241 / Water Street;
- A4241 / Industrial Unit Access / Harbourside Road / Industrial Unit Access (West);
- A4241 / A4241 Harbour Way / North Bank Road;
- A4241 Harbour Way / Oakwood Road / Llewellyn's Road;
- A4241 Harbour Way / Port Talbot Steelworks West Gate Access;
- A4241 Harbour Way / Port Talbot Steelworks Main Gate Access;
- A4241 Harbour Way / A48 Margam Road / Access Road; and

⁵³ Pollution prevention for business. Available at: <https://www.gov.uk/guidance/pollution-prevention-for-businesses>

- M4 Junction 38.

Accidents and Safety

5.110 Personal injury road traffic accident records have been obtained for the most recent five-year period available at junctions / links within the study area, which is shown on the accident plan presented in **Figure 5.6** and summarised in **Table 5.3** below.

Table 5.3: Accident Record Summary

Junction	Fatal	Serious	Slight	Total
M4 Junction 41 Junction	0	0	2	2
A48 Heilbronn Way / Car Park Access / A4241 / Water Street Junction	0	0	3	3
A4241 link between the A48 Heilbronn Way / Car Park Access / A4241 / Water Street Junction and the A4241 / Industrial Unit Access / Harbourside Road / Industrial Unit Access (West) Junction	0	1	0	1
A4241 / Industrial Unit Access / Harbourside Road / Industrial Unit Access (West) Junction	0	0	0	0
A4241 / A4241 Harbour Way / North Bank Road Junction	0	0	2	2
A4241 Harbour Way / Oakwood Road / Llewellyn's Road Junction	0	1	1	2
A4241 Harbour Way link between the A4241 Harbour Way / Oakwood Road / Llewellyn's Road Junction and the A4241 Harbour Way / West Gate Access Junction	0	1	0	1
A4241 Harbour Way / West Gate Access Junction	0	0	0	0
A4241 Harbour Way link between the A4241 Harbour Way / West Gate Access Junction and the A4241 Harbour Way / Main Gate Access Junction	0	0	1	1
A4241 Harbour Way / Main Gate Access Junction	0	0	3	3
A4241 Harbour Way link between the A4241 Harbour Way / Main Gate Access Junction and the A4241 Harbour Way / A48 Margam Road / Access Road Junction	0	2	0	2
A4241 Harbour Way / A48 Margam Road / Access Road Junction	0	0	1	1
A48 Margam Road link between A4241 Harbour Way / A48 Margam Road / Access Road Junction and the M4 Junction 38	0	0	1	1
M4 Junction 38	1	2	6	9

Baseline Traffic Flows

- 5.111 In order to establish the existing traffic flow demand on the local highway network, manual classified turning count traffic flow surveys have been undertaken at all junctions in the study area. The traffic surveys were undertaken on Thursday 30th June 2022, in a neutral traffic month, between 07:00 – 09:30 and 16:00 – 18:30.
- 5.112 The resulting 2022 AADT Traffic Flows are shown in **Table 5.4** below for the links within the study area, with the link reference points presented in **Figure 5.7**.
- 5.113 In addition, 2026 Baseline flows⁵⁴ have also been determined in order to inform the potential for likely significant effects at the construction and operational stage. The predicated flows are, inclusive of background traffic growth and the following local committed developments⁵⁵:
- P2021/1255 - Land off J38 of the M4, Margam - Full planning application of the development of a metal processing facility totalling 28,500sq.m of floorspace comprising a powder processing plant (17,377sq.m), warehouse and store (5,428 sq.m) office building (1,442 sq.m), amenity building (776 sq.m), laboratory (200 sq.m), services building (470 sq.m), substation (107 sq.m), phase 2 (2,700 sq.m), CCTV, storage tanks and plant, parking, servicing and roads and associated works; and
 - A2020/0014 - Tyn-y-caeau, Margam Road - Change of use from dwelling house and annex building into a mixed used development consisting of guest house accommodation consisting of 16 guest rooms, with associated bar, cafe and spa facilities, and truck stop with 21 HGV parking spaces. The proposal includes the demolition of an existing single storey rear extension, and the erection of a single-storey rear extension, together with widened site access, additional internal access roads, parking areas and associated works.

Table 5.4: 2022 and 2026 Baseline AADT / Daily HGVs

Reference Point	Road Name	2022 AADT	2022 HGV	2026 AADT	2026 HGV
1	A48 Pentyla-Baglan Road	17954	698	18499	719
2	B4286 Heilbronn Way	17187	462	17712	476
3	Car Park Access (North)	15	0	15	0
4	A48 Heilbronn Way (North)	16991	698	17519	719
5	Car Park Access (South)	1155	354	1189	364
6	A48 Heilbronn Way (East)	10002	403	10305	415
7	Water Street	14420	585	14852	602

⁵⁴ The operational year of the Proposed Scheme is assumed to be 2026, as set out in **Chapter 4**.

⁵⁵ The identified committed developments have been determined in consultation with NPTCBC

Reference Point	Road Name	2022 AADT	2022 HGV	2026 AADT	2026 HGV
8	A4241 (North 1)	5490	231	5685	238
9	Industrial Unit Access (East)	438	74	452	76
10	Industrial Unit Access (West)	21	0	21	0
11	Harbourside Road	634	0	653	0
12	A4241 (North 2)	5362	251	5554	258
13	A4241 (West)	7775	310	8152	319
14	North Bank Road	732	113	754	116
15	A4241 Harbour Way (West)	12273	467	12815	481
16	Oakwood Road	762	20	785	20
17	Llewellyn's Road	949	88	977	91
18	A4241 Harbour Way (North)	11609	487	12131	501
19	West Gate Site Access	3072	260	3163	268
20	Access Road 1	49	10	51	10
21	A4241 Harbour Way (South 1)	10641	570	11134	587
22	Access Road 2	152	0	157	0
23	Main Gate Site Access	4286	334	4414	344
24	A4241 Harbour Way (South 2)	9152	600	9601	618
25	Access Road 3	197	88	1584	111
26	A48 Margam Road (North)	7299	305	7989	347
27	A48 Margam Road (South)	14470	890	15759	1036
28	M4 Southbound Off-slip	3495	147	3947	185
29	A48 (East)	9230	378	9505	390
30	M4 Southbound On-slip	3406	334	3781	390
31	M4 Northbound Off-slip	4345	378	4711	430
32	Heolcae'r-Bont	772	103	795	106

Effects Unlikely / Not Significant

5.114 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this.

Increase in driver delay as a result of temporary construction traffic

- 5.115 Professional judgement has been applied to consider how an increase in traffic flows arising from the construction of the Proposed Scheme would likely influence the junctions within the study area. In such circumstances and aligning with Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic⁵⁶ (referred to as ‘IEMA Road Traffic Guidance’), it is considered that less than a 30% increase in flows would result in a ‘negligible’ increase in driver delay. Such judgement also aligns with Rule 1 of the screening procedure set out within IEMA Road Traffic Guidance, where it suggests that the scale and extent of any assessment of traffic related impacts should be where an increase by more than 30% should be considered⁵⁷.
- 5.116 The total estimated construction traffic flows (as informed by **Chapter 4** and information provided by the Applicant/contractor) are shown in **Table 5.5** for the links within the study area as well as the percentage increase in traffic flows when compared to the 2026 AADT flows presented earlier. **Table 5.5** demonstrates that the construction in the most part would generate <5% change, with a single road (West Gate Site Access) seeing a higher increase (approximate 25.4%). As such, given that expected construction traffic is not considered to exceed a 30% change it would not give rise to a significant increase in driver delay during the construction stage.

Table 5.5: Estimated Construction Traffic Flows

Reference Point	Road Name	LGV	HGV	Total	% Increase over 2026 baseline
1	A48 Pentyla-Baglan Road	167	0	167	0.9%
2	B4286 Heilbronn Way	34	0	34	0.2%
3	Car Park Access (North)	0	0	0	0.0%
4	A48 Heilbronn Way (North)	202	0	202	1.2%
5	Car Park Access (South)	0	0	0	0.0%
6	A48 Heilbronn Way (East)	27	0	27	0.3%
7	Water Street	0	0	0	0.0%
8	A4241 (North 1)	229	0	229	4.0%
9	Industrial Unit Access (East)	0	0	0	0.0%
10	Industrial Unit Access (West)	0	0	0	0.0%

⁵⁶ Institute of Environmental Management and Assessment (1993). Guidelines for the Environmental Assessment of Road Traffic.

⁵⁷ IEMA Guidance does make reference to a second rule where a 10% change should be considered within sensitive areas, however, the road links within the study area are not considered to be within a ‘sensitive area’.

Reference Point	Road Name	LGV	HGV	Total	% Increase over 2026 baseline
11	Harbourside Road	0	0	0	0.0%
12	A4241 (North 2)	229	0	229	4.1%
13	A4241 (West)	109	0	109	1.3%
14	North Bank Road	0	0	0	0.0%
15	A4241 Harbour Way (West)	338	0	338	2.6%
16	Oakwood Road	0	0	0	0.0%
17	Llewellyn's Road	0	0	0	0.0%
18	A4241 Harbour Way (North)	338	0	338	2.8%
19	West Gate Site Access	564	240	804	25.4%
20	Access Road 1	0	0	0	0.0%
21	A4241 Harbour Way (South 1)	226	240	466	4.2%
22	Access Road 2	0	0	0	0.0%
23	Main Gate Site Access	0	0	0	0.0%
24	A4241 Harbour Way (South 2)	226	240	466	4.9%
25	Access Road 3	0	0	0	0.0%
26	A48 Margam Road (Norh)	21	37	58	0.7%
27	A48 Margam Road (South)	205	203	408	2.6%
28	M4 Southbound Off-slip	0	35	35	0.9%
29	A48 (East)	28	0	28	0.3%
30	M4 Southbound On-slip	89	83	172	4.6%
31	M4 Northbound Off-slip	89	85	174	3.7%
32	Heolcae'r-Bont	0	0	0	0.0%

5.117 Although no significant effects are expected, a Construction Traffic Management Plan (CTMP) will be prepared by the principal contractor which will set out the proposed routing of construction traffic and measures to enforce such routing (i.e. signage) [T3]. In addition, the CTMP will set out procedures for deliveries and any restrictions in line with best practice measures. The CTMP will be submitted as part of the CEMP for approval prior to any commencement on site [T3]. Therefore, such measures would further limit any potential for significant effects to occur.

5.118 Given the above, increase in driver delay as a result of temporary construction traffic is considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Delay in journey times of public transport as a result of temporary construction traffic

5.119 The local bus routes appear to avoid the majority of links within the study area, nonetheless, as detailed above, construction traffic associated with the Proposed Scheme is not considered to give rise to a significant increase in driver delay during the construction stage that it would influence public transport users and their journey time. Therefore, delays in the journey times of public transport as a result of temporary construction traffic is considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Changes to pedestrian amenity and delay as a result of temporary construction traffic

5.120 Amenity is defined in the Design Manual for Roads and Bridges (DMRB) as the relative pleasantness of a journey for pedestrians and others. This is mainly influenced by the volume and type of traffic on an adjacent link. Other key contributory factors are the standard and width of footways/cycleways, the street furniture provided, planting and landscape etc.

5.121 There is a shared footway / cycleway that runs along western side of the West Gate Access, connecting to a shared footway / cycleway on the A4241 Harbour Way via a dropped kerb crossing with tactile paving. The shared footway / cycleway on the A4241 Harbour Way provides a wide pedestrian connection to Margram and Port Talbot as well as to local bus stops and Port Talbot Parkway Railway Station. During construction, no alteration will occur to existing footways and therefore, any changes to pedestrian amenity would arise from changes in traffic flows or composition.

5.122 As set out within IEMA Road Traffic Guidance, it is suggested that ‘significant’ changes to pedestrian amenity occur where traffic flow (or its lorry component) is either halved or doubled. As set out within **Table 5.5**, the proposed construction traffic flows (or lorry component) during the construction stage would not double or half of the existing baseline traffic flows. As such, the temporary construction traffic associated with the Proposed Scheme would not constitute a ‘significant’ change as defined by IEMA Road Traffic Guidance.

5.123 Nonetheless, a CTMP **[T3]** will be prepared by the principal contractor which will set out the proposed routing of construction traffic and measures to enforce such routing (i.e. signage). The CTMP will be submitted as part of the CEMP for approval prior to any commencement on site **[T3]**. Such measures would further support the minimisation of effects.

5.124 With respect to pedestrian delay, IEMA guidelines state that the volume, composition or speed of traffic may affect the ability of people to cross roads. The guidance proposes that evaluators “... use their judgement to determine whether pedestrian delay is a significant impact”.

5.125 There are multiple uncontrolled dropped kerb pedestrian crossings along the A4241 Harbour Way and uncontrolled pedestrian crossings are also present on at least one approach at the majority of junctions within the TA study area.

- 5.126 Pedestrian delay to cross a link is calculated using peak hour traffic flows on the relevant road link and Figure 1 of DMRB Volume 11 Section 3 Part 8⁵⁸. Applying this indicates that pedestrian delays to cross each of the roads on the pedestrian desire routes surrounding the Site would be less than 10 seconds in both the existing baseline scenario and during the construction stage with assumed construction traffic flows applied. As such, construction traffic is not considered to give rise to a significant increase in pedestrian delay during the construction stage.
- 5.127 Nonetheless, a CTMP [T3] will be prepared by the principle contractor which will set out the proposed routing of construction traffic and measures to enforce such routing (i.e. signage). The CTMP will be submitted as part of the CEMP for approval prior to any commencement on site [T3]. Therefore, such tertiary mitigation measures are considered an integral part of the Proposed Scheme.
- 5.128 Given the above, changes to pedestrian amenity and delay as a result of temporary construction traffic is considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Increase in fear and intimidation as a result of temporary construction traffic

- 5.129 As set out in IEMA Road Traffic Guidance fear and intimidation is dependent upon the amount of traffic, its HGV composition and its proximity to people or the lack of protection caused by narrow pavement widths, for example. The IEMA Road Traffic Guidance states that there are no widely acceptable thresholds for estimating this from known traffic and physical conditions, however, it does suggest some thresholds which could be used based on previous research and these are presented in **Table 5.6** below:

Table 5.6: Potential Thresholds for Assessing Impact on Fear and Intimidation

Degree of Hazard	Average traffic flow over 18hr day – (vehicles/hour 2-way)	Total 18 hour HGV flow	Average Vehicle Speed over 18 hour day (mph)
Extreme	+1,800	+ 3,000	+ 20
Great	1,200 – 1,800	2,000 – 3,000	15 – 20
Moderate	600 – 1,200	1,000 – 2,000	10 – 15

- 5.130 The above table identifies how a potential change in the degree of hazard can be used to determine the scale of impact of the Proposed Scheme upon the levels of fear and intimidation on the surrounding network.
- 5.131 The 2026 baseline AAWT flows and the 2026 ‘with scheme’ construction traffic AAWT flows are shown in **Table 5.7** below for the links within the study area. In addition, the 2026 baseline 18-hour HGV flows and the scheme construction traffic 18-hour HGV flows are presented in **Table 5.8**.

⁵⁸ Design Manual for Roads and Bridges. Volume 11, Section 3, Part 8, Figure 1.

Table 5.7: 2026 Baseline AAWT / 2026 With Construction Traffic AAWT

Reference Point	Road Name	2026 AAWT	2026 AAWT (VPH)	2026 'With Scheme' AAWT	2026 'With Scheme' AAWT (VPH)
1	A48 Pentyla-Baglan Road	20158	1120	20283	1127
2	B4286 Heilbronn Way	19300	1072	19325	1074
3	Car Park Access (North)	17	1	17	1
4	A48 Heilbronn Way (North)	19090	1061	19241	1069
5	Car Park Access (South)	1296	72	1296	72
6	A48 Heilbronn Way (East)	11229	624	11250	625
7	Water Street	16184	899	16184	899
8	A4241 (North 1)	6195	344	6367	354
9	Industrial Unit Access (East)	492	27	492	27
10	Industrial Unit Access (West)	23	1	23	1
11	Harbourside Road	712	40	712	40
12	A4241 (North 2)	6052	336	6223	346
13	A4241 (West)	8883	493	8965	498
14	North Bank Road	822	46	822	46
15	A4241 Harbour Way (West)	13964	776	14217	790
16	Oakwood Road	855	47	855	47
17	Llewellyn's Road	1065	59	1065	59
18	A4241 Harbour Way (North)	13219	734	13473	748
19	West Gate Site Access	3447	191	4050	225
20	Access Road 1	55	3	55	3
21	A4241 Harbour Way (South 1)	12133	674	12482	693
22	Access Road 2	171	10	171	10
23	Main Gate Site Access	4809	267	4809	267
24	A4241 Harbour Way (South 2)	10462	581	10811	601
25	Access Road 3	1726	96	1726	96

Reference Point	Road Name	2026 AAWT	2026 AAWT (VPH)	2026 'With Scheme' AAWT	2026 'With Scheme' AAWT (VPH)
26	A48 Margam Road (Norh)	8705	484	8748	486
27	A48 Margam Road (South)	17172	954	17478	971
28	M4 Southbound Off-slip	4301	239	4327	240
29	A48 (East)	10357	575	10377	577
30	M4 Southbound On-slip	4120	229	4250	236
31	M4 Northbound Off-slip	5134	285	5264	292
32	Heolcae'r-Bont	866	48	866	48

Table 5.8: 2026 Total 18-Hour HGV Flow / Scheme Construction Traffic Total 18-Hour HGV Flow

Reference Point	Road Name	2026 18-Hour HGV	Scheme 18-Hour HGV Flow	Total
1	A48 Pentyla-Baglan Road	783	0	783
2	B4286 Heilbronn Way	519	0	519
3	Car Park Access (North)	0	0	0
4	A48 Heilbronn Way (North)	783	0	783
5	Car Park Access (South)	397	0	397
6	A48 Heilbronn Way (East)	452	0	452
7	Water Street	656	0	656
8	A4241 (North 1)	259	0	259
9	Industrial Unit Access (East)	83	0	83
10	Industrial Unit Access (West)	0	0	0
11	Harbourside Road	0	0	0
12	A4241 (North 2)	281	0	281
13	A4241 (West)	348	0	348
14	North Bank Road	127	0	127
15	A4241 Harbour Way (West)	524	0	524
16	Oakwood Road	22	0	22
17	Llewellyn's Road	99	0	99

Reference Point	Road Name	2026 18-Hour HGV	Scheme 18-Hour HGV Flow	Total
18	A4241 Harbour Way (North)	546	0	546
19	West Gate Site Access	292	180	472
20	Access Road 1	11	0	11
21	A4241 Harbour Way (South 1)	640	180	820
22	Access Road 2	0	0	0
23	Main Gate Site Access	375	0	375
24	A4241 Harbour Way (South 2)	673	180	853
25	Access Road 3	121	0	121
26	A48 Margam Road (Norh)	378	28	405
27	A48 Margam Road (South)	1129	153	1281
28	M4 Southbound Off-slip	202	26	228
29	A48 (East)	425	0	425
30	M4 Southbound On-slip	425	63	487
31	M4 Northbound Off-slip	469	64	532
32	Heolcae'r-Bont	116	0	116

5.132 None of the links within the study area average over 1,200 vehicles per hour in either the base or with scheme construction traffic scenario and none of the links have 18-hour HGV flows of over 2,000. Therefore the degree of hazard would be less than moderate and would not increase as a result of the proposed construction phase.

5.133 Nonetheless, a CTMP [T3] will be prepared by the principle contractor which will set out the proposed routing of construction traffic and measures to enforce such routing (i.e. signage). The CTMP will be submitted as part of the CEMP for approval prior to any commencement on site [T3]. Therefore, such tertiary mitigation measures are considered an integral part of the Proposed Scheme.

5.134 Given the above, an increase in fear and intimidation as a result of temporary construction traffic is considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Increase in severance as a result of temporary construction traffic

5.135 The IEMA Road Traffic Guidance states that “severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery”. Furthermore, “Changes in traffic flow of 30%, 60% and 90% are regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ changes in severance respectively”.

- 5.136 The IEMA Road Traffic Guidance acknowledges, however, that it is particularly difficult to predict and measure severance. Specific local conditions, in particular the location of pedestrian routes to key local facilities and whether or not crossing facilities are provided are key in the assessment of severance.
- 5.137 The Proposed Scheme during construction will not result in the creation of a new carriageway or road that would sever a community directly. Nor will the Proposed Scheme alter traffic speeds, widths of existing roads or remove any existing crossing facilities. As such, severance arising from such aspects is not anticipated. Therefore, any severance during construction would arise from changes to traffic flows increasing difficulty to cross roads.
- 5.138 There are multiple uncontrolled dropped kerb pedestrian crossings along the A4241 Harbour Way and uncontrolled pedestrian crossings are also present on at least one approach at the majority of junctions within the study area.
- 5.139 Uncontrolled crossings would be influenced by changes to traffic flows which could lead to increased difficulty in crossing and thus severance. Nonetheless, as set out within IEMA Road Traffic Guidance, a 30% change in traffic is considered to result in a 'slight' change in severance. As set out in **Table 5.5**, the construction traffic would generate a maximum of an approximate 25.4% increase (and in most case <5%) on any link within the study area when compared to the baseline 2026 AADT flows presented earlier. As such, increase in severance as a result of construction traffic is not considered to be significant.
- 5.140 Nonetheless, a CTMP **[T3]** will be prepared by the principal contractor which will set out the proposed routing of construction traffic and measures to enforce such routing (i.e. signage). The CTMP will be submitted as part of the CEMP for approval prior to any commencement on site **[T3]**. Therefore, such measures are considered to further reduce the potential of significant effects.
- 5.141 Given the above, overall increase in severance as a result of temporary construction traffic is considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Increase in accidents and safety as a result of temporary construction traffic

- 5.142 The IEMA Road Traffic Guidance states that "Professional judgement will be needed to assess the implications of local circumstances, or factors, which may elevate or lessen risks of accidents, e.g. junction conflicts".
- 5.143 **Table 5.3** above shows no accidents were recorded at the A4241 / Industrial Unit Access / Harbourside Road / Industrial Unit Access (West) and A4241 Harbour Way / West Gate Access junctions during the five-year study period.
- 5.144 Of the remaining junctions within the study area, all experienced three or less accidents during the five-year study period except the M4 Junction 38. Less than three accidents over a five-year period is not considered to be an unusual frequency for these types of junctions and therefore, the existing accident record at these junctions does not represent a material concern in the context of the Proposed Scheme.

Furthermore, all of the links experienced between 1 and 2 accidents over the five-year period, with no accident cluster spots.

5.145 A total of nine accidents were recorded at the M4 Junction 38 during the five-year period, of which, 6 resulted in 'slight' severity injuries, 2 resulted in 'serious' severity injuries and 1 resulted in 'fatal' injuries. The fatal accident took place in 2019 and involved a car moving off and a motorcycle colliding with the rear of the car. Whilst all accidents are regrettable, nine accidents over a five-year period (average of 1.8 per year) is not considered to be an unusual frequency for this type of junction and the traffic volumes it carries. Therefore, the existing accident record at this junction does not represent a material concern in the context of the scheme.

5.146 Therefore, it is considered that increased accidents and safety as a result of temporary construction traffic is unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES.

Increase in hazardous loads during construction stage

5.147 There are unlikely to be any hazardous loads as part of the construction stage and therefore, an increase in hazardous loads during the construction stage is considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Increase in driver delay; delays to journey times of public transport users; pedestrian amenity and delay; fear and intimidation; severance; and accidents and safety as a result of operational traffic

5.148 The Proposed Scheme does not result in any changes to highway infrastructure that would change traffic speeds or impact on pedestrians, cyclists or drivers. As such all potential effects at the operational stage would be derived from changes in traffic flows or composition, in line with the IEMA Road Traffic Guidance. Furthermore, the operational stage will generate significantly less two-way traffic movements when compared to the construction stage, as summarised below:

- The applicant has confirmed the Proposed Scheme will generate up to 30 two-way tanker / HGV movements per day in relation to road imports / exports associated with the proposed Site operations. This is not significant for a 24-hour facility as even if it is assumed all imports / exports take place in the 12-hour period of 07:00 – 19:00, this results in just circa 3 additional two-way HGV movements per hour; and
- In terms of staff, there will be up to 84 staff spread across four shift patterns with a maximum of 168 two-way vehicle movements per day associated with staff.

5.149 Having regard to the above and when considering the evidence presented for the same effects during the construction stage (**Paragraph 5.115 – 5.146**), where there is expected to a greater level of traffic generated, all effects with the exception of hazardous loads, are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

5.150 A Framework Operational Transportation Management Plan will be prepared and submitted within the Application. This will set out all forms of transportation to be used during the operation of the Proposed Scheme (and associated materials to be transported), including details of safety measures/procedures to be deployed to ensure safe transportation and compliance with any relevant legislation, regulation or guidance (i.e. UN Model Regulations, The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009, The International Convention for the Safety of Life at Sea, 1974 (SOLAS), The International Carriage of Dangerous Goods by Inland Navigation (ADN) and International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 relating thereto (MARPOL)) [P6].

Increase in hazardous loads during the operational stage

5.151 IEMA Road Traffic Guidance suggests that the ES needs to clearly outline the estimated quantity and composition of such loads, but that the analysis should reflect the nature of the load in question. The operational stage will result in hazardous loads such as sustainable diesel, nitrogen, contaminated water and waste ethanol being transported to/from the site via road.

5.152 Notwithstanding the above, less than 15 (30 two-way) hazardous loads are anticipated per day and all hazardous loads will be transported in appropriate vehicles, such as tankers, in accordance with the agreement concerning the International Carriage of Dangerous Goods by Road (ADR) / Regulation 5 of the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (CDG) [T13].

5.153 A Framework Operational Transportation Management Plan will be prepared and submitted within the Application. This will set out all forms of transportation to be used during the operation of the Proposed Scheme (and associated materials to be transported), including details of safety measures/procedures to be deployed to ensure safe transportation and compliance with any relevant legislation, regulation or guidance (i.e. UN Model Regulations, The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009, The International Convention for the Safety of Life at Sea, 1974 (SOLAS), The International Carriage of Dangerous Goods by Inland Navigation (ADN) and International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 relating thereto (MARPOL)) [P6].

5.154 Having regard to the above, hazardous loads during the operational stage are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Limitations and Assumptions

5.155 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- The assessments of effects are based on projections based on various sources of information provided by the client on the anticipated operations and the construction traffic movements are based on professional experience and estimates provided by the contractor which may be subject to change as the scheme develops. This is considered the most appropriate and robust method

for estimating the level of traffic anticipated to be generated, due to the bespoke nature of the Proposed Scheme; and

- The assessment year of 2026 is based on the projected construction programme.

Marine Navigation and Marine Recreational Resource

Technical Baseline

- 5.156 Port Talbot Docks is an existing and working docks, handling around 6.6 million tonnes of cargo every year and over £760 million of trade⁵⁹.
- 5.157 In addition, the Port Talbot Docks does support recreational uses, including fishing⁶⁰, sailing and rowing as part of the Port Talbot Sea Cadets (North Wharf), as well as other water sports through the Port Talbot YMCA Water sports facility (North Wharf). Afan Boat Club are located on the River Afan, near to Port Talbot Docks, with associated slipway and moorings.

Effects Unlikely / Not Significant

- 5.158 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this.

Impacts on Marine Navigation (and safety) associated with additional ship movements

- 5.159 Ship movements associated with the Proposed Scheme will utilise the existing navigation line / routes to and from the port (as aided by existing navigation aids within Swansea Bay and Port Talbot Docks) as well as ensuring port entry requirements, as established by ABP as harbour master, are abided by. Such practices are commonplace for shipping movements akin to those to be adopted for the Proposed Scheme and already in place for all existing shipping movements to and from Port Talbot Docks. The Proposed Scheme will not therefore result in a need to deviate from this practice to result in a notable change to baseline conditions.
- 5.160 As such impacts on marine navigation (and safety) is considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.
- 5.161 It should be noted that a Marine Navigation Risk Assessment will be submitted within the Application for completeness.

Impacts upon marine recreational resources associated with additional ship movements

- 5.162 The Proposed Scheme will result in the movement of additional ships, which could adversely influence the additional marine users, in terms of their ability to operate or use the Port Talbot Docks as per the baseline situation. Nonetheless, such users already have an interface with the existing ship movements and therefore already operate in such a way that their interaction with shipping movements are controlled

⁵⁹ <https://www.abports.co.uk/locations/port-talbot/>

⁶⁰ <https://fishingwales.net/fishing-locations/port-talbot-docks/>

and based on principles established by ABP as harbour master. The Proposed Scheme would not result in a deviation from this position or are so notable that they would remove the ability for such users to continue to operate. On this basis, impacts on marine recreational resources is considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

- 5.163 It should be noted that a Marine Navigation Risk Assessment will be submitted within the Application for completeness and will likely consider the interface between such other marine recreational uses and ship movements.

Lighting

Technical Baseline

- 5.164 The Site comprises previously developed land within a wider industrial context. As such, there are no known operational lighting within the majority of the Site, with the exception of column lighting on the Unnamed Port Road. Nonetheless, in the wider area surrounding the Site there is existing lighting associated with the existing commercial/industrial operations and road network. The surrounding residential areas of Port Talbot are generally reflective of residential areas, where street lighting is the dominant lighting source, with façade mounted lighting associated with properties. Those properties with views towards the Site would likely experience the operational lighting associated with the wider commercial/industrial activities within Port Talbot.
- 5.165 Given the characteristics of the Sites it is likely to be classified as an E2/E3 (low/medium ambient brightness) lighting environmental zone⁶¹ given the general absence of lighting and light spill into the Site from surrounding sources. Nonetheless, this would be in the context of the wider commercial/industrial surrounding which would be more characteristics of E3 (medium ambient brightness) up to an E4 (high ambient brightness) lighting environmental zone.

Effects Unlikely to be Significant

- 5.166 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the Preliminary Environmental Management Plan (PEMP) provided in **Appendix 2.1**.
- 5.167 Ecology receptors sensitive to lighting have been considered as part of the terrestrial ecology chapter (**Chapter 7**).

⁶¹ NLIPI (2007). What are lighting environmental zones? Available at: <https://www.lrc.rpi.edu/programs/NLPIP/lightingAnswers/lightPollution/environmentalZones.asp> [Accessed 14/09/2022].

Disturbance to nearby residents due to obtrusive light during construction

- 5.168 Light pollution (or obtrusive light) comprises any adverse effects of artificial lighting including glare⁶², light trespass⁶³/spill⁶⁴ and sky glow⁶⁵, occurring as a result of temporary construction activities associated with the Proposed Scheme. The nature of the effect and its significance is relative to the existing baseline conditions (i.e. lighting environment experienced by existing receptor) and general proximity to potential light sources, where the greatest effect is felt by receptors adjacent to, or in close proximity to a light source (i.e. within 50m).
- 5.169 The majority of the Site is not adjacent to residential receptors, with the PDZ (where the majority of temporary construction lighting will be implemented) being >400m from the nearest residential receptors at Lower West Road. It is noted that the Temporary Construction Area is approximately 50m from residential properties on Lower West End, however, these receptors do experience existing lighting environment governed by the highways lighting on Harbour Way A4241 (located between the receptors and Temporary Construction Area). Furthermore, Harbour Way A4241 is located at a marginally higher elevation (approximately 10m AOD⁶⁶) than both the Temporary Construction Area (approximately 8m AOD) and the residential properties on Lower West End (the closest being approximately 8m AOD), creating some degree of visual separation between the receptors and the likely temporary construction lighting, further separation is created by the closed board fencing barrier (assumed to be about 2m) located on the northern side of Harbour Way (likely deployed as noise mitigation for the road).
- 5.170 Lighting will be required during construction activities in order to provide a safe working environment, however, in the most part this lighting will be a notable distance from potential receptors (as noted above). Nonetheless, potential adverse effects arising from temporary construction lighting can be controlled through a series of best practice measures, in line with lighting industry standards and guidance including the CIE publication 'Technical Report Document 129⁶⁷ and BS EN 12464-2:2014⁶⁸, incorporated as part of a CEMP [T1, T5]. The following measures are proposed in order to control Light Spill, Glare and Sky Glow effects and thus manage light pollution [T5]:
- Where practicable, construction lighting in the Site would be designed to comply with Environmental Zone E3 in accordance with the ILP Guidance Note GN01⁶⁹;

⁶² The uncomfortable brightness of the light source against a dark background which results in dazzling the observer, which may cause nuisance to a specific receptor.

⁶³ The spilling of light beyond the boundary of a property, which may cause nuisance to others.

⁶⁴ The unwanted spillage of light onto adjacent areas which may affect sensitive receptors (particularly residential properties and ecological sites).

⁶⁵ The direct upward spill of light into the sky, which can cause a glowing effect and is often seen above cities when viewed from a dark area.

⁶⁶ Informed by Google Earth elevation data

⁶⁷ CIE - Technical Report Document 129 (1998) Guide for Lighting Exterior Work Areas.

⁶⁸ British Standards (2014) BS EN 12464-2 – Lighting of Work Places – Part 2: Outdoor Work Places.

⁶⁹ Institute of Lighting Professionals (ILP) (2021) Guidance Notes for the Reduction of Obtrusive Light (GN01).

- Illuminance levels arising from temporary lighting to be designed in accordance with BS EN 12464-2: 2014 and CIE 129.
- Placement of temporary lighting required to ensure safe working conditions and to maintain security, to have due regard of sensitive receptors (i.e. occupied residential properties);
- Lighting to be directed so as avoid unnecessary Light Spill outside of construction areas and to ensure that the light distribution is toward the task area;
- Lighting to be switched off when not required for safe working conditions and Site security;
- Use of light shields/baffles to control upward light to within the maximum 2.5% set out in the ILP Guidance Note GN01, where possible;
- Lighting to be kept at 0° tilt to avoid Sky Glow, where practicable; and
- Light dimming and automatic switch off would be used (where appropriate).

5.171 Therefore, disturbance to nearby residents due to obtrusive light during construction is considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Disturbance to residents due to obtrusive light during operation

5.172 Operational lighting will be required for the Proposed Scheme to ensure appropriate working environment and according with Health and Safety guidance. The exact future lighting is not known at this time, but is likely to include a combination of the following:

- Operational task lighting associated with operational plant and machinery, including at height (i.e. gangways, instrument panels, inspection/monitoring locations etc.);
- General task lighting between operational plant/machinery to provide safe working conditions;
- Column lighting associated with internal access roads/points;
- Low level bollard lighting associated with pedestrian routes/zones;
- Façade mounted general/security lighting (i.e. flood lighting) in and around ancillary operational facilities (i.e. plant room, laboratories etc.) and ship/road loading facilities; and
- Reinstated highways lighting on unnamed port road and provision of additional similar lighting at new access points.

5.173 As noted within **Chapter 4**, the Proposed Scheme requires the installation of a single enclosed ground flare. The flare is provided for essential operational safety purposes or the ‘venting/clearing’ of material during ‘start-up’ and ‘shut-down’ stages, which would largely occur when catalytic material in the process is to be renewed (approximately

every 2 years) and for other maintenance activities. The flare will have a continuous pilot flame. Nonetheless, the use of a ground flare means that any 'lighting' impacts that may arise from it is limited due to intervisibility between the Site and receptors and general containment within the Site (i.e. the barrier that surrounds the flare) and screening effect provided by surrounding plant/equipment. Overall, it is considered that the ground flare would be noted in the context of the other operational lighting associated with the Proposed Scheme, but its contribution to potential nuisance issues minimal.

- 5.174 Almost all operational lighting, including that associated with the flare, will be located within the PDZ. The only element of lighting outside of the PDZ will be associated with ship unloading/loading facility. Nonetheless, lighting associated with the jetty is considered to be minimal and comprise focused task lighting.
- 5.175 As with the discussion of effects for temporary construction lighting (**Paragraph 6.168 – 5.171**) the nature of effect(s) and its significance is relative to the existing baseline conditions (i.e. lighting environment experienced by existing receptor) and general proximity to potential light sources. As already established (**Paragraph 5.169**) potential receptors are all located >400m from the PDZ. At such distances the potential for nuisance effects is considered unlikely and not significant, even where operational lighting will be visible in the distance (i.e. lighting at height). Furthermore, the operational lighting associated with the Proposed Scheme is not considered to influence the existing lighting environment experienced by the receptors, which is dominated by the existing street lighting located in proximity to the receptors.
- 5.176 Obtrusive light can be avoided through appropriate lighting design in line with best practice, guidance and standards, including but not limited to: ILP's PLG04⁷⁰; ILP Guidance Note GN01⁷¹; British Standard 5489-1:2020⁷²; BS EN 13201-2 – Road lighting⁷³, and BS EN 12464-2 – Lighting of Work Places⁷⁴ **[P4]**. Measures to mitigate effects from obtrusive light, as set out in the identified guidance, include the selection of the correct type of luminaire, the use of shields, hoods (as required), as well as the design and positioning of lights (e.g. power, orientation, and height of the luminaire) **[P4]**.
- 5.177 Overall, when considering the existing factors, distances to receptors and the provision of a correctly design lighting scheme at the Site, disturbance to residents due to obtrusive light during operation are considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

⁷⁰ Institute of Lighting Professionals (ILP) PLG04 Guidance on Undertaking Environmental Lighting Impact Assessment (2013)

⁷¹ ILP Guidance Note 01/21 The Reduction of Obtrusive Light (2021)

⁷² British Standard (2020). 5489-1:2020 Design of road lighting. Lighting of roads and public amenity areas. Code of practice.

⁷³ BS EN 13201-2:2015 Road Lighting Performance Requirements (2016)

⁷⁴ BS EN 12464-2:2014 Light and Lighting – lighting of work places. Outdoor work Places (2014)

Waste

Technical Baseline

5.178 The Site is currently vacant, and so there is no existing waste generating uses on Site.

Effects Unlikely to be Significant

5.179 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the Preliminary Environmental Management Plan (EMP) provided in **Appendix 2.1**.

Waste generation during construction

5.180 Sources of waste during the construction stage are assumed to relate to construction materials (including packaging) and general construction activities⁷⁵. It is anticipated that generic waste produced during construction would be controlled through the implementation of a CEMP, secured by planning condition. The CEMP will be informed by the waste provisions of the Environmental Protection Act 1990⁷⁶ and the Environmental Protection (Duty of Care) Regulations 1991⁷⁷ **[T1]** and will set out the principles and legal requirements relating to waste, including any hazardous waste that is encountered and required to be exported off-site for disposal.

5.181 The CEMP will also describe how materials will be managed efficiently and disposed of legally during construction. It will also outline the aims, objectives and on-going management responsibilities, including management practices, to be implemented during the construction stage, and will set targets for the reduction, diversion from landfill and reuse of waste **[T7]**.

5.182 Therefore, waste generated during construction is considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Waste generated during operation

5.183 Waste generated during the operational stage is anticipated to include generic waste streams arising from the ancillary infrastructure on Site (i.e. control room, laboratories etc.) as well as secondary outputs of the overall ATJ SPK and ATJ-RD production process, as set out in **Chapter 4** (i.e. waste ethanol and impurities and spent catalyst). In the most part the production process is largely a closed system and therefore there is limited waste streams, however, there will be inevitable waste products.

5.184 The secondary output from the process are very specific materials and therefore requires specific management and disposal processes, rather than being disposed of to

⁷⁵ There is an assumed cut and fill balance across the Site, as set out within **Chapter 4: High Level Development Specification**.

⁷⁶ Environmental Protection Act 1990 No. 43 Available at: <https://www.legislation.gov.uk/ukpga/1990/43/contents> [Accessed: 22/12/2022].

⁷⁷ Environmental Protection (Duty of Care) Regulations 1991 No. 2839. Available at: <https://www.legislation.gov.uk/uksi/1991/2839/made#:~:text=The%20duty%20requires%20such%20persons,person%20or%20to%20a%20person> [Accessed: 22/03/2022].

landfill. In some instances, these waste arising would be classified as hazardous substances and therefore will be managed and disposed in line with the Hazardous Waste (England and Wales) Regulations 2005⁷⁸. Other substances, such as the process catalyst, are dealt with through the supplier who will remove waste product either for re-use or appropriate disposal. An operational management practice will be in place for the waste arising from the industrial process.

- 5.185 With respect to the generic waste arisings statutory legislation (i.e. The Waste (England and Wales) Regulations 2011, Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations 1991) defined that it is the responsibility of the occupants to arrange for the necessary refuse and recycling to be collected from their premises. As such, the Applicant will employ a suitably accredited waste contractor to collect the waste arising from the Site **[P5]**. Waste collection frequency will be dependent upon the volume of waste generated, the storage method (i.e. whether balers and waste compactors are used) and the schedule of the appointed waste contractor. Nevertheless, the Proposed Scheme will include the appropriate provision for waste storage and handling facilities/areas, inclusive of areas for segregation of waste and recycling in accordance with British Standard (BS) 5906:2005 Waste Management in Building – Code of Practice **[P5]**.
- 5.186 Based on the evidence above, specifically adherence to relevant legislation and regulations, effects related to operational waste are considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

⁷⁸ Hazardous Waste (England and Wales) Regulations 2005 no. 894.

6. Major Accidents and/or Disasters

Site Terminology

- 6.1 As outlined in **Chapter 2, 3 and 4**, the Site is split into a number of parcels/zones (**Figure 4.2**). This Chapter refers to both the Site as a whole, and individual parcels/zones. The individual parcels are referred to as follows:
- Primary parcel of land for the location of the proposed production facility (approximately 9.1ha), comprising bare land adjacent to Phoenix Wharf (Port Talbot) (referred to as the '*Production Development Zone [PDZ]*');
 - A discrete parcel of land located within the wider Port Talbot at the eastern boundary of Phoenix Wharf (approximately 2.6ha) (referred to as '*Temporary Construction Area*');
 - 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 marine environment of Phoenix Wharf, located to the north of the PDZ and the unnamed port road (referred to as the '*Phoenix Wharf Marine Unloading/Loading Facility*').
- 6.2 Note that where primary and tertiary mitigation is referred to throughout this Chapter, a referencing system has been used (e.g. **[P1]**, **[T1]**, etc) to link this to the summary of the mitigation in the Preliminary EMP in **Appendix 2.1**.

Technical Baseline

- 6.3 The Site does not currently contain any uses so there are not considered to be any operational hazards on Site. A review of the Control of Major Accident Hazards (COMAH) 2015 Public Information Records from HSE⁷⁹ identified two establishments within 3 miles of the Site that have operations that fall under the COMAH Regulations 2015 and thus could be a potential existing source of a major accident or disaster. The identified establishment comprised:
- BOC Limited (Margam) – approximately 3.4km south-east of the PDZ; and
 - Tata Steel UK Limited (Port Talbot Steelworks) – located adjacent to the Site.
- 6.4 As noted above, Tata Steels' Port Talbot Steelworks (classified as an upper tier establishment⁸⁰) is located adjacent to the Site and therefore the closest source of potential major accident/disaster. The COMAH records indicate that the principal

⁷⁹ Available <https://notifications.hse.gov.uk/COMAH2015/Search.aspx>

⁸⁰ There are two types of establishment which are subject to COMAH – Upper and Lower Tier. Which tier an establishment falls in is dependent on the quantity of dangerous substances they hold.

dangerous substances associated with the establishment include flammable liquids and gases; hazardous to the aquatic environment; and toxic substances.

Proposed Scope of Assessment

- 6.5 As detailed within Schedule 4, Paragraphs 5 and 8 of the EIA Regulations, there is the requirement to consider the risk of major accidents and/or disasters relevant to the Proposed Scheme. The EIA Regulations are not specific on the nature of risk / disasters to consider, nor an approach to be adopted when determining where such effects may be significant or not. The most applicable guidance in relation to major accidents and disasters is IEMA Major Accidents and Disasters in EIA: A Primer⁸¹ ('IEMA MAD Primer') which provides context to the way in which the technical aspect should be addressed through the EIA process.
- 6.6 There is the potential for a wide range of major accidents⁸² and/or disasters⁸³ that can occur, however, in line with best practice guidance⁸⁴ and the IEMA MAD Primer, it is necessary to apply proportionality when considering the potential for major accidents and disasters. As such, to inform the potential scope a preliminary risk evaluation (**Table 6.3**) has been completed which has qualitatively considered potential 'risk events' associated with the Proposed Scheme, based on an understanding of the characteristics of the Site, surrounding area and the operational activities being proposed as part of the Proposed Scheme (**Chapter 4**). The preliminary risk evaluation (**Table 6.3**) is not an exhaustive list of all possible major accidents or disasters, rather it is focused on those that may give rise to potential significant effects, as defined within the IEMA MAD Primer as *"Could include the loss of life, permanent injury and temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration"*.
- 6.7 As with any evaluation of 'risk', it is necessary to consider both the severity of any risk event (including aspects such as geographical extent, duration, and sensitivity of receptor) as well as the likelihood/probability of the risk event. Severity and likelihood of a risk event has been informed by the criteria set out within **Table 6.1**. Both aspects have been considered together (see **Table 6.2**) to inform a likely risk category, set at Red, Amber, Green and Blue, where only those categorised as Red being considered likely to be significant and thus requiring further assessment.

⁸¹ IEMA Major Accidents and Disasters in EIA: A Primer (September 2020)

⁸² Events that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment.

⁸³ May be a natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident

⁸⁴ IEMA (2015). Environmental Impact Assessment Guide to: Shaping Quality Development and IEMA (2016). Environmental Impact Assessment Guide to: Delivering Quality Development.

Table 6.1: Risk Criteria

	Applied Scale	Corresponding Terminology	Description
Severity	1	Minor	No perceived harm to human health (including welfare) and limited potential impact to the environment with short term implications.
	2	Moderate	Result in limited harm to human health (i.e. with short-medium term implications on health and welfare) and/or result in negative impacts and damage to the environment with medium term implications
	3	Severe	Result in notable harm to human health (i.e. long term implications on health and welfare) / result in low to medium scale fatalities (in terms of numbers of fatalities) and/or total removal/damage to the environment with long term, wide reaching but reversible implications
	4	Extreme	Result in notable harm to human health (i.e. long term implications on health and welfare) / result in large scale fatalities (in terms of numbers of fatalities and geographical scale of event) and/or total removal/damage to the environment with long term, wide reaching and non-reversible implications
Likelihood	1	Low	Occurrence of risk event is considered highly unlikely (albeit not impossible) or almost entirely limited by the presence of suitable control measures
	2	Medium	Potential for risk event to occur but can be partly limited due to presence of suitable control measures.
	3	High	Elevated potential of risk event to occur and inability to limit likelihood through the use of control measures.

Table 6.2: Risk Matrix

Severity	Likelihood		
	1 – Low	2 – Medium	3 – High
1 – Minor			
2 – Moderate			
3 – Severe			
4 – Extreme			

6.8 In line with the IEMA MAD Primer and the terminology descriptions set out in **Table 6.1**, both aspects can be influenced by ‘mitigating actions/control measures’. This is considered relevant as in most instances where activities are considered to have a high severity of risk event, key legislative requirements (i.e. COMAH Regulations 2015) are applicable and stipulate the requirement for an extensive review of potential risk and the identification/implementation of appropriate management strategies/working practices that limit the likelihood/probability of the risk event occurring to ‘as low as reasonably practicable’ (ALARP)⁸⁵. The presence of key legislation would fall under the definition of tertiary mitigation (**Paragraph 2.22**), as such legislation would apply regardless of the need for EIA and confidence can be placed on the ultimate outputs of the legislation processes to control effects.

6.9 The preliminary risk evaluation (**Table 6.3**) has been used to inform the scope of assessment and justify the ‘scoping out’ of effects ensuring the EIA and ES only assess those effects considered ‘likely’ to be significant.

Effects Unlikely / Not Significant

6.10 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided as part of the preliminary risk assessment (**Table 6.3**). Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the Preliminary EMP provided in **Appendix 2.1**.

6.11 Based on the preliminary risk evaluation (**Table 6.3**) the following risk events are not considered likely to be significant:

- Major road traffic accident resulting in death or permanent injury to members of public (construction and operation);
- Pollution event / migration of existing contamination from the Site to controlled waterbody (construction);

⁸⁵ ALARP describes the level to which it is expect to see a risks controlled.

- 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);
- Pollution event occurring during ship transportation of input/output material (operation); and
- Natural disasters events (i.e. hurricanes and earthquakes) impacting users of the site and on-site operations (construction and operation).

Table 6.3: Preliminary Risk Evaluation

Risk Event / Hazard (<i>applicable development stage</i>)	Severity (1 – 4)	Likelihood (1 – 3)	Discussions of Risk / Hazard (including known mitigation)	Risk Category	Scoped In/Out
Major road traffic accident resulting in death or permanent injury to members of public (<i>construction</i>)	3	1	<p>During the construction stage, additional HGV vehicles will be present on the local road network⁸⁶ which could lead to increased potential for road traffic accidents. Accidents and Safety has been considered as part of Chapter 5, Paragraph 5.110, 5.142 – 4.146 and 5.148 – 1.150, where it was identified that no accidents were recorded at the A4241 / Industrial Unit Access / Harbourside Road / Industrial Unit Access (West) and A4241 Harbour Way / West Gate Access junctions in the last five years. Other junctions in the surrounding area all experienced three or less accidents over the last five years, except the M4 Junction 38 (where there was a total of nine accidents in five years). Less than three accidents over a five-year period is not considered to be an unusual frequency for these types of junctions and therefore, the existing accident record at these junctions does not represent a material concern in the context of the Proposed Scheme. As such, given the existing data is assumed that the likelihood of accidents is reduced.</p> <p>Given the nature of the vehicles dominant during the construction stage (i.e. HGV) the severity of risk could be considered to be greater. However, the local road network already has a proportion of HGV vehicles given the presence of industrial and commercial premises nearby and as such, when considering the existing accident and safety data, the potential severity of risk is partly reduced.</p>	Green	Out

⁸⁶ Approximately 8-10 two-way HGV movements per hour, at peak construction

Risk Event / Hazard (<i>applicable development stage</i>)	Severity (1 – 4)	Likelihood (1 – 3)	Discussions of Risk / Hazard (including known mitigation)	Risk Category	Scoped In/Out
			Furthermore, all additional vehicles would accord with the highway code and where dangerous loads are being transported these would be done in accordance with The International Carriage of Dangerous Goods by Inland Navigation (ADN) and general best practice (i.e., covered loads, appropriate vehicles, etc.).		
Major road traffic accident resulting in death or permanent injury to members of public (<i>operational</i>)	3	1	Similar to the above consideration, during operation of the Proposed Scheme, HGVs will be utilised to transport some materials to and from the Site, albeit the primary transport of key input and outputs (i.e. Ethanol, ATJ SPK and ATJ-RD) will utilise ships (discussed below). As such, at the operational stage the HGV component of the Proposed Scheme is not considered to be any different to the scenario during construction which is set out above.	Green	Out
Pollution event / migration of existing contamination from the Site to controlled waterbody or marine environment (<i>construction</i>)	1	1	Migration of existing contamination from the Site to a controlled waterbody could occur during the construction stage as a result of disturbance from earthworks or other below ground activities. Contamination could impact the water quality of the controlled waterbodies, impacting upon any ecological flora and fauna reliant upon the waterbody. However, such a hazard has been considered within Chapter 5, Paragraph 5.95 – 5.105 and with the implementation of best practice measures controlled through a CEMP [T1, T2], the likelihood of the risk is minimised.	Blue	Out
Extreme flooding event (including under the influence of climate)	3	1	There is the potential that a flood event could occur at the Site, arising from a number of sources. Such events could result in direct harm to future users of the Site, or even cause damage or	Green	Out

Risk Event / Hazard (<i>applicable development stage</i>)	Severity (1 – 4)	Likelihood (1 – 3)	Discussions of Risk / Hazard (including known mitigation)	Risk Category	Scoped In/Out
change) causing risk to human life or failure of operational safety measures, indirectly resulting other forms of incidents (<i>operation</i>)			<p>impact operational safety measures implemented on site, result in consequential hazards/incidents. Furthermore, the risk is potentially intensified due to climate change and its influence on extreme weather events and increased flooding potential.</p> <p>Nonetheless, the risk of flooding to the Site (including accounting for climate change) has been considered as part of Chapter 5, Paragraph 5.88 – 5.105. The evaluation determined that the risk of flooding is either limited or controlled through the implementation of key mitigation as part of the Proposed Scheme (i.e. raising levels within the Site [P2], drainage strategy [P3], etc.). Furthermore, in terms of potential events impacting operational safety measures, this is considered to be limited due to the requirement of the Technical Measures Document ‘Design Code – Plant’⁸⁷, which require the design of the Proposed Scheme to take account of future extreme weather events [T14]. Further information is set out in Chapter 10 (Paragraph 10.39 – 10.42).</p>		
Pollution event occurring during ship transportation of input/output material	3	2	<p>The use of ship transportation to bring the ethanol to Site and the exportation of the ATK SJF from the Site, if subject to damage, could lead to potential off-site pollution events associated with the modes of transport. The severity of this risk event would depend on the location of the pollution event (i.e. would it occur in and around an environmental designation or populated area). Furthermore, the severity of a pollution event out at sea may be more severe as the ability to control or remediate any consequence may be more difficult.</p>	Amber	Out

⁸⁷ <https://www.hse.gov.uk/comah/sragtech/techmeasplant.htm>

Risk Event / Hazard (applicable development stage)	Severity (1 – 4)	Likelihood (1 – 3)	Discussions of Risk / Hazard (including known mitigation)	Risk Category	Scoped In/Out
			<p>Nonetheless, the movement of substances and ensuring that mode of transportation are governed by key legislation and guidance, as set out under “Fire event occurring during ship transportation of input/output material” above. Furthermore, specifically for shipping the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL)⁸⁸ would be applicable [T13]. As such the Applicant and their chosen transportation partner(s) would be duty bound to comply with the measures specified within the relevant legislation and/or regulations where applicable.</p>		
<p>Operational plant/infrastructure failure (i.e. structure/building collapse, human error, explosion, non-descriptive accident)</p>	4	2	<p>The Proposed Scheme is an operational production facility, with plant and other infrastructure used in the overall processing of ethanol to ATJ SPK and ATJ-RD. As such a large number of plant and interconnecting infrastructure will be used, all of which could be subject to failure, human error (where human operation/input is notable) or non-descriptive accidents. Furthermore, the ancillary infrastructure on-site (such as plant room, laboratory, etc.) could be subject to failure, with respect to aspects such as structural/building collapse. All aspects could have notable implication on future on-site users, as well as directly impact those outside of the Site, especially in instances where a ‘chain-reaction’ could occur.</p> <p>Such operational plant/infrastructure failure is considered to be of high severity, but with the likelihood largely limited by a series of</p>	Red	In

⁸⁸ [International Convention for the Prevention of Pollution from Ships \(MARPOL\) \(imo.org\)](https://www.imo.org)

Risk Event / Hazard (applicable development stage)	Severity (1 – 4)	Likelihood (1 – 3)	Discussions of Risk / Hazard (including known mitigation)	Risk Category	Scoped In/Out
			<p>control measures employed from the design phase, all the way through to commencement of operational activities.</p> <p>As with any such similar project a detailed design process will occur, undertaken in line with international and national standards, including the specification of failsafe measures and procedures built into the plant (i.e. release valves, auto-shutoff/containment vessels, etc.). This would include checks and measures as part of the design process (i.e. review of design and associated risk assessment by Design Safety Engineer), third party independent check of design or within conjunction with relevant authority (i.e. HSE) [T13, T14]. In addition to this, supplied plant/infrastructure would be subject to testing by the manufactures/suppliers where required and provided in line with detailed design [T14]. Furthermore, there would be a commissioning phase associated with the construction of the Proposed Scheme and prior to full operation of the plant, which would look to incrementally review the plant has been built and installed in line with the design process, the correct operation of the Proposed Scheme and implement remedial activities where necessary.</p> <p>In terms of the more standard buildings proposed as part of the Proposed Scheme (i.e. plant room, control room etc.) these will be built in line with Building Regulations (as applicable) and all foundations (across the Site) will be designed and installed in line with relevant standards and guidance, including (but not limited to) CIRIA Report C572: Treated ground engineering properties and performance; British Research Establishment document FB75:</p>		

Risk Event / Hazard (<i>applicable development stage</i>)	Severity (1 – 4)	Likelihood (1 – 3)	Discussions of Risk / Hazard (including known mitigation)	Risk Category	Scoped In/Out
			<p>Building on Fill –Geotechnical Aspects and BS 6031:2009: Code of Practice for Earthworks [T14].</p> <p>Implementation of all the above aspects, undertaken in line with set industrial guidance and regulations, requiring sign off from relevant authorities as necessary, helps to ensure risks arising from operational failure of plant/infrastructure is reduced.</p>		
Fire event occurring on-site and impacting operational activities on-site, as well as consequential chain reaction events	4	2	<p>Given the nature of the Proposed Scheme and the materials being used within the processes on-site, which are highly-flammable, any potential occurrence of a fire on-site could result in a severe/extreme risk event, influencing future users of the Site and causing a ‘chain-reaction’ event on/off-site.</p> <p>The industrial nature of the Proposed Scheme means that stringent control measures for fire will be implemented throughout the Site, including in relation to the storage of material, processing plant, loading/unloading facilities and the ancillary activities on-site (i.e., laboratory, plant room, etc.). These aspects would be picked up as part of the process of designing the operational plant/infrastructure on the Site [T13], discussed in detail above – ‘<i>Operational plant/infrastructure failure</i>’.</p> <p>In line with the above control measures for management of fire, both in terms of its prevention and response to fire events are set out within key guidance and legislation for all aspects within the Site. Adherence to such measures would include ‘fail-safes’, ‘containment protocols’ and evacuation procedures where relevant and necessary [T14].</p>	Red	In

Risk Event / Hazard (applicable development stage)	Severity (1 – 4)	Likelihood (1 – 3)	Discussions of Risk / Hazard (including known mitigation)	Risk Category	Scoped In/Out
			Implementation of all the above aspects, undertaken in line with set industrial guidance and regulations, helps to ensure risks arising from fire events are reduced.		
Fire event occurring during ship transportation of input/output material	3	2	<p>Although like the above risk/hazard – ‘<i>Fire event occurring on-site and impacting operational activities on-site, as well as consequential chain reaction events</i>’ – this specific risk is in relation to the movement of material by ship and an incident occurring within the Port Talbot Docks/sea or when in transit. In such circumstances the severity of the risk is lesser than that associated with the risk on-site, due to its partial isolation and reduced potential to cause a ‘chain-reaction’ event. Nonetheless, the risk still can result in loss of human life and depending on the proximity of the event to other populated areas.</p> <p>The transportation of flammable materials (i.e. flammable liquids such as the ethanol or ATJ SPK and ATJ-RD) would fall under the UN Model Regulations⁸⁹, The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009⁹⁰, The International Convention for the Safety of Life at Sea, 1974 (SOLAS)⁹¹, The International Carriage of Dangerous Goods by Inland Navigation (ADN)⁹², amongst other legislation/regulation [P6].</p>	Red	In

⁸⁹ <https://unece.org/transport/dangerous-goods/un-model-regulations-rev-22>

⁹⁰ <https://www.legislation.gov.uk/ukxi/2009/1348/contents/made>

⁹¹ [International Convention for the Safety of Life at Sea \(SOLAS\), 1974 \(imo.org\)](http://www.imo.org)

⁹² [The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 \(legislation.gov.uk\)](https://www.legislation.gov.uk)

Risk Event / Hazard (<i>applicable development stage</i>)	Severity (1 – 4)	Likelihood (1 – 3)	Discussions of Risk / Hazard (including known mitigation)	Risk Category	Scoped In/Out
Natural disasters events (i.e. hurricanes and earthquakes) impacting users of the site and on-site operations (<i>construction and operation</i>)	3 / 4	1	<p>As such the Applicant and their chosen transportation partner(s) would be duty bound to comply with the measures specified within the relevant legislation and/or regulations where applicable.</p> <p>The potential for a natural disaster is considered highly unlikely given the natural climatic conditions and geological conditions of the UK. This is not to say they do not occur, but their frequency and intensity are considered to be very limited. There is limited abilities to mitigate for natural disaster events, however, ensuring the Proposed Scheme is designed in line with current legislation and guidance [T14] would ensure that the Proposed Scheme is built to the highest safety specification possible, so that should a natural disaster disrupt operational plant/infrastructure on-site, the outcome would be similar to that considered above.</p>	Green / Amber	Out

Effects Likely / Significant

- 6.12 **Table 6.4** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 6.4: Potential Likely Significant Effects and Sensitive Receptors

Effect	Receptor(s)	Applicable Stage(s)
Operational plant/infrastructure failure (i.e. structure/building collapse, human error, explosion, non-descriptive accident)	Future on-site users and members of public	Operation
Fire event occurring during ship transportation of input/output material	Members of public	Operation
Fire event occurring on-site and impacting operational activities on-site, as well as consequential chain reaction events	Future on-site users and members of public	Operation

Assessment Methodology of Effects Likely / Significant

- 6.13 The assessment of major risk and disasters will be informed by the IEMA MAD Primer. For the identified risk events considered likely to be significant (**Table 6.3**) a qualitative assessment will be completed in order to determine the reasonable worst-case impact associated with each risk event.
- 6.14 The assessment will be informed by a greater level of information regarding the operational activities to be undertaken on site, as provide by the Applicant, and the Applicants own Health and Safety Executive (HSE) Design Philosophy (to be provided alongside the ES) that will underpin the design of the Proposed Scheme by the Applicant’s design engineers.
- 6.15 In line with **Chapter 2: Approach to EIA**, the assessment will set out both sensitivity of receptor and a magnitude of change. Sensitivity will be informed by the identified receptors/receiving environment that will be subject to the identified risk event. This will take into account the receptors/receiving environment’s adaptability/tolerance to change and recoverability following the risk event. Sensitivity will be considered on a scale of high, medium, low and negligible.
- 6.16 Magnitude of change will be determined by considering the combination of severity of the risk (including taking account of geographical extent and duration) and likelihood, informed by the Applicants own Health and Safety Executive (HSE) Design Philosophy

and associated risk evaluation. Magnitude of change will be based on a scale of large, medium, small and negligible.

- 6.17 As part of the assessment, there will be a greater focus on the mitigation to be adopted in order to reduce the risk event down '*as low as reasonably practicable*' (in line with IEMA MAD Primer), informed by information provided by the Applicant, with respect to management procedures and how operational activities will align with key legislation and guidance.
- 6.18 The assessment of likely significant effects will consider the sensitivity of the receptor and the magnitude of change to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgment.

Limitations and Assumptions

- 6.19 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- A qualitative evaluation is sufficient to determine likely significant effects and can be informed by the Applicants own Health and Safety Executive (HSE) Design Philosophy and associated risk evaluation works being undertaken by the Applicant as part of the design of the Proposed Scheme; and
 - It is not necessary for the EIA to set out all procedures and management practices to be implemented in order to manage or reduce risk associated with operational activities, rather set out the relevant legislation/regulation/consent or license mechanisms that will need to be met to resolve potential risks.

7. Terrestrial Ecology

Site Terminology

- 7.1 As outlined in **Chapter 2, 3 and 4**, the Site is split into a number of parcels/zones (**Figure 4.2**). This Chapter refers to both the Site as a whole, and individual parcels/zones. The individual parcels are referred to as follows:
- Primary parcel of land for the location of the proposed production facility (approximately 9.1ha), comprising bare land adjacent to Phoenix Wharf (Port Talbot) (referred to as the '*Production Development Zone [PDZ]*');
 - A discrete parcel of land located within the wider Port Talbot at the eastern boundary of Phoenix Wharf (approximately 2.6ha) (referred to as '*Temporary Construction Area*');
 - 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 marine environment of Phoenix Wharf, located to the north of the PDZ and the unnamed port road (referred to as the '*Phoenix Wharf Marine Unloading/Loading Facility*').
- 7.2 Note that where primary and tertiary mitigation is referred to throughout this Chapter, a referencing system has been used (e.g. **[P1]**, **[T1]**, etc) to link this to the summary of the mitigation in the Preliminary EMP in **Appendix 2.1**.

Technical Baseline

- 7.3 A number of study areas for the different types of ecological receptors, as defined in **Table 7.1**, have been used to inform the baseline position and the identification of potential receptors. The study areas relate to the potential Zones of Influence (Zoi) for each type of the receptor. The geographic extent of potential impacts varies for different receptors based on their value and the potential for pathway connections relating to the Proposed Scheme. Furthermore, it is not automatic that a receptor located within the potential Zoi experience an effect.

Table 7.1: Study Areas

Type of Ecological Receptors ⁹³	Maximum Zone of Impact from the Site Boundary
Statutory designated European sites (including faunal species included as part of the designation) ⁹⁴ , e.g. SAC.	10km
Statutory Nationally designated sites (including faunal species included as part of the designation), including SSSIs and National Nature Reserves (NNRs)	5km
Non-statutory designated sites – e.g., SINCs	2km (5km for bats)
Records of protected and or notable species ⁹⁵	Up to 2km
Protected and notable species / habitats	Within/adjacent to the Site
Non-native Invasive species	Within the Site only

Designated Sites

- 7.4 The closest internationally protected sites are Kenfig SSSI/NNR/SAC (located 5.3km to the south of the PDZ), Crymlyn Bog and Pant y Sais SSSI/NNR/SAC (located 7km to the north of the Site) and Glaswelltiroedd Cefn Cribwr SSSI/SAC (9.7km to the south-east of the PDZ).
- 7.5 There are other nationally designated sites located within 5km, the closest being Margam Moor SSSI and Eglwys Nunydd Reservoir SSSI both located 3.7km south of the PDZ.
- 7.6 Five non-statutory Sites of Interest to Nature Conservation (SINC) are located within 2km of the PDZ:
- Harbourside Law Courts SINC - a 3.04ha brownfield site supporting Open Mosaic Habitats (OMH) on Previously Developed Land located 700m to north-east;
 - Lower River Afan Estuary SINC - a 6.63ha site comprising coastal saltmarsh and intertidal mudflats located 100-130m north;
 - Little Warren SINC – a 1.47ha site consisting of coastal sand-dunes with associated slacks, seepages, grassland and scrub habitat, 200m to the north;

⁹³ Derived from the following sources; MAGIC: Nature on the Map; Natural Resources Wales (NRW): Designated Sites Search; National Biodiversity Network (NBN); and Natural Resources Wales Ancient Woodland Inventory.

⁹⁴ Including proposed sites

⁹⁵ The desk study will define legally protected species, Species of principal importance, Birds of Conservation Concern, RDB species and locally important species within 2km of the Site. Known bat roosts and bat activity within 5km of the Site will considered in the assessment.

- NPT Watercourses SINC is an extensive designation covering watercourses and waterways across the county borough with the River Afan the closest watercourse to the Site, located 670m west; and
- Bryn Goytre Cycleway SINC, a 2.5m section of disused railway line bounded by ancient woodland and neutral grassland, located 1.6km to the north-east.

7.7 There are a number of areas of Ancient Woodland within 2km of the Site, to the east of the M4 with the exception of a small block enclosed by residential development.

7.8 Most of Port Talbot Docks and the Tata steelworks form part of a regional 'B-Line' network which is a national initiative led by Buglife with the objective of facilitating projects that restore, enhance and create wildflower-rich habitat for pollinators as stepping stones along the corridors. The PDZ falls within the B Line network which around Port Talbot covers coastal, urban, and industrial land.

Habitats

7.9 The baseline habitat survey data in the PDZ and Temporary Construction Area was obtained in June and July 2021, and supplemented by further habitat and botanical surveys in summer 2022 completed in line with appropriate survey periods. The Preliminary Ecological Appraisal is included at **Appendix 7.1**. This information will be submitted as part of the ES and wider Application.

Production Development Zone

7.10 The PDZ (**Figure 4.2**) is sited entirely on previously developed land. The dominant habitats are willow scrub (primarily grey willow) and very extensive stands of Japanese knotweed⁹⁶.

7.11 There are several areas of naturally regenerated grassland within the PDZ, the largest is in the eastern half of the PDZ with further areas on the northern boundary adjoining the unnamed port road and as glades between blocks of willow scrub and Japanese knotweed. The areas of grassland generally have moderate diversity but across the grasslands as a whole supports over 30 indicator species listed in the Guidelines for the Selection of Wildlife Sites in South Wales (The South Wales Wildlife Sites Partnership, 2004). This diversity reflects the low nutrient status of the underlying substrates.

7.12 The other habitats present in the PDZ are small reedbeds, stands of bracken, bramble, hawthorn scrub and a very localised stand of dune slack vegetation.

Temporary Construction Area

7.13 The Temporary Construction Area is a sparsely vegetated land parcel adjoining the eastern boundary of Port Talbot Docks. The regenerating habitats on the previously developed ground create a mosaic of bare ground, ephemeral vegetation and grassland and scattered scrub which together classifies as an 'open mosaic habitat on previously developed ground' (OMH), a Section 7 Habitat of Principal Importance. Colonies of oxtongue broomrape, a legally protected Schedule 8 plant species are

⁹⁶ See **Chapter 5**, Ground Conditions section.

widely distributed across the land parcel and the flower rich ephemeral vegetation includes over 20 indicator species.

Phoenix Wharf Ship Unloading/Loading Facility and Unnamed Port Road Supporting Infrastructure

7.14 Phoenix Wharf Ship Unloading/Loading Facility is partly located in a linear area of land between the internal port road and partly within Port Talbot Docks. The primary habitat on the dockside is a dense stand of bracken which forms a monoculture in places with patches of bramble and tall ruderal vegetation on a low roadside bund. The former jetty has a crushed stone substrate and remains sparsely vegetated bare ground with a few bryophyte species. A few plants of Japanese knotweed are present on bund and there are scattered shrubs (butterfly bush) around the old berth adjoining the dock wall.

7.15 Marine ecology of Phoenix Wharf is discussed in **Chapter 13**, supported by the benthic survey (**Appendix 13.1**).

Species

7.16 The following species surveys have been completed:

- Bat activity surveys – transects and remote recording;
- Reptile presence/absence surveys;
- Targeted surveys for badger;
- Surveys to assess presence/absence of otter activity; and
- Bryophyte assessment (**Appendix 7.3**).

7.17 A survey of oxtongue broomrape within the land parcels in the Site Boundary (excluding the disused railway line) was completed in late June and early July 2022 with the support of the national expert for broomrape species.

7.18 The Phase 2 Species Survey Report is provided in **Appendix 7.2**.

7.19 An overwintering bird survey was undertaken for terrestrial habitats across the whole of Harbourside area within Port Talbot Docks in winter 2021/2022. The survey area included the PDZ. Additional bird survey work is being undertaken in winter 2022/2023 to record for wintering bird activity in the areas of Port Talbot Docks within and adjoining the Site. The full results of the bird surveys will be presented within the EclA.

7.20 In summer and early autumn 2021, a series of Phase 2 species surveys were completed on land directly to the west of the PDZ (including assessments of bat activity, reptiles, breeding birds and invertebrates). The results of these surveys will be referenced in the baseline sections where relevant to the Site.

7.21 A detailed survey of the Japanese knotweed has been undertaken on behalf of ABP to inform the approach and methods to be adopted for the clearance and removal of Japanese knotweed from the PDZ.

Bats

- 7.22 The assemblage of foraging bats recorded within the EIA Study Area is almost exclusively common and widespread species, common pipistrelle, soprano pipistrelle, and noctule bats. Activity levels are generally low but with extended pipistrelle foraging recorded on the northern boundary of the PDZ. Noctule bats were most frequently recorded on detectors placed close to Port Talbot Docks, with occasional foraging activity detected as well as commuting. A single Nathusius pipistrelle bat pass was recorded in scrub woodland in the PDZ.

Breeding Birds

- 7.23 The assemblage of breeding birds includes several species of principal importance/ species of conservation concern. Song thrush, whitethroat, dunnock, and long-tailed tit are all assumed to breed within the PDZ with potential for linnet, bullfinch, reed bunting, and goldcrest. The linear areas of grassland (**Paragraph 7.11**) have very low suitability for ground nesting species of conservation concern (skylark and meadow pipit). Cetti's warbler (legally protected under Schedule 1 of Wildlife and Countryside Act 1981⁹⁷) was present in spring 2022 and is presumed to be breeding in the reedbed/scrub habitat in PDZ. Overall, the extent of very open structured willow scrub, and dense Japanese knotweed is considered to have limited opportunities for nesting.

Wintering Birds

- 7.24 Port Talbot Docks is used by wintering populations of gull species and waterbirds. Sections of the dock within and adjoining the Site form part of the habitat used by these populations.
- 7.25 The PDZ supports a relatively low diversity of wintering birds, providing sources of food and shelter. Surveys in winter 2021/2022 recorded common species that are also associated with residential gardens. Small numbers of snipe winter within the PDZ and surroundings with woodcock also recorded on one occasion.

Reptiles

- 7.26 The three most common reptile species that have been confirmed as occurring in habitats in the Site include; common lizard, slow worm and grass snake.
- 7.27 Common lizard was in largest numbers in the PDZ where suitable habitat is most extensive. The adult peak count indicates a medium population. Only one individual was recorded in the adjacent terrestrial habitats at Phoenix Wharf at the site of the former jetty.
- 7.28 Slow worm was recorded in small numbers in scrub on the boundary of the PDZ (peak count of 2). Individuals were also recorded in scrub habitats off-site and at the eastern end of the railway sidings.
- 7.29 Grass snakes were found in the PDZ and at Phoenix Wharf Berth. Observations included juvenile, sub-adult and adult grass snakes confirming a breeding population

⁹⁷ The Wildlife and Countryside Act 1981 (England and Wales) (Amendment) Regulations 2016.

with Port Talbot Docks. As a far-ranging species, its presence in different parts of the Site is expected.

- 7.30 The survey findings indicated the very likely absence of all three species in the Temporary Construction Area, which comprises sparsely vegetated ground.

Amphibians

- 7.31 In the past great crested newt (GCN) surveys were conducted on the waterbody in the base of a former mineral extraction and on the artificial pond associated with the sand martin bank (**Appendix 7.2**). Over the two surveys a combination of environmental DNA and traditional surveys were completed with the results consistently indicating the absence of GCN.
- 7.32 There are no ponds or waterbodies within 250m of the (excluding Port Talbot Docks) This species is considered to be absent from the PDZ, the Temporary Construction Area, and Phoenix Wharf Ship Unloading/Loading Facility.
- 7.33 The commonly occurring species of principal importance, are presumed to be present in suitable habitat within the Site.

Mammals

- 7.34 Badger are considered to be absent from the PDZ, Unnamed Port Road Supporting Infrastructure, Phoenix Wharf Ship Unloading/Loading Facility and Temporary Construction Area.
- 7.35 Surveys have found no evidence of otter using habitats within the Site and their potential value for foraging and laying up is limited.
- 7.36 The commonly occurring species of principal importance, hedgehog is presumed to be present in suitable habitat within the Site.

Invertebrates

- 7.37 Based on the surveys completed in the wider port an assemblage of terrestrial invertebrates will be present within the PDZ, primarily associated with the naturally regenerating grasslands and edges of the scrub woodland. The Temporary Construction Area supports OMH with flower rich vegetation which will support a range of species that utilise pioneer habitats. The presence of a proportion of rare/scarce species is assumed based on surveys of equivalent habitat within Port Talbot Docks

Higher Plants

- 7.38 Nationally important population of oxtongue broomrape occurs in multiple locations within the wider Port Talbot Docks. Two individual spikes of this plant were recorded in the PDZ, with a large colony present in the Temporary Construction Area.
- 7.39 Populations of locally important plant species including a species of principal importance basil thyme. The open grassland habitat in the PDZ and ephemeral habitats in the Temporary Construction Area support populations of a wide range of indicator species listed in the Guidelines for the Selection of Wildlife Sites in South

Wales. The number of indicator species in the grasslands equates to a habitat of county importance for nature conservation.

Lower Plants

- 7.40 An assemblage of bryophyte species are associated with OMH. The ruderal communities of bryophytes, including those on areas of derelict concrete padding and areas where spoil has been spread historically, are moderately diverse, though nothing exceptional. The assemblage of species is generally consistent across the different locations within the Site. The epiphyte flora on the young willows is particularly poor, and no species of principal importance or assemblages of conservation interest were present.

Proposed Scope of Assessment

- 7.41 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Site, surrounding area and the Proposed Scheme (**Chapter 4**). Where environmental effects are considered unlikely to be significant, an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' to be significant.

Effects Unlikely / Not Significant

- 7.42 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the Preliminary EMP provided in **Appendix 2.1**.

Direct loss, injury and/or disturbance to Hazel Dormouse, Great Crested Newts, Bat Roosts and Badgers

- 7.43 Based on the nature of the regenerating habitats on previously developed ground and lack of connectivity to potential dormouse habitat off-site; this species is considered to be absent from the Site.
- 7.44 Great crested newt (GCN) surveys were conducted on waterbodies within the wider Harbourside in 2021 and previously in 2019. The surveys comprised a combination of environmental DNA and traditional surveys and the results consistently indicated the absence of GCN. There are two areas where water pools in winter on Tata Steel land to the south-east of the PDZ. They both have very low suitability for GCN and are located over 250m from the development boundary. With a high degree of separation between them and the development there is negligible potential for GCN to utilise habitats within the PDZ or the Temporary Construction Area.
- 7.45 With respect to Bat Roosts there are no features with the potential to support roosting bats within or directly adjoining the PDZ, and Temporary Construction Area.
- 7.46 Survey work has confirmed the very likely absence of any active badger setts within or directly adjoining the Production Development Zone and Temporary Construction Area.

7.47 Therefore, direct loss, injury and/or disturbance to Hazel Dormouse, GCN, Bat Roosts and Badgers are considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Effects Likely / Significant

7.48 **Table 7.2** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

7.49 An Ecological Impact Assessment (EclA) will be undertaken, in line with Chartered Institute of Ecology & Environmental Management CIEEM guidance⁹⁸, alongside the ES which will consider all the identified likely significant effects and receptors. As part of that process and to inform the ES, only those effects that are deemed significant will be reported within the ES (in line with **Chapter 2**) whilst ensuring all relevant ecological effects are addressed as part of the EclA. The EclA will also set out all ecological mitigation, regardless of whether effects are significant or not. All mitigation will also be included within the EMP.

Table 7.2: Potential Likely Significant Effects and Sensitive Receptors

Effect	Receptor(s)	Applicable Stage(s)
Habitat loss	OMH, and indicator plant species Naturally regenerated grassland including populations of indicator plant species Willow scrub (grey willow) Reedbed Bramble, bracken and scrub Dune slack vegetation	Construction
Disturbance to Schedule 8 plant population	Oxtongue broomrape	Construction
Removal of invasive non-native plant species	Japanese knotweed (plus cotoneaster spp., and Montbretia)	Construction
Habitat loss and displacement of reptiles	Common lizard, slow worm and grass snake	Construction

⁹⁸ Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

Effect	Receptor(s)	Applicable Stage(s)
Disturbance as a result of construction noise and vibration	Breeding birds, wintering birds, and reptile species	Construction
Disturbance as a result of artificial lighting	Bat species and breeding birds	Construction
Loss of bird nesting sites and foraging areas	Breeding bird assemblage including the Schedule 1 species: Cetti's warbler	Construction
Loss of bat foraging habitat	Foraging bat species (common pipistrelle, soprano pipistrelle, Nathusius pipistrelle, Noctule bat)	Construction
Disturbance arising from general site construction activities including piling (Phoenix Wharf Ship Unloading/Loading Facility and Temporary Construction Area)	Wintering birds in Port Talbot Docks	Construction
Disturbance as a result of operational noise, artificial lighting and general site activities	Foraging bats, breeding birds, wintering birds	Operation
Degradation of qualifying features in designated sites due to air emissions	Statutory designated sites	Operation

Assessment Methodology of Effects Likely / Significant

- 7.50 As noted above (**Paragraph 7.54**), an Ecological Impact Assessment (EclA), in line with CIEEM guidance, will be prepared alongside the ES which will consider all effects on terrestrial ecology receptors, which will in turn inform the ES, which will be focused on those effects where a significant effect is expected.
- 7.51 The following additional guidance documents will inform the approach to assessment of the Proposed Scheme:
- Directive on the Conservation of Natural Habitats and Wild Flora and Fauna, 92/43/EEC⁹⁹;

⁹⁹ Directive on the Conservation of Natural Habitats and Wild Flora and Fauna, 92/43/EEC.

- The Wildlife and Countryside Act (WCA), as amended¹⁰⁰;
- The Conservation of Habitats and Species Regulations 2017¹⁰¹;
- Natural Environment and Rural Communities Act 2006¹⁰²;
- The Environment (Wales) Act 2016¹⁰³;
- Well-being of Future Generations (Wales) Act 2015¹⁰⁴;
- The Nature Recovery Plan 2020¹⁰⁵;
- Planning Policy Wales: Technical Advice 5: Nature Conservation and Planning¹⁰⁶;
and
- The Action Plan for Pollinators in Wales¹⁰⁷.

Assessment of Sensitivity, Magnitude and Significance

- 7.52 As noted above, the ES will be informed by the EclA, which will be appended to the ES. The use of the EclA will ensure compliance with relevant technical guidance. In the EclA, the baseline ecological conditions will be assessed for the PDZ, Temporary Construction Area, the Phoenix Wharf Ship Unloading/Loading Facility and Unnamed Port Road Supporting Infrastructure.
- 7.53 Each habitat or species population or assemblage will be assigned a value with reference, its distribution and status (including a consideration of trends based on available historical records). Although rarity in itself is not necessarily an indicator of value it is to be considered in the assessment because of potentially higher vulnerability, the need to conserve representative habitat types and the genetic diversity of species populations. Consequently a species that is rare and declining will be assigned a higher value than one that is rare but known to be stable.
- 7.54 The sensitivity of each important receptor will then be defined on a scale of high, medium, low and negligible. In line with CIEEM guidance the sensitivity of the receptor will be cross-referenced to a geographic scale, as follows:
- High – internal / national context;
 - Medium - district / county context;

¹⁰⁰ The Wildlife and Countryside Act (1981), as amended.

¹⁰¹ The Conservation of Habitats and Species Regulations (2017, No.1012).

¹⁰² Natural Environment and Rural Communities Act (2006, c.16).

¹⁰³ The Environment (Wales) Act (2016, anaw 3).

¹⁰⁴ Welsh Government (2015). Well-being of Future Generations (Wales) Act 2015.

¹⁰⁵ Welsh Government (2020). The Nature Recovery Action Plan for Wales 2020 – 21.

¹⁰⁶ Welsh Assembly Government (2009). Technical Advice Note 5: Nature Conservation and Planning.

¹⁰⁷ Welsh Government (2013). The Action Plan for Pollinators in Wales.

- Low – local context; and
 - Negligible – up to site context.
- 7.55 This approach aligns with the terminology used for sensitivity of receptor across the wider ES, as set out in **Chapter 2**.
- 7.56 The assessment will then identify and characterise impacts in order to assess potential adverse (and beneficial) effects, in line with **Table 7.2** and consider the construction stage [including enabling works] and operational stages of the Proposed Scheme.
- 7.57 For each relevant ecological receptor, the impact magnitude will be derived from an assessment of the extent, scale, duration, reversibility and timing/frequency. Further consideration will be given to the fragility or stability of the habitats, sensitivity of the species and conservation status. The magnitude of the impact will be assigned on a scale of large, medium, small and negligible. This approach aligns with the terminology used to for magnitude of change across the wider ES, as set out in **Chapter 2**.
- 7.58 The sensitivity and magnitude will determine the level of effect, again aligning with the approach to determine level of effect across the wider ES, in line with **Chapter 2**. All effects will be classified as adverse, beneficial or no change and be defined on a scale of major, moderate, minor, and negligible and will be referenced to relevant geographic context of the effect.
- 7.59 The assessment of impacts will consider primary mitigation measures (i.e. those built into the Proposed Scheme) that help to avoid and reduce impacts and incorporate opportunities for ecological and biodiversity enhancement. Where necessary following assessment, additional mitigation measures will be defined including, where necessary, off-site compensation proposals directly addressing effects that that cannot be mitigated through primary measures. Furthermore, enhancement measures (measures designed to ensure net biodiversity benefit) will be defined in addition to the mitigation and compensation measures to secure an overall net benefit for biodiversity.
- 7.60 Where mitigation compensation and enhancement is identified, it will be designed to promote the resilience of the ecosystems being created/enhanced, consistent with the requirements of Planning Policy Wales¹⁰⁸.
- 7.61 The significance of effects will be determined following this through professional judgment. Under the CIEEM guidance on assessment, a ‘significant effect’ is an effect that either supports or undermines conservation objectives for “*important ecological features*”.

Limitations and Assumptions

- 7.62 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

¹⁰⁸ Welsh Government (2018). Planning Policy Wales (Edition 11, February 2021).

- The nature of the willow scrub and stands of Japanese knotweed are a constraint on access into parts of the Production Development Zone for surveys in 2021 and 2022. The constraints were taken into account in the design of the survey to minimise the effect on the collection of baseline data;
- The dead stems of the extensive dense stands of Japanese knotweed were cut to ground level in early spring 2022 to improve access routes and enable targeted ground investigations following precautionary working methods to avoid the spread of the plant. The whole Site was subject to walkover scoping surveys in early spring 2022 prior to the young growth of Japanese knotweed emerging from the ground;
- Access routes were possible to all areas of grassland and ephemeral habitat that could not be accessed in 2021, while avoiding disturbance to stands of Japanese knotweed;
- Japanese knotweed control works are being undertaken by ABP in 2023 and 2024 as part of a port wide control/eradication strategy. Japanese knotweed is growing within other vegetation as well as in dense stands. ABP have cut down of the majority of willow scrub, bramble, gorse and hawthorn in the Production Development Zone in early 2023. The habitat conditions prior to the start of the Japanese knotweed control works form the baseline for the assessment;
- Breeding bird surveys have not been undertaken for the Production Development Zone, Temporary Construction Area and the Phoenix Wharf Ship Unloading/Loading Facility. The baseline data for breeding bird activity assessed in the adjoining part of the wider Port Talbot Docks in spring 2021 will be extrapolated for equivalent habitats within the Site to provide a precautionary assessment of the likely breeding assemblage; and
- A terrestrial invertebrate survey comprising visits in early, mid and late summer were undertaken in the adjoining part of the Harbourside site in 2021. Habitats within the survey area included willow scrub and naturally regenerating grassland adjoining the boundary Production Development Zones. As with the breeding birds, the survey results will be used to inform a precautionary baseline assessment and assigning sensitivity (value) to the Site discussed between ABP and the NPTCBC ecologist in early spring 2022.

8. Landscape and Visual

Site Terminology

- 8.1 As outlined in **Chapter 2, 3 and 4**, the Site is split into a number of parcels/zones (**Figure 4.2**). This Chapter refers to both the Site as a whole, and individual parcels/zones. The individual parcels are referred to as follows:
- Primary parcel of land for the location of the proposed production facility (approximately 9.1ha), comprising bare land adjacent to Phoenix Wharf (Port Talbot) (referred to as the '*Production Development Zone [PDZ]*');
 - A discrete parcel of land located within the wider Port Talbot at the eastern boundary of Phoenix Wharf (approximately 2.6ha) (referred to as '*Temporary Construction Area*');
 - 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 marine environment of Phoenix Wharf, located to the north of the PDZ and the unnamed port road (referred to as the '*Phoenix Wharf Marine Unloading/Loading Facility*').
- 8.2 Note that where primary and tertiary mitigation is referred to throughout this Chapter, a referencing system has been used (e.g. **[P1]**, **[T1]**, etc) to link this to the summary of the mitigation in the Preliminary EMP in **Appendix 2.1**.

Technical Baseline

- 8.3 A baseline landscape and visual appraisal (LVA) of the Site and its surroundings was undertaken in November 2022 and is provided at **Appendix 8.1**. Furthermore, it has been informed by representative viewpoints discussed with the planning team at Neath and Port Talbot on 04 August 2022 to agree the scope of viewpoints. Following the Site visit further correspondence was undertaken by email, a response was received from the Council on 10 November 2022 confirming the location of viewpoints as set out on **Figure 8.8** was acceptable.
- 8.4 The study area for the LVA includes both the Site and the surrounding wider context within a 2km radius, as illustrated in **Figure 8.1**. This is considered an appropriate area of study in terms of the enclosure of the Site and the scale of the Proposed Scheme.
- 8.5 The extent of the study area was informed by the field study, review of available mapping data and the production of a computer generated Zone of Theoretical Visibility (ZTV) (**Figure 8.7**), which identifies where in the surrounding landscape the Proposed Scheme is likely to be visible. This has been modelled using the latest LIDAR data available and the maximum height of proposed built development within the PDZ and looks at a wider 5km study area. This is included at **Figure 8.7**.

8.6 The 2km Study Area is considered appropriate as even though there will be more distant areas beyond with some inter-visibility with the Site, it is considered that any effects on such receptors would be so minimal that detailed assessment is not warranted. This approach is supported by GLVIA3¹⁰⁹ which states that the scale of assessment should be appropriate and proportional to the nature of the proposed development. The study area for the landscape and visual assessment was therefore identified as an area within 2km from the Site.

8.7 The Site is located within the following Landscape Character Areas as defined in published landscape character assessments (**Figure 8.2** and **Figure 8.3**):

National Level

- National Landscape Character Area 38, Swansea Bay;
- Marine Character Area 26, Swansea Bay and Porthcawl;
- LANDMAP Geological Aspect Area NPTGL032, Margham (Low Overall Evaluation)¹¹⁰;
- LANDMAP Landscape Habitats Aspect Area NPTLH063 (Moderate Overall Evaluation);
- LANDMAP Visual and Sensory Aspect Area NPTVS837, Margam Works (Low Overall Evaluation);
- LANDMAP Historic Landscape Aspect Area NPTH1006, Port Talbot Industrial (Moderate Overall Evaluation); and
- LANDMAP Cultural Landscape Aspect Area NPTCLS091, Margam Works.

Local Level

- Neath Port Talbot LANDMAP Landscape Character Area¹¹¹ 50, Port Talbot Docks & Margam Works; and
- Carmarthen Bay, Gower and Swansea Bay Local Seascape Character Area SCA 9, Swansea Bay East.

8.8 Within the study area, a more detailed assessment of landscape character was conducted at local level building on the information provided in the studies identified above with additional information captured during a site visit (22nd September 2022). This process was carried out in accordance with An Approach to Landscape Character Assessment¹¹² and the Landscape Institute's Technical Information Note 08/2015¹¹³. Four local landscape character areas (LLCA) were identified largely reflecting the boundaries of the Neath Port Talbot study (**Figure 8.4**). These constitute the landscape

¹⁰⁹ Landscape Institute. Guidelines for Landscape and Visual Impact Assessment, Third Edition,

¹¹⁰ LANDMAP character assessment evaluations as set out by National Resources Wales (NRW)

¹¹¹ White Consultants (2004). Neath Port Talbot LANDMAP Landscape Assessment.

¹¹² Christine Tudor, Natural England (2014). An Approach to Landscape Character Assessment.

¹¹³ Landscape Institute (2016). Landscape Character Assessment: Technical Information Note 08/2015.

character receptors with potential to be affected by redevelopment of the Site, and have been classified as below:

- LLCA1 – Industrial Foreshore;
- LLCA2 – Port Talbot Town;
- LLCA3 – Margam, Emroch & Dinas Mountains; and
- LLCA4 – Swansea Bay.

8.9 The Site is not located within any identified national, regional or local landscape designations. There are a number of landscape or heritage related designations in the surrounding area (**Figure 8.2**), including:

- SLA4 Margam, identified as Special Landscape Area (SLA), is located on the eastern edge of the study area, c.1.1km to the east of the PDZ at its closest point;
- Margam Mountain, identified as Registered Landscape of Outstanding and of Special Interest, also located on the eastern edge of the study area, c.1.1km to the east of the PDZ at its closest point; and,
- Talbot Memorial Park, identified as Registered Historic Parks and Gardens, c.670m to the north-east of the PDZ at its closest point.

8.10 The extent of visibility of the Site is limited by its topography, undeveloped state and the influence of surrounding mature vegetation and built form (**Figure 8.6** and **Figure 8.7**). Due to the lack of structures within the Site and distance from publicly accessible areas, there are limited existing views of land within the Site.

8.11 The Hanson Cement works, which is located to the north of the PDZ (outside of the Site) is visible from the surrounding area, with a height of approximately 40m, it gives an indication of the potential visibility of future development within the PDZ. The principal areas where the Site and PDZ are likely to be visible include the areas around Phoenix Wharf to the north; the steelwork site to the south; sections of the M4 and Harbour Way, particularly as the latter passes closer to the PDZ; other streets with vistas orientated towards the Production Development Zone (Afan Way, Aberavon Rd, Darwin Road, Talcennau Rd, Abbey Rd); potential glimpsed views from areas of public open spaces within the study area; and, sections of the Wales Coastal Path Route 4.

Proposed Scope of Assessment

8.12 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Site, surrounding area and the Proposed Scheme (**Chapter 4**). Where environmental effects are considered unlikely to be significant, an appropriate evidence base has been provided to justify the ‘scoping out’ of these effects ensuring the EIA and ES only assess those effects considered ‘likely’ to be significant.

Effects Unlikely / Not Significant

- 8.13 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the PEMP provided in **Appendix 2.1**. Whilst these effects will not be reported in the ES, a standalone Landscape and Visual Impact Assessment (LVIA) report will be prepared as an appendix to the ES to document the effects that will not be significant.

Changes to the special qualities and landscape characteristics of the Margam Special Landscape Area and Margam Mountain Registered Landscape of Outstanding Special Interest in Wales

- 8.14 This area of designated landscape is located c1.1km to the east of the PDZ. The special interest and features of these areas are described further in **Appendix 8.1**. The Proposed Scheme would not directly impact the landscape features within these areas. The distinctive topography of the area and its landscape features would all be maintained. The Proposed Scheme would sit below the ridgeline formed by the Margam mountains so visual association with the mountains from the wider area, as a distinctive and dominating landform, would also be maintained.
- 8.15 The Proposed Scheme would be visible from localised areas along the southwest facing slope of Margam Mountain within 5km from the PDZ, as demonstrated by the ZTV (**Figure 8.7**). However, it would be experienced in the context of Port Talbot which forms an existing part of the setting. The ZTV also demonstrates that the Proposed Scheme would be obscured from Margam Park which is a special feature of the SLA with its historic buildings and scarp backdrop contributing to its scenic quality.
- 8.16 Therefore, the changes to the special qualities and landscape characteristics of the Margam Special Landscape Area and Margam Mountain Registered Landscape of Outstanding Special Interest are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Changes to local landscape character areas surrounding the Site

- 8.17 The Site falls within 'LLCA1 Industrial Foreshore', and the Proposed Scheme would directly impact this character area through the introduction of new built form and associated construction works. LLCA1 has been identified in the baseline appraisal as having Low Sensitivity. Whilst the Proposed Scheme would result in localised changes including noticeable new features within the Site itself, the proposed built form and activity associated with the proposed uses would be of similar scale and character of development present within the surrounding area and would be largely in keeping with the existing character. Therefore, the direct effect on LLCA1 arising from the Proposed Scheme would be not be significant.
- 8.18 The Proposed Scheme would not directly change the characteristics of LLCA2 and indirect changes as a result of changes to views, additional activity and lighting in the surrounding landscape would be experienced in the context of the existing steelworks. The existing built form within 'LLCA2 Port Talbot Town' creates a lack of intervisibility

between this location and the Site, which limits indirect changes to the characteristics of this area as a result of changes to views experienced in the area.

- 8.19 The key characteristics of 'LLCA3 Margam, Emroch & Dinas Mountains' and 'LLCA4 Swansea Bay' would be retained, any indirect effects as a result of changes to views experienced from within these areas, would be read in context with existing development of a similar scale which provide a backdrop to these areas and would not harm the special qualities or natural beauty of LLCA3 and LLCA4.
- 8.20 Therefore, the changes to landscape character of the following Local Landscape Character Areas (LLCA) arising from the Proposed Scheme are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.
- LLCA1 - Industrial Foreshore;
 - LLCA2 - Port Talbot Town;
 - LLCA3 - Margam, Emroch & Dinas Mountains; and
 - LLCA4 - Swansea Bay.

Changes to visual amenity experienced by private residents due to the introduction of the Proposed Scheme

- 8.21 Residents living in an area are also a receptor group but it is commonly accepted due to case law that the impact of development on private views is not a planning consideration¹¹⁴ unless the development is likely to be so overbearing or dominating that it could result in unacceptable living conditions. The closest residential properties to the PDZ are located c. 900m at Darwin Road to the west, and c. 500m at Lower West End to the east of the PDZ. The temporary construction zone is located closer to properties at Lower West End at distances of c.70m. Views from these properties are restricted by a close board timber fence running alongside Harbour Way and the lack of windows to main living spaces on the west facing elevations. The properties are also set on lower ground levels to Harbour Way. As a result, whilst the construction works would be visible for a temporary period, the impacts on views would be limited and would be read in context with structures in the existing steel works.
- 8.22 Due to distance from the PDZ and the existing development within the intervening area, it is not anticipated that any proposed development would be overbearing or result in unacceptable effects on visual amenity. Consequently, the impacts on views experienced by private residents are not likely to be significant and will not be considered further in the ES. High level analysis of the impacts on views experienced by residents on Lower West End will be provided in the LVIA to document these non significant changes to views.
- 8.23 Therefore, effects to views experienced by private residents are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

¹¹⁴ Aldred's Case in 1610 established the principle that private individuals do not have a legal right to a view.

Changes to visual amenity experienced by specified visual receptors due to the introduction of the Proposed Scheme

- 8.24 The Proposed Scheme has the potential to result in changes to visual amenity as a result of the appearance of built development within views experienced by users of the local roads. The road users of Harbour Way have been identified in the baseline appraisal (**Appendix 8.1**) as having Medium-Low sensitivity which is of lower sensitivity than users of public rights of way whose attention is likely to be focussed on the landscape. Whilst the Site is visible from some viewpoints to the north and west of the Site, within such views, the Proposed Scheme would be read in context of the surrounding industrial development and the introduction of new noticeable features during the construction and operation stages would be in keeping with the existing character of the views.
- 8.25 Road users and pedestrians on residential streets within Port Talbot and Margam would also experience changes to visual amenity. This visual receptor has been identified as having Medium sensitivity (**Appendix 8.1**). The Proposed Scheme would be visible from some streets orientated towards it, and would be obscured from other areas due to intervening built form as demonstrated by the ZTV. Where visible, the Proposed Scheme would constitute localised changes to the skyline with the scale of proposed elements similar to, and read in context with, existing components of the views. Features that contribute positively to views, such as the mountains seen in the background, would be maintained.
- 8.26 On this basis, the visual receptors that are not considered likely to experience significant effects and will not be considered further in the EIA or reported in the ES are as follows:
- Road users on Harbour Way / A4241 (as demonstrated by RVs 1 & 2¹¹⁵); and
 - Road users and pedestrians on residential streets within Port Talbot and Margam (as demonstrated by RVs 4, 5, 8 & 9).
- 8.27 The Representative Views (RVs) that demonstrate a snapshot of the visual experience that would be experienced by the visual receptor and have been identified to inform the assessment (**Figure 8.8**).
- 8.28 Therefore, effects to the above visual receptors are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.
- Effects Likely / Significant**
- 8.29 **Table 8.1** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

¹¹⁵ RVs 1 and 2 would also be experienced by users of the Wales Coast Path long distance footpath. This is a receptor of higher sensitivity which will be considered further in the EIA.

Table 8.1: Potential Likely Significant Effects and Sensitive Receptors

Effect	Receptor(s)	Applicable Stage(s)
Changes to the character and amenity of views	Users of the Wales Coast Path to the north and west of Phoenix Wharf (as demonstrated by RVs 1, 2, 3, & 7)	Construction and Operation
	Users of the Wales Coast Path on Margam Mountain (as demonstrated by RV6)	
Changes to Landscape components within the Site	Vegetation on Site	Construction and Operation

Assessment Methodology of Effects Likely / Significant

8.30 The following methodology for assessment is proposed:

- Assessment methodology is drawn from the Guidelines for Landscape and Visual Impact Assessment (GLVIA), 3rd Edition¹¹⁶. The detailed of the methodology is set out in **Appendix 8.1** and is to be agreed with the landscape officer on behalf of NPTCBC;
- The assessment of effects will be based on the deviation from the baseline conditions of the existing landscape character and visual receptors of the Site and the surrounding area established through the baseline Landscape and Visual Appraisal provided at **Appendix 8.1**;
- Representative viewpoint photography to support the ES will be prepared in accordance with the Landscape Institutes Technical Guidance Note 06/19¹¹⁷. GLVIA3 and the Technical Information Note 06/19 which recommends a proportionate approach to the assessment of views and type of supporting visualisation required, in relation to the scale of development proposed and the sensitivity of the visual receptors. Due to the nature of the planning application, it is proposed that Type 4 visualisations - survey verifiable, photowire (RVs 3, 4, 5, 6, 8, 9 and 10) and a small number of rendered photomontage (RVs 1, 2 and 7) images, would provide sufficient information to assess the Proposed Scheme¹¹⁸;
- A standalone Landscape and Visual Impact Assessment (LVIA) report will be prepared as an appendix to the ES to inform this process, determine which effects on receptors will be significant and document the assessment of both

¹¹⁶ Landscape Institute and the Institute of Environmental Management and Assessment's Guidelines for Landscape and Visual Impact Assessment (GLVIA), 3rd Edition

¹¹⁷ Landscape Institute (2019) Technical Guidance Note 06/19 on the Visual Representation of Development Proposals

¹¹⁸ This approach was agreed during correspondence with officers at NPTCBC in October 2022.

significant and non-significant effects. The ES Chapter will report out on those effects deemed to be significant. The visual assessment will be supported by an assessment of representative views, to assist with the interpretation of the effects on visual receptors;

- The Proposed Scheme will be considered, along with an assessment of the 'sensitivity' of the identified landscape receptor, visual receptor or representative view. This will be determined by establishing the 'value' of the landscape or view and 'susceptibility to change' of the receptor in relation to the Proposed Scheme. From this, the potential magnitude of 'change' from the Proposed Scheme is predicted and assessed. The methodology and approach in undertaking this impact assessment is based upon informed and reasoned professional judgement, taking into account a combination of quantitative and qualitative factors;
- The assessment of effects will consider the changes during both day-time and night-time and the 'worst case' scenario will be reported. In understanding night-time visual effects this will be based on professional judgement and qualitative interpretation of the existing night-time scene, as checked during the field study, and how this may change given the likely lighting assumed through Chapter 4 of the Proposed Scheme; and
- The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgment.

Limitations and Assumptions

8.31 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- In considering the effects of the Proposed Scheme upon the landscape character areas and visual receptors, the assessment will be based on the general arrangement plans and the information on the Proposed Scheme contained within the development specification in the ES. This approach will allow for a balanced assessment that considers all the relevant material and allows for judgements to be made on design quality and associated mitigation measures;
- In regard to the visual assessment the assessment will not attempt to predict the visual effects of seasonal changes throughout the year, or the difference between day and night time effects, but describes the 'worst case' position in terms of the view when the Proposed Scheme would be most visible i.e. daytime views in the winter (when trees would have lost their leaves);
- The effects of the Proposed Scheme will be determined during the construction and operational stage; and

- Whilst a selection of representative viewpoints will be provided and further evaluation of the kinetic experience of visual receptors will be undertaken, not every available view within the study area will be illustrated and professional judgement will be used to assess the effects of the Proposed Scheme and when defining effects which are and are not significant. The identified location of representative viewpoints and suggested visualisation types were discussed with the planning team at Neath and Port Talbot on 04/08/2022 to agree the scope. Following the Site visit further correspondence was undertaken by email, a response was received from the Council on 10/11/2022 confirming the location of viewpoints as set out on **Figure 8.8** was acceptable.

9. Socio-Economics and Human Health

Site Terminology

- 9.1 As outlined in **Chapter 2, 3 and 4**, the Site is split into a number of parcels/zones (**Figure 4.2**). This Chapter refers to both the Site as a whole, and individual parcels/zones. The individual parcels are referred to as follows:
- Primary parcel of land for the location of the proposed production facility (approximately 9.1ha), comprising bare land adjacent to Phoenix Wharf (Port Talbot) (referred to as the '*Production Development Zone [PDZ]*');
 - A discrete parcel of land located within the wider Port Talbot at the eastern boundary of Phoenix Wharf (approximately 2.6ha) (referred to as '*Temporary Construction Area*');
 - 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 marine environment of Phoenix Wharf, located to the north of the PDZ and the unnamed port road (referred to as the '*Phoenix Wharf Marine Unloading/Loading Facility*').
- 9.2 Note that where primary and tertiary mitigation is referred to throughout this Chapter, a referencing system has been used (e.g. **[P1]**, **[T1]**, etc) to link this to the summary of the mitigation in the Preliminary EMP in **Appendix 2.1**.

Technical Baseline

- 9.3 In the absence of guidance or policy available to inform the definition of appropriate study areas, it is reasonable to define study areas based on an understanding of relevant local and wider economic geographies, and the extent to which socio-economic and human health effects are likely to be contained within these geographies. These are:
- A local impact area based on the administrative area of Neath Port Talbot County Borough Council (NPTCBC). The 2011 Census¹¹⁹ indicates that 64% of people working in Neath Port Talbot also live within the authority; and
 - A wider impact area defined to cover Wales. The 2011 Census¹²⁰ found that almost all (99%) of the people working in Neath Port Talbot lived within the

¹¹⁹ ONS via Nomis (2011). 2011 Census: Table WU01UK - Location of usual residence and place of work by sex.

¹²⁰ Ibid.

wider impact area, suggesting a very high level of socio-economic containment within this geography¹²¹.

Employment

- 9.4 A total of 52,000 jobs were recorded within NPTCBC as of 2020¹²², representing 4% of total employment in Wales. The construction sector contributes 2,500 jobs in NPTCBC, equating to 5% of the area's workforce. Industrial employment sectors (including transport & storage and manufacturing) account for 12,000 jobs in the area, representing 23% of local employment.
- 9.5 The latest ONS Claimant Count data indicates that 2,820 residents of NPTCBC, equating to c.4.2% of the economically active population are claiming benefits associated with being out of work, which is broadly in line with the proportion recorded across Wales as a whole (4.3%)¹²³. It is notable that the number of people claiming out of work benefits has reduced substantially from the peak recorded during the Covid-19 pandemic in August 2020 with 5,395 (8.5%) residents of NPTCBC claiming benefits associated with being out of work. A similar trend has been observed in the rest of Wales, where the proportion has reduced from a peak of 8% in August 2020.
- 9.6 There is a high proportion of workless households in Neath Port Talbot (21%) and Wales (17%). These are both above the equivalent figure for the United Kingdom (14%). This remains true for households with dependent children, where 11% of households with dependent children are workless in Neath Port Talbot and Wales compared to 10% in the United Kingdom¹²⁴.

Public Health Profile

- 9.7 Public Health Wales data provides an overview of health outcomes relevant to this process in NPTCBC relative to Wales. NPTCBC performs worse in terms of most health and wellbeing indicators in relation to Wales.
- 9.8 Life expectancies at birth for both men (76.6 years) and women (81.2 years) in NPTCBC are lower than those estimated for Wales (78.2 years for men and 82.2 years for women).¹²⁵ Inequalities in life expectancy (i.e. the difference between an area's neighbourhoods with the highest and the lowest life expectancies) are lower in NPTCBC for men, but marginally higher for women¹²⁶.

¹²¹ Sufficient data not yet available from the 2021 census. Therefore 2011 still used for this assessment.

¹²² ONS via Nomis (2020). Business Register & Employment Survey: 2020.

¹²³ ONS via Nomis (2022). Claimant Count: June 2022; January 2020.

¹²⁴ ONS via Nomis (2022). Annual Population Survey: January – December 2020

¹²⁵ StatsWales (2012). Life expectancy by local authority and gender.

¹²⁶ StatsWales (2016). Inequality gap in life expectancy and healthy life expectancy at birth (Slope Index of Inequality) in years by Local Health Board and Local Authority.

- 9.9 A higher proportion of adults (Aged 16+) have a BMI considered obese in NPTCBC (28%) than in Wales (25%)¹²⁷. The proportion of adults who are physically active¹²⁸ (47%) in NPTCBC is lower in comparison with Wales (56%)¹²⁹. Smoking prevalence amongst adults is also higher in NPTCBC (15%) than in Wales (13%)¹³⁰. Further, a similar proportion of adults report themselves to be in 'Bad or Very Bad' health in NPT and Wales (both 9%), though a higher proportion of adults in NPTCBC (40%) report themselves to be limited at all by a longstanding illness than in Wales (34%)¹³¹.

Proposed Scope of Assessment

- 9.10 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Site, surrounding area and the Proposed Scheme (**Chapter 4**). Where environmental effects are considered unlikely to be significant, an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' to be significant.
- 9.11 The scoping stage for human health effects involves a review of the local potentially vulnerable groups, the appropriate health determinants and the relevant study areas.
- 9.12 The scoping stage identified the different population groups to be considered (namely the local population and the future population, and the specific groups within these) as well as the different impacts during construction and operation.
- 9.13 The identification of potentially vulnerable groups is highlighted as a key component of HIA by the WHIASU's 'HIA: A Practical Guide' document¹³², which outlines that "*the target groups identified as vulnerable or disadvantaged will depend on the characteristics of the local population and the nature of the proposal itself*".
- 9.14 As indicated in by the WHIASU's HIA Guide, the potential vulnerable groups considered as part of this assessment should be identified through baseline analysis¹³³. As in the baseline assessment above, lower-income households, in particular those categorised as 'workless' are considered at higher risk of food and fuel/energy poverty and the health risks associated with these.

¹²⁷ StatsWales (2022). National Survey for Wales – adult lifestyle by local authority and health board.

¹²⁸ Defined as undertaking a minimum total of 150 minutes (2.5 hours) of moderate physical activity.

¹²⁹ StatsWales (2022). National Survey for Wales – adult lifestyle by local authority and health board.

¹³⁰ Ibid.

¹³¹ StatsWales (2020). National Survey for Wales - adult general health and illness by local authority and health board.

¹³² Wales Health Impact Assessment Support Group (no date). Health Impact Assessment: A Practical Guide.

¹³³ Wales Health Impact Assessment Support Group (no date). Health Impact Assessment: A Practical Guide.

Effects Unlikely / Not Significant

- 9.15 The health determinants are the social, economic and environmental conditions which determine the health and wellbeing of a local population. While there is no definitive list that is applicable to every development, guidance published by the NHS Healthy Urban Development Unit¹³⁴ (HUDU) and the Wales Health Impact Assessment Support Unit (WHIASU) provide an assessment matrix that identifies broad determinants of health.
- 9.16 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the PEMP provided in **Appendix 2.1**.

Access to quality housing, healthcare services, open space and nature, and other social infrastructure

- 9.17 This development does not contain a residential element, therefore determinants relating to resident impacts have not been included for consideration, these are *Housing quality and design* and *Access to healthcare services and other social infrastructure*. The Site is also proposing to occupy a parcel of land on a pre-existing industrial park and therefore the impact on *Access to open space and nature* has not been deemed relevant.

Access to healthy food

- 9.18 Whilst most important in relation to residential development, affordable healthy food options should also be available and easily accessible to those using and working at new developments to enable and promote healthy lifestyles. The Proposed Scheme is located within walking distance (c. 10-15 minutes walk) of Port Talbot town centre, where affordable healthy food options are available, such as ALDI on Commercial Road.
- 9.19 Therefore, effects related to access to affordable healthy food are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Accessibility and active travel

- 9.20 Active travel and sustainable travel options should be accessible to those working at and using new developments to enable and promote healthy and sustainable lifestyles through facilitating physical activity and zero/low emissions transport, such as walking, cycling and public transport options.
- 9.21 It is likely that two points of access will be created, one to serve the associated operational facilities (including accompanying car parking). This access will also provide access for pedestrians and cyclists as required. An additional separate access is

¹³⁴ The London Healthy Urban Development Unit (HUDU) helps the NHS engage and respond proactively to population growth and change in London and to maximise the opportunities that aligning the health and planning agendas can bring to improve health and narrow health inequalities

provided for deliveries¹³⁵, maintenance and collections (i.e. HGVs) and therefore excludes any pedestrian or cycle access.

- 9.22 The Site sits within an existing employment area and employees may make use of existing transport infrastructure such as Port Talbot Parkway train station which has trains that travel both westbound to Swansea and Eastbound towards Cardiff, Newport, London and Manchester. Port Talbot is also part of the Cymru Clipper bus service, which provides long distance bus services in South and West Wales and to nearby centres such as Neath, Swansea and Bridgend.
- 9.23 When considering effects related to active travel and sustainable travel from a socio-economics & human health perspective, the focus should be on impacts on health outcomes for users which has not been deemed significant here. As such, the consideration of the effect within this chapter has focused on the availability of options specifically.
- 9.24 Therefore, effects related to accessibility and active travel are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Social cohesion and lifetime neighbourhoods

- 9.25 Developments should connect with existing communities (for example through access layouts which avoid physical barriers) and land uses and spaces should encourage social interaction where appropriate, taking into account principles of inclusive design. The Proposed Scheme is sited on a restricted industrial estate meaning it is highly unlikely that this will be a major consideration of the design stage.
- 9.26 Therefore, effects related to social cohesion and inclusive design are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Crime reduction and community safety

- 9.27 Sites will be kept secure during the construction stage to ensure that potential for crime and anti-social behaviour is minimised. Due to the existing uses in its proximity, access to the Site is currently controlled by security measures such as an access gate. Once operational, developments should incorporate design elements and site management measures to help 'design out' crime, to help people feel secure, again minimising the potential for crime and anti-social behaviour. This will include on-site security.
- 9.28 During the construction stage, temporary fencing / hoarding will be installed around the perimeter of the Site as required, restricting access and creating a secure site for the purpose of health and safety and general security purposes [T2]. This will be in addition to the installation of CCTV, a key crime deterrent [T2].
- 9.29 Security during the operational stage will be of high importance due to need for site specific safety procedures to be implemented in light of the proposed industrial process. The Site is within an area where access is currently controlled by Tata Steel

¹³⁵ With respect to delivery of materials required to support the process plant, rather than input and output products.

and will soon be taken over by the Associated British Ports. As a result, the Proposed Scheme is unlikely to significantly alter security arrangements at the Site.

- 9.30 Therefore, effects related to crime and community safety are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES

Access to work and training

- 9.31 Employment and income are key determinants of health and wellbeing, whilst unemployment is known to be a significant contributor to poverty, illness and a reduction in personal and social esteem. New development can improve people's access to work and training opportunities, for example, through apprenticeships and other employment and training opportunities and programmes during the construction stage and on-site once operational.

- 9.32 The Proposed Scheme is yet to appoint a construction contractor, who will largely determine the level of work and training provided during the construction stage. Similarly, it is expected that within the operational workforce a small proportion would be on training programmes such as apprenticeships however this is largely yet to be determined and is unlikely to constitute a number large enough to be deemed significant.

- 9.33 Therefore, effects related to access to work and training opportunities are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Environmental conditions and climate change

- 9.34 It should additionally be noted that a number of additional effects which could be considered as relevant to an assessment of Socio-economics & Human Health will be addressed in other topics in the EIA or can be scoped out, and therefore will not be addressed within Socio-economics and Human Health. These effects include those related to:

- Risks to health from contamination and flood risk which is addressed through the technical topics of Ground Conditions and Contamination (see **Chapter 5**);
- Nuisance from Lighting (see **Chapter 5**);
- Risk of Major Accidents and Disasters (see **Chapter 6**);
- Air Quality, noise and neighbourhood amenity, which is addressed through the technical topics of Transport, Air Quality and Noise and Vibration in this EIA Scoping Report (see **Chapter 5**, **Chapter 11** and **Chapter 12**); and
- Climate change, which is addressed through the Climate Change technical topic section of this EIA Scoping Report (see **Chapter 10**).

Effects Likely / Significant

- 9.35 **Table 9.1** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 9.1: Potential Likely Significant Effects and Sensitive Receptors

Effect	Receptor(s)	Applicable Stage(s)
Employment generated in the construction stage	Local labour force Vulnerable Groups	Construction
Employment generated in the operation stage	Local labour force Vulnerable Groups	Operation

Assessment Methodology of Effects Likely / Significant

9.36 In the absence of formal guidance, appropriate study areas will be defined, which will be based on an understanding of relevant local and wider economic geographies and a consideration of the extent to which socio-economic and human health effects are likely to be contained therein. The identified effects will be considered across the two identified impact areas, comprising Neath Port Talbot and Wales.

Socio-Economics

9.37 Best practice and methodological guidance will be drawn upon as appropriate to inform key elements of the economic elements of the assessment, including the *Additionality Guide*¹³⁶ and *Employment Density Guide*¹³⁷ produced by the former Homes and Communities Agency (HCA) (now known as Homes England). Net additional economic impacts will be presented, accounting for a range of economic additionality factors such as leakage¹³⁸, displacement¹³⁹ and multiplier effects¹⁴⁰.

9.38 The sensitivity of receptors will be determined by way of observed change in receptors locally compared to local, regional and national trends. Through observation of a receptor's capacity for change relative to wider comparator areas and/or national standards, the sensitivity of receptors locally will be observed. Consideration will also be given to the priority attributed to specific receptors in strategy and policy terms. The assignment of sensitivity will be based on professional judgement.

9.39 Once the sensitivity of the receptor has been identified, the change attributable to the Proposed Scheme will be benchmarked against the observed rate of change in the corresponding employment baseline. This will allow a relative assessment of the magnitude of change that is attributable to the Proposed Scheme to be conducted.

¹³⁶ Homes & Communities Agency (2014). *Additionality Guide* (4th Edition).

¹³⁷ Homes & Communities Agency (2015). *Employment Densities Guide* (3rd Edition).

¹³⁸ The measure of the extent to which impacts (such as employment) will occur outside of the defined local and wider impact areas.

¹³⁹ The measure of the extent to which the Proposed Scheme will lead to existing businesses or employees within the defined local and wider impact areas relocating activities to the Proposed Scheme, as opposed to the attraction of new investment and employment arising from the Proposed Scheme.

¹⁴⁰ The measure of further economic activity (such as employment, expenditure or income) associated with supply chain expenditure, additional local income (from employment) and longer term expenditure effects.

- 9.40 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgement and consideration of policy and strategic priority.

Limitations and Assumptions

- 9.41 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- The assessment of effects will be desk-based and therefore reliant on data and information obtained from a variety of official published sources (such as the 2011 Census and the Business Register and Employment Survey¹⁴¹). No further verification of these sources will be undertaken (unless otherwise stated in the ES). Each data source has methodological limitations related to data collection and surveys only represent the socio-economic context at a specific point in time;
 - The forecasted baseline will draw upon employment forecasts produced by Experian¹⁴². There are known uncertainties to using such trend-based forecasts (especially in the current context of economic uncertainty caused by factors such as the COVID-19 pandemic and Brexit); however, the use of such forecasts is considered appropriate for drawing conclusions about how the economy and labour market might change in the future; and
 - Where necessary, professional and realistic assumptions will be made and applied, such as those relating to the economic additionality factors of leakage, displacement and multiplier effects.

¹⁴¹ ONS via Nomis (2021). Business Register and Employment Survey: 2020.

¹⁴² Experian (2022). Local Market Forecasts Quarterly: June 2022.

10. Climate Change

Site Terminology

- 10.1 As outlined in **Chapter 2, 3 and 4**, the Site is split into a number of parcels/zones (**Figure 4.2**). This Chapter refers to both the Site as a whole, and individual parcels/zones. The individual parcels are referred to as follows:
- Primary parcel of land for the location of the proposed production facility (approximately 9.1ha), comprising bare land adjacent to Phoenix Wharf (Port Talbot) (referred to as the '*Production Development Zone [PDZ]*');
 - A discrete parcel of land located within the wider Port Talbot at the eastern boundary of Phoenix Wharf (approximately 2.6ha) (referred to as '*Temporary Construction Area*');
 - 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 marine environment of Phoenix Wharf, located to the north of the PDZ and the unnamed port road (referred to as the '*Phoenix Wharf Marine Unloading/Loading Facility*').
- 10.2 Note that where primary and tertiary mitigation is referred to throughout this Chapter, a referencing system has been used (e.g. **[P1]**, **[T1]**, etc) to link this to the summary of the mitigation in the Preliminary EMP in **Appendix 2.1**.

Technical Baseline

- 10.3 Current baseline climate conditions for the Site have been established from the Met Office's closest automatic weather station at Mumbles Head¹⁴³, approximately 9 miles to the west. Average monthly conditions for the 1981-2010 period are summarised in **Table 10.1**.
- 10.4 Although monthly average data for the period 1991 to 2020 recently became available from the Met Office, the UKCP18 climate projections for the future baseline are relative to the 1981 to 2010 period hence this dataset is reported.

Table 10.1: Current Baseline Climate Conditions (1981-2010 Monthly Averages)

Month	Max. temp (°C)	Min. temp (°C)	Days of air frost (days)	Rainfall (mm)	Mean wind speed at 10m (knots)
January	7.95	3.95	3.00	95.52	15.53
February	7.81	3.57	3.30	66.96	14.31

¹⁴³ <https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climateaverages/gcjjm7j5g>

Month	Max. temp (°C)	Min. temp (°C)	Days of air frost (days)	Rainfall (mm)	Mean wind speed at 10m (knots)
March	9.54	4.84	0.70	72.94	13.85
April	11.90	6.32	0.13	58.54	12.15
May	14.99	9.20	0.00	62.84	12.43
June	17.65	11.78	0.00	63.79	10.75
July	19.61	13.92	0.00	71.87	11.65
August	19.70	14.01	0.00	83.90	11.75
September	17.77	12.38	0.00	77.37	12.89
October	14.42	9.86	0.00	123.10	15.13
November	11.13	6.92	0.30	112.09	14.27
December	8.72	4.65	2.27	110.30	15.37
Annual	13.46	8.48	9.70	999.22	13.34

10.5 In summary, baseline maximum monthly temperatures range from 7.81°C (February) to 19.70°C (August) and with an annual average of monthly maximum temperatures of 13.46°C. Minimum monthly average temperatures range from 3.57°C (February) up to 14.01°C (August) and with an annual average of 8.48°C.

10.6 Monthly average rainfall varies from 58.54mm (April) up to 123.10mm (October) and with annual average rainfall of 999.22mm. Monthly average wind speed at 10m above ground level varies from 10.75 knots (June) to 15.53 knots (January) and with an annual average wind speed of 13.34 knots.

10.7 Given the nature of Climate Change it is necessary to also establish the future baseline climate conditions for the Site area have been established from the Met Office's latest climate projections UKCP18¹⁴⁴ for the 25km OS grid square within which the site is located (262500, 187500).

10.8 The projections comprise forecast changes relative to 1981 to 2010 baseline conditions for annual and seasonal temperatures and rainfall as well as sea level rise and wind speed. In accordance with IEMA guidance, projections are taken from the "high" emissions scenario (known as "RCP8.5"), 50th percentile (i.e. median) scenario for the 2020s (i.e. construction stage) and 2050s (i.e. operational stage).

Temperature & Rainfall

10.9 Projected changes to seasonal and annual temperature and rainfall relative to 1981-2010 conditions which could result in severe weather effects such as droughts, floods and heat waves are provided in **Table 10.2**.

¹⁴⁴ <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/about/what-is-ukcp>

Table 10.2: UKCP18 Climate Projections (Changes Relative to 1981-2010 Baseline, RCP8.5, 50th Percentile)

Parameter		2020s	2050s
Temperature	Winter maximum (°C)	+ 0.6	+ 1.6
	Summer maximum (°C)	+ 1.1	+ 2.6
	Annual maximum (°C)	+ 0.8	+ 2.0
Rainfall	Winter (%)	+ 7	+ 14
	Summer (%)	- 10	- 23
	Annual (%)	+ 1	+ 4

10.10 In summary for the 2020s (construction stage), an increase in maximum seasonal and annual temperatures of 1.1°C (summer), 0.6°C (winter) and 0.8°C (annual) are projected. Whilst an increase of only 1% in annual rainfall is projected, summer rainfall is projected to reduce by 10% and winter rainfall increase by 7%.

10.11 For the 2050s (operational stage), more significant increases in maximum seasonal temperature are projected of 2.6°C (summer), 1.6°C (winter) and 2.0°C (annual). Annual rainfall is projected to increase by 4%, summer rainfall reduces by 23% and winter rainfall increase by 14%.

Sea Level Rise

10.12 **Table 10.3** presents UKCP18 sea level rise projections for the high emissions scenario (RCP8.5) with respect to the 1981-2000 average for Cardiff. Both 5th and 95th percentile projections are presented although the 95th percentiles should be used as a reasonable worst case.

Table 10.3: UKCP18 - Climate Projections - Sea Level Rise, Cardiff (meters)

Year	Cardiff	
	5 th Percentile	95 th Percentile
2020	0.07m	0.13m
2040	0.15m	0.28m
2060	0.25m	0.51m

10.13 In summary for 2020 (construction stage), sea level rise of up to 0.13m is projected at Cardiff relative to the 1981-2010 period, with this rise forecast to increase to 0.28m and 0.51m by 2040 and 2060 respectively (operational stage).

Wind Speed

10.14 **Table 10.4** presents projected changes in wind speed for the area in which the Site is located when global mean warming has reached 2°C above pre-industrial (1850- 1900)

levels relative to baseline (1981-2010) conditions for the calendar year, winter (December-February) and summer (June-August) in the "high" model scenario.

Table 10.4: UKCP18 - Climate Projections – Wind Speed (meters/second)

Parameter	Change (m/s)	
Wind speed	Winter	+ 0.2 to 0.4
	Summer	+ 0.0 to 0.2
	Annual	+ 0.0 to 0.2

- 10.15 In summary, projected changes to baseline wind speeds include increased average winter wind speeds of up to 0.4 m/s, and increased average summer and annual wind speeds of up to 0.2 m/s.

Proposed Scope of Assessment

Greenhouse Gas (GHG) Emissions

- 10.16 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Site, surrounding area and the Proposed Scheme (**Chapter 4**). Where environmental effects are considered unlikely to be significant, an appropriate evidence base has been provided to justify the ‘scoping out’ of these effects ensuring the EIA and ES only assess those effects considered ‘likely’ to be significant.

Effects Unlikely / Not Significant

- 10.17 There is not the data at this stage to confirm whether any effects in relation to GHG emissions are considered unlikely to be significant.

Effects Likely / Significant

- 10.18 **Table 10.5** outlines the effects (and associated receptors) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 10.5: Potential Likely Significant Effects and Sensitive Receptors

Effect	Receptor(s)	Applicable Stage(s)
GHG emissions	Global climate system	Construction
GHG emissions	Global climate system	Operation
Net GHG Emissions	Global climate system	Construction and Operation

Assessment Methodology of Effects Likely / Significant

- 10.19 Current baseline conditions regarding greenhouse gas (GHG) emissions will be established at the local authority (Neath Port Talbot) and national level from the latest

(2019) UK Government local authority and regional carbon dioxide emissions national statistics: 2005 to 2019¹⁴⁵.

- 10.20 Baseline GHG emissions from the Site will be assumed to be zero for the purposes of the GHG emissions assessment.
- 10.21 Future baseline conditions regarding GHG emissions will also be established in the form of carbon budgets proposed for Neath Port Talbot (from *Tyndall Centre's Setting Climate Commitments for Neath Port Talbot, July 2022*¹⁴⁶) and Wales (from *Welsh Government's Climate change targets and carbon budgets, November 2021*¹⁴⁷).
- 10.22 The above local and national current and future baseline conditions regarding GHG emissions will be used to contextualise GHG emissions / savings calculated from the Proposed Scheme in order to establish the magnitude of its net GHG effect.
- 10.23 The net GHG emissions effect of the Proposed Scheme and its contribution to Wales' and the UK's net zero trajectory will be assessed in accordance with IEMA's EIA Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022)¹⁴⁸.
- 10.24 This will comprise estimating construction-stage GHG emissions as far as reasonably possible by applying UK Government's indirect supply chain emissions factor for construction¹⁴⁹ to the Proposed Scheme's construction value, which will be based on information available from the Applicant.
- 10.25 Operational-stage GHG will be calculated using data from the Sustainable Aviation Fuel (SAF) product Life Cycle Assessment (LCA) undertaken by the Applicant. This LCA has been undertaken to demonstrate the SAF product from the Proposed Scheme (synthetic jet fuel) will deliver an appropriate lifecycle CO₂ emissions reduction relative to standard fossil fuel aviation fuel as required by DfT to be certified as a SAF, whilst providing detailed information on quantities of all key inputs (e.g. ethanol feedstock, power, water, gas etc) and outputs (e.g. SAF product) from the production process to inform the assessment of GHG emissions.
- 10.26 GHG emission reductions from use of the SAF product relative to standard fossil fuel aviation fuel will also be calculated based on its percentage lifecycle CO₂ improvement, forecast annual SAF production and assumed operational timeframe of the facility.

¹⁴⁵ BEIS (2021). UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2019. Available at: <https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2019>

¹⁴⁶ Tyndall Centre (2022). Setting Climate Commitments for Neath Port Talbot. Available at: <https://carbonbudget.manchester.ac.uk/reports/W06000012/>

¹⁴⁷ Welsh Government (2021). Climate change targets and carbon budgets, November 2021). Available at: <https://gov.wales/climate-change-targets-and-carbon-budgets>

¹⁴⁸ IEMA (2022). EIA Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance

¹⁴⁹ DEFRA (2014). "Table 13" Indirect emissions from the supply chain. Version 2. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/404542/Table_13_Indirect_emissions_from_supply_chain_2007-2011.xls

- 10.27 The Production Development Zone will form the principal study area for the assessment, however the assessment will include off-site GHG emissions / savings such as those associated with the manufacture and transportation of construction materials, those associated with the off-site generation (e.g. at a power station) of grid electricity consumed by the operational Scheme, and also GHG savings occurring at and between airports from use of the SAF product in place of standard fossil fuel kerosene.
- 10.28 Calculated GHG emissions from the construction and operation of the Proposed Scheme, and also GHG savings from use of the SAF product in place of standard kerosene, will enable its net GHG effect to be established. The magnitude of GHG emissions and savings will be established in the context of current and future baseline GHG emissions at the local (Neath Port Talbot and Wales levels).
- 10.29 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible), the magnitude of change (on a scale of large, medium, small and negligible), the level of effect on a scale of major, moderate, minor and negligible. The significance of the Proposed Scheme's net GHG effect will then be determined by considering the magnitude of its net GHG emissions effect in conjunction with consideration of whether it makes an appropriate contribution to the Wales and UK's net zero trajectory for a project of that type.

Climate Resilience

Effects Unlikely / Not Significant

- 10.30 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following Climate Resilience effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the Preliminary EMP provided in **Appendix 2.1**.

Increased risk of flooding

- 10.31 Changes to seasonal rainfall patterns as a result of climate change have the potential to increase the risk of flooding at the Site and impact construction workers and activities, and proposed infrastructure during operation.
- 10.32 The risk of flooding associated with the Proposed Scheme has been considered as part of this EIA Scoping Report¹⁵⁰ (see **Chapter 5** and **Appendix 5.3 – 5.5**), which has considered the Welsh Government's latest climate change guidance and Annual Exceedance Probabilities (AEPs) when drawing a conclusion on flood risk to the Site and Proposed Scheme. Baseline conditions indicate that a portion of the Site is at risk of flooding from fluvial and tidal sources as a result of climate change. As such, the Proposed Scheme could have the potential to impact flood risk receptors, including site users, assets and infrastructure, during the permanent site operations, if mitigation measures are not in place. The risk from fluvial and tidal sources is only present when

¹⁵⁰ Prepared by JBA Consulting who are flood risk consultants for the project.

climate change impacts are taken into account, and therefore mitigation measures are not required for flood risk during the construction stage.

- 10.33 To manage residual flood risk and provide a higher standard of protection than required under TAN-15, it is proposed that ground levels across the Site are raised to above the AEP tidal and fluvial flood level including climate change allowance. This equates to a minimum ground level of 7.5mAOD, which much of the Site already exceeds (as set out in **Chapter 4**) [P2]. Following this mitigation, significant effects on flood risk receptors from the operational stage of the Production Development Zone were considered unlikely (**Chapter 5**).
- 10.34 The evaluation also considered the introduction of significant areas of hardstanding across the Site resulting in the potential for surface water flood impacts and likely significant effects to on-site users and adjacent developments during permanent operations if not appropriately mitigated. The Proposed Scheme includes the application of Sustainable Drainage Systems (SuDS) [P3] in accordance with Welsh Government statutory standards (as set out in **Chapter 4**). Following approval by the proposed SuDS Approval Body (SAB) a high degree of confidence can be assigned to this mitigation and as a result significant effects from surface water flooding are determined to be unlikely (**Chapter 5**). Implementation of the drainage strategy at the earliest stage will also mitigate the risk of increased overland flows and impediments to runoff pathways on site causing a localised increase in flood risk [P3].
- 10.35 Baseline conditions identify that the Temporary Construction Area is at risk of reservoir flooding. However the Reservoirs Act 1975 provides appropriate mitigation with a high degree of certainty that the risk from reservoir flooding is suitably managed and significant effects are unlikely (**Chapter 5**).
- 10.36 The baseline conditions also identified a low risk of groundwater flooding across the Site. The Proposed Scheme includes ground raising [P2] and do not incorporate any basement level development that would be particularly vulnerable to the impacts of basement flooding. Consequently, significant effects from groundwater flooding are unlikely to be significant (**Chapter 5**).
- 10.37 Therefore, as concluded within **Chapter 5**, potential flood risk during construction and operation of the Proposed Scheme, and including contribution from climate change, is considered unlikely to be significant. As such, increased risk of flooding arising from climate change will not be considered further in the EIA or reported in the ES.

Heat stress during construction

- 10.38 Higher summer temperatures as a result of climate change may increase the risk of heat stress on construction workers. However, the effects of high summer temperatures will be mitigated through implementation of the CEMP which will include measures to reduce heat stress such as the provision of shaded areas, potable water supplies and suitable personal protective equipment (PPE) [T8]. These tertiary mitigation measures will be considered an integral part of the Proposed Scheme and considered as part of the Schedule of Mitigation. Therefore, increased summer temperatures as a result of climate change on construction workers are not considered to be significant and will not be considered further in the EIA or reported in the ES.

Extreme weather

- 10.39 The design, construction and operation of the Proposed Scheme will be required to comply with the Control of Major Accident Hazards (COMAH) Regulations¹⁵¹ which seek to ensure that all necessary measures are taken to prevent major accidents involving dangerous substances and limit the consequences to people and the environment of any major accidents which do occur [T12]. This is further explained in **Chapter 6: Major Accidents and/or Disasters**.
- 10.40 Natural Resources Wales (NRW) is one of the Competent Authorities under the COMAH Regulations alongside the Health & Safety Executive (HSE) which provides guidance for the safe operation of facilities including Technical Measures for the prevention, control and mitigation of failure modes for systems and unit operations.
- 10.41 One such Technical Measures Document ‘Design Code – Plant’¹⁵² provides detailed design guidance, codes and standards for the mechanical design of equipment. The guidance explains how weather extremes including ambient temperature should be taken into account for external plant and evidence provided via safety reports that the process conditions and environment in which the equipment is to be utilised have been assessed. Protection against lightning strikes on process plant located outside buildings is also required [T14]. Further Design Codes (Buildings / Structures) similarly require that structural design takes into account natural events such as wind loadings, snow loadings and seismic activity.
- 10.42 Through compliance with relevant COMAH requirements [T12], the Proposed Scheme will be required to demonstrate to the satisfaction of NRW that risks from extreme weather events such as high winds, snow and lightning have been appropriately considered and mitigated through design. These tertiary mitigation measures will be considered an integral part of the Proposed Scheme and considered as part of the Schedule of Mitigation. Therefore, increased summer temperatures as a result of climate change on construction workers are considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Effects Likely / Significant

- 10.43 **Table 10.6** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 10.6: Potential Likely Significant Effects and Sensitive Receptors

Effect	Receptor(s)	Applicable Stage(s)
Changes to seasonal weather including temperature and rainfall	Habitats and species with the Site and off-site compensation area	Construction and Operation

¹⁵¹ Control of Major Accident Hazards (COMAH). Available at: <https://naturalresources.wales/about-us/what-we-do/how-we-regulate-you/control-of-major-accident-hazards-comah/?lang=en>

¹⁵² <https://www.hse.gov.uk/comah/sragtech/techmeasplant.htm>

Effect	Receptor(s)	Applicable Stage(s)
Water availability	Site processes and operations	Operation
Summer overheating	Building users	Operation

Changes to seasonal weather including temperature and rainfall

10.44 The Terrestrial Ecology input to the EIA Scoping Report prepared by RPS explains how ecological compensation and enhancement will be designed to promote the resilience of the ecosystems being created/enhanced, consistent with the requirements of Planning Policy Wales. Connected to this, the ES Chapter will specifically assess the potential effects of climate change on the biodiversity features within the proposed scheme and those being created as compensation outside of the Site.

Water availability

10.45 Changes to seasonal rainfall patterns as a result of climate change may reduce mains water availability thereby impacting site processes and operations. This potential effect will therefore be considered as part of the EIA.

Summertime overheating in buildings

10.46 Higher summer temperatures as a result of climate change will increase potential overheating risk in buildings. *Approved Document O Overheating*¹⁵³ came into effect in Wales in November 2022 and requires an assessment of overheating risk for new residential buildings including dwellings and institutional living accommodation. UK Government does not have strong evidence on the severity or prevalence of overheating risk for non-domestic buildings in the UK, however those buildings within the Proposed Scheme that are regularly occupied and therefore have treated internal environments (i.e. heated / cooled) will need to be appropriately designed to mitigate overheating risk. This potential effect will therefore be considered as part of the EIA.

Assessment Methodology of Effects Likely / Significant – Climate Resilience

10.47 The climate change resilience assessment will be undertaken in accordance IEMA’s EIA Guide to Climate Change Adaptation & Resilience (2020)¹⁵⁴. The UK Climate Change Risk Assessment (2022)¹⁵⁵ will be reviewed and considered alongside current and future baseline climate condition established for the area from UKCP18.

10.48 Potentially significant climate resilience effects will be discussed with relevant EIA disciplines and the project design team, and measures developed to mitigate such effects. Changes to seasonal temperature including rainfall will be discussed with the terrestrial ecology lead. Regarding water availability, building and particularly process

¹⁵³ Welsh Government (2022). *Approved Document O Overheating*. 2022 Edition for use in Wales. Available at: <https://gov.wales/sites/default/files/publications/2022-05/approved-document-o.pdf>

¹⁵⁴ IEMA (2020). *EIA Guide to Climate Change Adaptation & Resilience*.

¹⁵⁵ HM Government (2022). *UK Climate Change Risk Assessment*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1047003/climate-change-risk-assessment-2022.pdf

mains water demands and efficiency measures will be established to ensure these continue to operate during periods of reduced mains water availability. Regarding summertime overheating, occupied buildings will be designed to ensure that summertime overheating risks are appropriately mitigated (e.g. glazing, shading, ventilation, comfort cooling, etc).

- 10.49 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible), the magnitude of change (on a scale of large, medium, small and negligible), the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined from this evaluation and including professional judgment.

Limitations and Assumptions

- 10.50 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- Applying the DEFRA supply chain emissions factor to the Proposed Scheme's construction value is a relatively course approach to estimating construction-stage GHG emissions but one considered reasonable given the lack of alternative approaches to a development of this nature. This approach is also considered likely to give a reasonable worst-case result given the DEFRA supply chain factors were last updated in 2014 and were previously reducing year on year as the national electricity grid and other part of the economy decarbonise over time.

11. Air Quality

Site Terminology

- 11.1 As outlined in **Chapter 2, 3 and 4**, the Site is split into a number of parcels/zones (**Figure 4.2**). This Chapter refers to both the Site as a whole, and individual parcels/zones. The individual parcels are referred to as follows:
- Primary parcel of land for the location of the proposed production facility (approximately 9.1ha), comprising bare land adjacent to Phoenix Wharf (Port Talbot) (referred to as the '*Production Development Zone [PDZ]*');
 - A discrete parcel of land located within the wider Port Talbot at the eastern boundary of Phoenix Wharf (approximately 2.6ha) (referred to as '*Temporary Construction Area*');
 - 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 marine environment of Phoenix Wharf, located to the north of the PDZ and the unnamed port road (referred to as the '*Phoenix Wharf Marine Unloading/Loading Facility*').
- 11.2 Note that where primary and tertiary mitigation is referred to throughout this Chapter, a referencing system has been used (e.g. **[P1]**, **[T1]**, etc) to link this to the summary of the mitigation in the Preliminary EMP in **Appendix 2.1**.

Technical Baseline

- 11.3 NPTCBC declared an Air Quality Management Area (AQMA) in 2000 for exceedances of the short-term 24-hour particulate matter (PM₁₀) objective covering the majority of land and properties between the Corus Steel Works and the M4 Motorway, to the north-east, east and south-east of the Site, but not the Site itself. The AQMA is declared due to industrial emissions reflecting the industrial nature of the area surrounding the Site. The dust emissions mainly relate to the steel works in the area. As reported in the NPTCBC 2020 LAQM Annual Progress Report¹⁵⁶, there has been a downward trend in pollution levels in the Taibach Margam area covered by the AQMA since the AQMA was first declared.
- 11.4 NPTCBC undertake automatic monitoring of PM₁₀ within the AQMA and surrounding area at 5 locations, the nearest being 0.8km to the east at the Porth Talbot Fire Station and 0.8km to the west at Little Warren. Annual concentrations at all five sites have been consistently less than 75% of the objective limit of 40 µg/m³ (classed as well below the objective) since before 2015. However, the sites continue to record exceedances of the 24-hour limit of 50 µg/m³ throughout the year, although as the objective allows for up to 35 exceedances of the objective in any given year, the

¹⁵⁶ NPTCBC (2020). 2020 Air Quality Progress Report, September 2020.

objective has been met at all monitoring locations since 2015 within the AQMA. As a cautious approach, NPTCBC have determined that average 24-hour levels are not yet low enough to revoke the AQMA and further review of monitoring data will continue¹⁵⁷.

- 11.5 NPTCBC also monitor nitrogen dioxide (NO₂) concentrations in the area, both within the AQMA and at locations outside the AQMA. The data shows concentrations in the area have been consistently below the annual mean and 1-hour objective limits for this pollutant. The data also shows a downward trend in NO₂ concentrations in the area¹⁵⁸.
- 11.6 NPTCBC have also identified issues in the Port Talbot area relating to large particulates (nuisance dust) and Polyaromatic hydrocarbons (PAH), both links to emissions from the Port Talbot steel works. NPTCBC have in place a dust management plan setting out measures to reduce emissions from the Steel Works, however levels and emissions of these pollutants in conjunction with PM₁₀ are still a significant issue in the area and continue to dominate the air quality baseline in the vicinity of the Site.

Proposed Scope of Assessment

- 11.7 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Site, surrounding area and the Proposed Scheme (**Chapter 4**). Where environmental effects are considered unlikely to be significant, an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' to be significant.

Effects Unlikely / Not Significant

- 11.8 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the Preliminary EMP provided in **Appendix 2.1**.

Nuisance, disturbance and a reduction in human health as a result of dust and particulate matter emissions from construction activities and NRMM

- 11.9 Dust and particulate matter emitted from construction related activities and Non-Road Mobile Machinery (NRMM) can impact adjacent receptors due to soiling (resulting in nuisance impacts) and with regards to health. Exposure to PM₁₀ has long been associated with a range of health effects and there is evidence that short-term exposure to particulate matter in the size range of PM₁₀ and PM_{2.5} can cause adverse respiratory and cardiovascular effects in humans¹⁵⁹.

¹⁵⁷ The data will be used to inform the baseline assessment of local particulate concentrations within the ES.

¹⁵⁸ The data is considered to be representative of baseline conditions in the vicinity of the Site and will be used to inform the baseline assessment within the ES.

¹⁵⁹ WHP. Air quality and health. Available at: <https://www.who.int/teams/environment-climate-change-and-health/air-quality-and-health/health-impacts/types-of-pollutants> [Accessed: 19/12/2022].

- 11.10 It is anticipated that dust and particulate matter emission produced during construction activities would be subject to standard best practices for the management of dust from construction sites, as informed by the Institute of Air Quality Management (IAQM) Construction Guidance¹⁶⁰ [T4]. Such preventative measures are likely to include, but not limited to, fencing/hoarding around the perimeter of the Site, screening stockpiles of materials and dampening exposed soils as appropriate and set out requirements for ongoing monitoring and liaison with the local community, and NPTCBC. These tertiary mitigation measures would be considered an integral part of the Proposed Scheme with the understanding that these measures would be secured through the provision of a Construction Environmental Management Plan (CEMP) by the appointed contractor and submitted to NTPCBC for approval prior to commencement of construction activities [T4]. Furthermore, the nearest sensitive receptors (residential properties) are located approximately 90m from the Site and approximately 440m from the Production Development Zone where the highest volume of construction activities will be undertaken. The risk of significant effects as a result of construction dust would therefore be low.
- 11.11 Consequently, as concluded in the IAQM guidance at sites where appropriate mitigation measures are implemented, and given the separation distance between the Site and nearest receptors, nuisance, disturbance and a reduction in human health as a result of dust and particulate matter emissions to the receptors outlined below are considered unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Effects Likely / Significant

- 11.12 **Table 11.1** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 11.1: Potential Likely Significant Effects and Sensitive Receptors

Effect	Receptor(s)	Applicable Stage(s)
Change to local air quality in terms of human health and ecology (particularly, but not limited to, nitrogen dioxide and particulate matter) 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	Nearest sensitive human receptors (residential, educational, health facilities) located to the east and northeast, particularly within the AQMA and to the west and northwest within Porth Talbot Ecological receptors – Kenfig Special Area of Conservation (SAC), Crymlyn Bog SAC, Cefn Cribwr SAC	Operation

¹⁶⁰ IAQM (2016). Guidance on the Assessment of Dust from Demolition and Construction, Version 1.1.

Effect	Receptor(s)	Applicable Stage(s)
Change to local air quality in terms of human health and ecology (particularly, but not limited to, nitrogen dioxide and particulate matter) due to on-Site emissions associated with flare	Nearest sensitive human receptors (residential, educational, health facilities) to the north-east, east, west and north-west in Port Talbot Ecological receptors – Kenfig SAC, Crymlyn Bog SAC, Cefn Cribwr SAC	Operation
Change to local air quality in terms of human health and ecology (particularly, nitrogen dioxide and particulate matter) due to transport emissions ¹⁶¹ to include vehicle and shipping emissions	Human receptors located within the Port Talbot AQMA (residential, educational and health facilities located adjacent to main road network) Ecological receptors located within 200m of an affected road (potentially Kenfig SAC and Cefn Cribwr SAC)	Construction and Operation
Changes to local air quality due to fugitive on-site emissions (dust, odour, gas emissions), where identified ¹⁶²	Human receptors in Port Talbot to the north-east, east, south-east and north-west	Operation

Assessment Methodology of Effects Likely / Significant

Assessment of On-Site Point Source Emissions

11.13 The following methodology will be carried out to assess effects associated with on-site point source emissions (energy plant such as gas fired boilers and the flare):

- Detailed dispersion modelling will be undertaken using either ADMS or AERMOD to predict emissions from any on-site emission sources, using emissions data provided by the operator¹⁶³ or where unavailable from the operator, emissions limits set out in relevant policy and guidance such as the Industrial Emission Directive (IED)¹⁶⁴ and the Medium Combustion Plant Directive (MCP)¹⁶⁵. All

¹⁶¹ Traffic data will be screened against currently available screening criteria to determine if there is a risk of significant effects and whether detailed assessment needs to be undertaken in relation to either human or ecological receptors.

¹⁶² The process is largely a closed loop system and therefore fugitive emissions are unlikely but these will be considered to ensure any potential fugitive source are identified).

¹⁶³ Emissions data will include location, height and diameter of emission stacks, discharge temperature (°C) and efflux velocity (m/s), rate of emissions of each pollutant (g/s or mg/m³), provided at reference or actual conditions.

¹⁶⁴ Directive 2010/75/EU of the European Parliament and of the Council, 2010 No. 75.

¹⁶⁵ Directive 2015/2193/EU of the European Parliament and of the Council, 2015 No. 2193.

dispersion modelling will be undertaken in conjunction with those modelling works completed as part of the permitting application process¹⁶⁶, as set out within **Chapter 2**;

- The assessment will predict emissions of NO_x, PM₁₀, PM_{2.5} and where considered relevant, volatile organic compounds (VOC's), heavy metals, PAH and any other emissions of relevance;
- The assessment will consider impacts/effects at human receptors within Port Talbot and nationally designated ecological receptors (SSSI, LNR, NNR) within 2km and internationally designated ecological receptors (SAC, RAMSAR, SPA) within 10 km of the Site. A review of local ecological receptors has identified the Kenfig, Crymlyn Bog and Cefn Cribwr SAC's within 10km of the Site;
- Predicted impacts/effects will be assessed against relevant UK air quality objectives set within the UK Air Quality Strategy¹⁶⁷ for the protection of human health and vegetation and relevant critical levels and loads related to the identified ecological sites as set out on the Air Pollution Information System (APIS)¹⁶⁸. For other relevant pollutants not covered by the above appropriate emission limits will be identified from relevant policy and guidance to assess significance of effects;
- The assessment of impacts/effects to sensitive receptors would be determined using guidance set out within CIEEM and IAQM guidance on the assessment of impacts on designated nature conservation sites¹⁶⁹ and the Defra guidance for environmental permits¹⁷⁰, taking into account the sensitivity of the receptors (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large medium, small or negligible). This will determine the level of effect on a scale of major, moderate, minor and negligible, based on professional judgement; and
- Where significant effects are identified appropriate mitigation will be identified to reduce emissions.

Assessment of Transport Emissions

11.14 The following methodology for assessment of transport emissions is proposed:

¹⁶⁶ As part of the permitting application process consultation with Natural Resources Wales (NRW) will be undertaken and modelling requirements, methodology and assumptions will be agreed.

¹⁶⁷ Defra (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Norwich: HMSO.

¹⁶⁸ Air Pollution Information System. Available at: <http://www.apis.ac.uk/>

¹⁶⁹ IAQM (2020, May). A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites.

¹⁷⁰ Environment Agency and Defra (2022). Air emissions risk assessment for your environmental permit. Available at: <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit>

- The assessment of traffic impacts will be based on the guidance set out within the Environmental Protection UK (EPUK) and IAQM Air Quality Planning guidance¹⁷¹ and the Defra Local Air Quality Management Technical Guidance (LAQM.TG16)¹⁷²;
- Trip generation data¹⁷³ will be screened against the criteria set out within the EPUK & IAQM planning guidance for assessment on human receptors, with those road links experiencing a change in daily trips during construction or operation exceeding the following being included within the assessment:
 - More than 100 daily light duty vehicles (LDV) trips within or adjacent to an AQMA, more than 500 daily trips elsewhere;
 - More than 25 daily heavy duty vehicle (HDV) trips within or adjacent to an AQMA, more than 100 daily trips elsewhere;
- Trip generation data will be screened against the following criteria in accordance with the IAQM guidance on the assessment of impacts on designated nature conservation sites to identify 'affected' roads within 200m of identified ecological receptors (international and national designated ecological sites):
 - An increase in traffic flows of >1,000 total annual average daily traffic (AADT) and/or >200 HDV AADT (when considering flows in combination with other committed development);
 - (where committed development traffic is not available) an increase in development traffic along of >50 total AADT and/or >10 HDV AADT;
- Where the above screening criteria for the assessment of either human or ecological receptors is exceeded, detailed dispersion modelling will be carried out using the ADMS Roads dispersion model (Version 5.1, September 2020) to predict traffic related emissions of NO₂, PM₁₀, PM_{2.5} and Ammonia (NH₃) (for impacts on ecological sites);
- The model will use the latest emission factors set out within the DEFRA emissions factor toolkit published in November 2020 (EFT2020_V11)¹⁷⁴. Appropriate future year emission factors will be agreed with NPTCBC;
- The model will be used to predict emissions relating to the following scenarios:
 - 2022 baseline (existing) scenario for model verification and baseline assessment;

¹⁷¹ EPUK & IAQM (2017). Land-Use Planning & Development Control: Planning for Air Quality.

¹⁷² Defra (2018) Local Air Quality Management Technical Guidance (TG16).

¹⁷³ To be provided by the SCP (transport consultants).

¹⁷⁴ Defra (2021). Emissions Factors Toolkit, Available at: <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/>

- Future year (2026) baseline scenario (to include trips relating to other committed developments);
- Future year (2026) with development scenario;
- Model verification will be carried out against local monitoring data from sites within Port Talbot according to the guidance set out within DEFRA Local Air Quality Management Technical Guidance Note 2016 (LAQM.TG(22))¹⁷⁵. As there is sufficient data available no additional monitoring is considered necessary;
- A review of non-road transport sources (shipping movements) associated with the Proposed Scheme will be carried out. It is considered unlikely that the number of movements associated with these sources will be considered significant in air quality terms therefore it is anticipated that the assessment will be limited to a qualitative assessment based on the screening approach for shipping emission sources as set out in the LAQM.TG(22); and
- The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will draw on the significance criteria set out within the EPUK & IAQM planning guidance and the IAQM guidance on the assessment of impacts at designated sites and will be determined through professional judgment.

Assessment of On-site Fugitive Emissions

11.15 The assessment of on-site fugitive emissions will include the following:

- A full review of on-site operations to determine the presence of fugitive emissions and the potential pollutants that may be emitted. Consideration will also be given to any specific emissions patterns such as times of emittance and length of period emittance may occur;
- Identify the location of any potentially significant emission sources and consider the separation distances between source and receptor (human receptors in the locale);
- Review local meteorological data to determine the prevailing whether conditions in the vicinity of the Site; and
- Determine the risk, qualitatively, of significant effects based on a source-receptor-pathway approach, taking account of the sensitivity of the receptor (on a scale of high, medium, low and negligible), the expected magnitude of emissions (on a scale of large, medium, small or negligible) to determine the level of effect on a scale of major, moderate, minor and negligible, using professional judgement.

¹⁷⁵ DEFRA (2022). Local Air Quality Management Technical Guidance (TG22).

Limitations and Assumptions

11.16 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- Air quality dispersion modelling has inherent limitations and areas of uncertainty including:
 - Future forecasts of traffic data used in the model;
 - Future emissions data associated with traffic data;
 - Simplifications in model algorithms and empirical relationships that are used to simulate complex physical and chemical processes in the atmosphere;
 - Future forecasts of background concentrations;
 - Meteorological data;
- It is assumed that data provided for input into the modelling assessment relating to on-site emission sources and traffic data is as accurate as possible and is based on corrected assessment processes and surveys where relevant;
- The scope of the assessment is based on currently available information regarding the proposed processes. As and when further detail or information is available, the scope of works will be re-appraised and amended in light of any additional information where necessary.

12. Noise and Vibration

Site Terminology

- 12.1 As outlined in **Chapter 2, 3 and 4**, the Site is split into a number of parcels/zones (**Figure 4.2**). This Chapter refers to both the Site as a whole, and individual parcels/zones. The individual parcels are referred to as follows:
- Primary parcel of land for the location of the proposed production facility (approximately 9.1ha), comprising bare land adjacent to Phoenix Wharf (Port Talbot) (referred to as the '*Production Development Zone [PDZ]*');
 - A discrete parcel of land located within the wider Port Talbot at the eastern boundary of Phoenix Wharf (approximately 2.6ha) (referred to as '*Temporary Construction Area*');
 - 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 marine environment of Phoenix Wharf, located to the north of the PDZ and the unnamed port road (referred to as the '*Phoenix Wharf Marine Unloading/Loading Facility*').
- 12.2 Note that where primary and tertiary mitigation is referred to throughout this Chapter, a referencing system has been used (e.g. **[P1]**, **[T1]**, etc) to link this to the summary of the mitigation in the Preliminary EMP in **Appendix 2.1**.

Technical Baseline

- 12.3 To the north, west and east, there are residential receptors beyond other commercial/industrial sites.
- 12.4 A technical study area for noise of a 1.3km radius from the Site is proposed which encompasses nearest residential receptors in each direction, as shown in **Figure 12.1**. The closest residential receptors in each direction from the Site, as shown in **Figure 12.1**, are indicated as dwellings on Mariners Point approximately 890m to the west (SSR1, Position A), dwellings on Green Park Street approximately 1050m to the north (SS4, Position B) and dwellings on Lower West End approximately 575m to the east (SSR8, Position C).
- 12.5 A baseline noise survey (**Appendix 12.1**) has been completed. Existing noise levels around the Proposed Scheme are dominated by road traffic and existing industrial sources.

Proposed Scope of Assessment

- 12.6 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Site, surrounding area and the Proposed Scheme (**Chapter 4**).

Where environmental effects are considered unlikely to be significant, an appropriate evidence base has been provided to justify the 'scoping out' of these effects ensuring the EIA and ES only assess those effects considered 'likely' and significant.

Effects Unlikely / Not Significant

- 12.7 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the Preliminary Environmental Management Plan (EMP) provided in **Appendix 2.1**.

Operational noise [Mumbles – 13km west]

- 12.8 During consultation (**Appendix 1.1**), Red Twin Limited suggested an assessment of operational noise to receptors in Mumbles, approximately 13km west of Site across the water. Water is an acoustically reflective surface, similar to the intervening hard ground and water which lies between the Proposed Scheme and nearest sensitive receptors (which lie less than 1km away).
- 12.9 The aim of the Proposed Scheme is to control noise to within reasonable levels at the critical nearest sensitive receptors (less than 1km away), and in doing so, those further away (and in this case, much further away) remain protected with significantly lower impacts.
- 12.10 Assessing operational noise effects to the nearest sensitive receptors is therefore indicated a robust approach and it is intended to scope out an assessment of operational noise to Mumbles.

Operational road traffic noise [surrounding residential receptors]

- 12.11 As noted within **Chapter 5, Paragraph 115 – 154**, operational traffic generated by the Proposed Scheme is considered to not be significant and any predicted changes in the movements of vehicles on the local highways network is considered to be less than that arising during the construction stage of the Proposed Scheme, which were estimated within **Table 5.5**. As is evident from **Table 5.5** the percentage change in traffic, over existing 2022 baseline traffic flows, are less than 5% on all road links, with the exception of West Gate Site Access, where an approximate 18% changes was identified. Overall when considering these changes in traffic flows, all would fall below the generally applied 25% threshold (well below for the majority), used to define the instance a notable change in noise levels is perceived by a receptor (1dB). On this basis, it is considered that noise arising from operational traffic is not considered to give rise to significant noise impacts at nearby noise sensitive receptors. Based on the above rationale, noise from operational road traffic is unlikely to be significant and will not be considered further in the EIA or reported in the ES.
- 12.12 Construction traffic noise however is a component of the construction noise and would therefore remain scoped in as part of the construction noise assessment.

Vibration from construction activities [surrounding residential receptors]

- 12.13 Specific construction methodology for the Proposed Scheme is unknown at this stage however high sources of vibration associated with construction techniques typically include piling and dynamic consolidation.
- 12.14 Tables in Annex D of British Standard 5228-2¹⁷⁶ indicate that at distances of the Proposed Scheme to nearest residential receptors (dwellings on Lower West End approximately 575m to the east), levels of vibration are indicated to fall well below structural damage thresholds.
- 12.15 In terms of human effects, at 1.0 mm.s⁻¹, BS 5228-2 states *“it is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents”* and at 10 mm.s⁻¹ *“Vibration is likely to be intolerable for any more than a very brief exposure to this level.”*
- 12.16 Annex E of BS 5228-2 provides empirical predictors for groundborne vibration arising from mechanized construction works for parameter ranges in the region of 100m.
- 12.17 For percussive piling, an estimate to 111m distance (max range of empirical predictor) of 0.6-1.9mm.s⁻¹ for pile not at refusal and 3.1mm.s⁻¹ for pile at refusal. This is based on worst case pile hammer energy of 85kJ and 20m toe depth.
- 12.18 For dynamic compaction, an estimate to 100m distance (max range of empirical predictor) of 3.3mm.s⁻¹ for 2MJ energy per blow.
- 12.19 As the nearest receptors are beyond the distances identified above (i.e., more than 4 times), temporary sources of vibration during the construction stage are considered unlikely to be significant and will not be considered further in the EIA or reported in the ES.

Effects Likely / Significant

- 12.20 **Table 12.2** outlines the effects (and associated receptor[s]) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

Table 12.1: Potential Likely Significant Effects and Sensitive Receptors

Effect	Receptor(s)	Applicable Stage(s)
Generation of noise from construction activities and construction traffic	Human - Surrounding residential and commercial premises	Construction
Generation of noise from plant during operation	Human – Surrounding residential and commercial premises	Operation

¹⁷⁶ British Standards Institute (2014). BS 5228-2:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.

12.21 It is understood from internal discussions with RPS (Ecological Consultants) that preliminary ecological investigations indicate that overwintering birds may be present at Port Talbot Docks (**Chapter 7**). Overwintering birds may be susceptible to disturbance arising from operational noise, however, given the nature of the effect such receptors will not be considered within the Noise and Vibration assessment, instead being assessed appropriately as part of Terrestrial Ecology assessment. Nonetheless, noise modelling work undertaken (see **Paragraph 12.21 – 12.23**) will be provided to the ecology team to assist them in making a judgement of this effect.

Assessment Methodology of Effects Likely / Significant

12.22 Baseline noise conditions have been determined with week-long unattended monitoring at Positions A-C identified in **Figure 12.1**, as well as a number of manned measurements during both daytime and night-time periods near sensitive receptor locations. The baseline conditions are set out within **Appendix 12.1**. To summarise:

- Baseline noise monitoring has been undertaken in accordance with British Standard 7445-1:2003¹⁷⁷ and British Standard 4142:2014+A1:2019¹⁷⁸;
- Parameters including L_{Aeq} , $L_{Amax,F}$ and background L_{A90} were logged with 100ms data and continuous audio, which allows for detailed post-analysis of data;
- Meteorological conditions (wind direction, wind speed, temperature, rainfall etc.) were logged continuously at 5 minute intervals using a weather station at a secure location at Port Talbot Docks; and
- Baseline daytime $L_{A90,1hr}$ and night-time $L_{A90,15mins}$ background sound levels have been determined from the data in line with guidance in BS 4142 for use in the operational impact assessment.

12.23 Baseline ambient $L_{Aeq,1hr}$ levels have been determined for use in the construction noise impact assessment. The outline construction noise assessment will be undertaken in line with British Standard 5228-1:2009+A1:2014¹⁷⁹, as follows:

- A three-dimensional noise map model will be plotted predicting construction noise to identified receptors for each main phase of construction;
- The noise map will be calibrated using manufacturer's plant noise data, database figures in Annex C of BS 5228-1 and available information on construction methods provided by the Applicant;

¹⁷⁷ British Standards Institute (2013) BS 7445-1:2003 'Description and measurement of environmental noise — Part 1: Guide to quantities and procedures

¹⁷⁸ British Standards Institute (2019) BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

¹⁷⁹ British Standards Institute (2014) BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise'

- Noise map plots will be generated showing noise to the surrounding area, taking losses for distance and screening from site topography and buildings/barriers in accordance with BS 5228-1 methodology;
- Results will then be compared with the proposed project construction noise criteria and assessed in accordance with BS 5228-1; and
- The assessment will also consider off-site activities such as construction traffic and deliveries using guidance in Calculation of Road Traffic Noise (CRTN¹⁸⁰) and Design Manual for Roads and Bridges (DMRB¹⁸¹).

12.24 The operational noise assessment will be undertaken in line with British Standard 4142:2014+A1:2019, with reference made to other relevant documents where applicable (Planning Policy Wales¹⁸², TAN 11P¹⁸³, Welsh Assembly Government's Noise and Soundscape Action Plan¹⁸⁴, British Standard 8233:2014¹⁸⁵, World Health Organisation guidance¹⁸⁶, NPT Local Development Plan¹⁸⁷), as follows:

- A three-dimensional noise map model will be plotted predicting resultant noise levels from the proposed operational noise to identified receptors. The model will include production buildings, external plant and vehicle movements (including ship);
- The noise map will be calibrated using manufacturer's plant noise data (where available) and in-house database figures. Noise map plots will be generated showing noise emissions to surrounding receptors, taking losses for distance and screening from site topography and buildings/barriers in accordance with ISO 9613-2:1996¹⁸⁸; and
- Results will then be compared with the proposed project noise criteria and assessed in accordance with British Standard 4142:2014.

12.25 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgment.

¹⁸⁰ Department of Transport Welsh Office (1988) Calculation of Road Traffic Noise (CRTN)

¹⁸¹ Highways Agency (2020) The Design Manual for Roads and Bridges (DMRB) LA111

¹⁸² Welsh Government (2021) Planning Policy Wales Edition 11 (PPW)

¹⁸³ Welsh Office (1997) Technical Advice Note (TAN) 11: Noise

¹⁸⁴ Welsh Government (2018) Noise and soundscape action plan

¹⁸⁵ British Standards Institute (2014) BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'

¹⁸⁶ World Health Organisation (1999) Guidelines for Community Noise

¹⁸⁷ Neath Port Talbot CBC (2016) Adopted Local Development Plan (2011-2026)

¹⁸⁸ International Organization for Standardization (1996) ISO 9613-2:1996 – Acoustics; Attenuation of sound during propagation outdoors – Part 2: General method of calculation

12.26 An ES chapter will be prepared with an operational noise assessment report provided in the form of a technical appendix.

Limitations and Assumptions

12.27 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- In the absence of specific construction methods at this stage, it has been assumed that high level sources of vibration associated with construction would be limited to any piling and dynamic consolidation works;
- The likely impact of vibration has been estimated using empirical prediction methods from Annex E of BS 5228-1:2009+A1:2014 and approximate distances to sensitive receptors. This is considered reasonable at this stage; and
- Meteorological conditions during the latter part of the weeklong baseline noise monitoring were not conducive to noise monitoring and therefore limits are to be set based on data gathered from the first four days of monitoring.
- Overall operational noise from multiple sources (i.e. a combination of plant and/or traffic movements) is not considered because the assessment methods are different (traffic assessed using DMRB and looking at change in levels, whereas operational noise is assessed under BS 4142 and looks at rating noise levels) and once the HGVs/tankers pull on to the Site, they become part of the operational noise assessment under BS 4142 and are included in the model (just not on public roads).

13. Marine Ecology

Site Terminology

- 13.1 As outlined in **Chapter 2, 3 and 4**, the Site is split into a number of parcels/zones (**Figure 4.2**). This Chapter refers to both the Site as a whole, and individual parcels/zones. The individual parcels are referred to as follows:
- Primary parcel of land for the location of the proposed production facility (approximately 9.1ha), comprising bare land adjacent to Phoenix Wharf (Port Talbot) (referred to as the '*Production Development Zone [PDZ]*');
 - A discrete parcel of land located within the wider Port Talbot at the eastern boundary of Phoenix Wharf (approximately 2.6ha) (referred to as '*Temporary Construction Area*');
 - 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 marine environment of Phoenix Wharf, located to the north of the PDZ and the unnamed port road (referred to as the '*Phoenix Wharf Marine Unloading/Loading Facility*').
- 13.2 Note that where primary and tertiary mitigation is referred to throughout this Chapter, a referencing system has been used (e.g. **[P1]**, **[T1]**, etc) to link this to the summary of the mitigation in the Preliminary EMP in **Appendix 2.1**.

Technical Baseline

- 13.3 The technical baseline is informed by a site-specific marine ecology survey which was carried out in September 2022¹⁸⁹. Imagery was acquired from eleven stations using Drop-down Video (DDV) to provide a baseline of Phoenix Wharf within the EIA Study Area Boundary, including information on the type of substrate present and the presence/absence of any associated fauna/flora. The methodology adopted, study area and results of the survey are provided in full within **Appendix 13.1**.
- 13.4 In line with CIEEM guidelines¹⁹⁰ potential Zones of Influence (Zoi) have been defined for each receptor and this has been used to set the boundary of the study area as outlined in **Table 13.1**. The geographic extent of potential impacts varies for different receptors based on their sensitivity and the potential for effects relating to the Proposed

¹⁸⁹ ABPmer, (2022). *P&C Project Dragon - Marine Ecology, Benthic survey report*, ABPmer Report No. R.4037. A report produced by ABPmer for LanzaTech UK Ltd, December 2022.

¹⁹⁰ CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland (Terrestrial, Freshwater, Coastal and Marine)*. Available at: <https://www.cieem.net/data/files/ECIA%20Guidelines.pdf> [Accessed 2 February 2023].

Scheme. This only considers impact pathways to marine receptors and therefore the Study Areas may differ to those defined for terrestrial ecology receptors.

Table 13.1: Study Area for marine ecology receptors

Marine Ecological Receptors	Maximum Zone of Influence from the Site Boundary
Statutory designated European sites (including faunal species included as part of the designation) with marine features, e.g. SAC	2km
Statutory Nationally designated sites (including faunal species included as part of the designation), including SSSIs and National Nature Reserves (NNRs) with marine features and Marine Conservation Zones (MCZs)	2km
Non-statutory designated sites - SINC - with marine features	2km
Protected and or notable marine species and habitats ¹⁹¹	Within Port Talbot Docks
Marine Non-native Invasive species	Within Port Talbot Docks

Designated Sites

- 13.5 The closest internationally protected site with marine ecology features is Kenfig SAC which is located 5.3km south of the PDZ. The Kenfig Pool and Dunes National Nature Reserve is located in the same area as the Kenfig SAC.
- 13.6 The closest nationally designated sites with marine features are Margam Moor SSSI (approximately 3.8km south of the PDZ which is an extensive area of coastal levels. Crymlyn Burrows SSSI is approximately 6km northwest of the PDZ.
- 13.7 There are two non-statutory Sites of Interest to Nature Conservation (SINC) within 2km of the PDZ which have marine ecological features:
 - Lower River Afan Estuary SINC - a 6.63ha site comprising coastal saltmarsh and intertidal mudflats located 100-130m north; and
 - Little Warren SINC – a 1.47ha site consisting of coastal sand-dunes with associated slacks, seepages, grassland and scrub habitat, 200m to the north.
- 13.8 There are no Marine Conservation Zones designated under the Marine and Coastal Access Act 2009 within 5km of the Proposed Scheme.

¹⁹¹ Derived from Welsh Government. *DataMapWales*. Available from: <https://datamap.gov.wales/maps> [Accessed 2 February 2023].

The Marine Environment

13.9 To provide context to the marine ecological baseline the following aspects are noted in relation to the wider marine environment:

- In terms of physical processes the Old Dock is an enclosed system which is connected to the Afon Afan via lock gates. There is also connectivity between the lower reaches of the Afon Afan and the Old Dock via a dock feeder channel which is used to maintain water levels in the dock. The lock gates open infrequently allowing transit of an average of eight vessels per month.
- The 'Old Dock' at Phoenix Wharf is located within the 'Afan Estuary Incl Docks' transitional WFD water body (ID: GB541005800600)¹⁹². This water body is heavily modified and has an overall status of 'moderate' (moderate ecological status and high chemical status¹⁹³). The 'Afan Estuary Incl Docks' water body covers the dock area and the lower reaches of the Afon Afan.
- Despite the water body being classified in WFD terms as transitional (estuarine) the dock is predominantly freshwater¹⁹⁴. This is recognised by Associated British Ports (ABP) (the port operator) who have confirmed that the water density is on average 1,000 kg/m³¹⁹⁵. Saltwater intrusion may occur when the lock gates are open, however, this occurs infrequently. The water within the dock is used by the neighbouring steel works¹⁹⁶, who use it as a coolant. The water, when recycled back into the dock, is typically at least 3°C warmer, than neighbouring bodies of water¹⁹⁴.
- The surface substrate observed during the DDV survey¹⁸⁹ comprised of fine muddy sediment at six of the stations, rocky substrate at four of the stations, and one station which consisted of mixed substrate with a combination of fine muddy sediment and loose rock. At a single location timber debris was identified, which correlated with the disused timber wharf just north of the PDZ.

Benthic subtidal and intertidal ecology

13.10 There are no records of protected habitats or species listed under Section 7 of The Environment (Wales) Act 2016 within Port Talbot Docks¹⁹⁷.

13.11 As described in **Appendix 13.1** the DDV survey¹⁸⁹ showed that the Site was largely absent of aquatic life above the bed with flora and fauna only observed in three out of

¹⁹² Natural Resources Wales (NRW) (2022). *Water Watch Wales*. Available at:

<https://waterwatchwales.naturalresourceswales.gov.uk/en/> [Accessed 31 January 2023].

¹⁹³ The reason for not achieving good status is listed as being due to the 'hydrological regime'¹⁹².

¹⁹⁴ Holmes, S. Callaway, R. (2021). Fouling communities and non-native species within five ports along the Bristol Channel, South Wales, UK. *Estuarine, Coastal and Shelf Science*. [Online] 452. Available from: <https://www.sciencedirect.com/science/article/pii/S0272771421001487>. [Accessed 31 October 2022]

¹⁹⁵ ABP (2021). *Acceptance Table - Port Talbot Old Dock - January 2021*. [Online] January 2021. Available from: <https://www.southwalesports.co.uk/admin/content/files/Port%20Talbot%20Old%20Dock%20%20Acceptance%20Table%20-January%202021.pdf>. [Accessed 3 November 2022]

¹⁹⁶ Tata Steel (2021). *Sustainable performance at our sites: Port Talbot*. [Online]. Available from: <https://www.tatasteeleurope.com/construction/sustainability/performance-at-our-sites/port-talbot>. [Accessed 4 November 2022].

¹⁹⁷ Welsh Government. *DataMapWales*. Available from: <https://datamap.gov.wales/maps> [Accessed 2 February 2023].

the eleven stations sampled at sites where rock was present. The survey did not record the presence of any species or habitats that are recognised as protected or as being at risk.

- 13.12 A review of literature suggests that the wider Old Dock area may support other benthic species, however there are no records of protected species or habitats within the Old Dock¹⁹⁷. Of note is the presence of the dark false mussel (*Mytilopsis leucophaeata*) which is an invasive non-native species which is known to occur in Port Talbot Docks¹⁹⁸.

Fish and shellfish

- 13.13 A desk-based review suggests the presence of a fish community which reflects the freshwater/brackish conditions of the dock with species present including bass (*Dicentrarchus labrax*), mullet (*Chelon* sp.), sea/brown trout (*Salmo trutta*), bream (*Abramis brama*), pike (*Esox lucius*), perch (*Perca fluviatilis*), roach (*Rutilus* sp.), rudd (*Scardinius erythrophthalmus*), tench (*Tinca tinca*) and the critically endangered European Eel (*Anguilla anguilla*)¹⁹⁹.
- 13.14 The closest designated Shellfish Waters is Swansea Bay (East) which covers a large part of Swansea Bay and borders the mouth of the Afon Afan, approximately 900m from the lock gate at the entrance to Port Talbot Docks²⁰⁰.

Ornithology

- 13.15 Port Talbot Docks has previously been surveyed by the British Trust for Ornithology with annual visits between 2009 and 2016²⁰¹. Surveys recorded the following species most frequently (5-year mean peak 2012/13 - 2016/17, peak month shown in brackets):
- Herring Gull (217, December);
 - Black-headed Gull (107, December);
 - Lesser Black-backed Gull (122, July);
 - Common Gull (51, December); and
 - Canada Goose (25, November).
- 13.16 Other species recorded in the wider area include Peregrine, Marsh Harrier and Grey Heron.

¹⁹⁸ Oliver, P.G. (2015). Old shell collection casts new light on an alien species. The dark false mussel (*Mytilopsis leucophaeata*) may have been in Britain as early as 1800. *Journal of Conchology*, 42(1), pp.63-66.

¹⁹⁹ Angling Trust (2020) Port Talbot Docks. [Online]. Available from: <https://fishingwales.net/fishing-locations/port-talbot-docks>. [Accessed: 01 November 2022]

²⁰⁰ Natural Resources Wales (2016). *Shellfish Water Protected Areas*. Available at: <https://cdn.cyfoethnaturiol.cymru/media/676244/shellfish-water-protected-areas-wales-2016-8-feb-002.pdf?mode=pad&rnd=131596369410000000> [Accessed 31 January 2023].

²⁰¹ British Trust for Ornithology (2022). *WeBS report online - Port Talbot Old Docks*. Available from: <https://app.bto.org/webs-reporting/numbers.jsp?locid=LOC645421> [Accessed 31 January 2023].

Proposed Scope of Assessment

- 13.17 The below sets out the proposed scope of assessment based on an understanding of the characteristics of the Site, surrounding area and the Proposed Scheme (**Chapter 4**). Consideration has been given to both construction and operational phases. Where environmental effects are considered unlikely to be significant, an appropriate evidence base has been provided to justify the ‘scoping out’ of these effects ensuring the EIA and ES only assess those effects considered ‘likely’ and significant.

Effects Unlikely / Not Significant

- 13.18 Based on the technical baseline and understanding of the Proposed Scheme (**Chapter 4**), the following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within the Preliminary Environmental Management Plan (EMP) provided in **Appendix 2.1**.

Direct or indirect loss of habitats and benthic species

- 13.19 As identified with **Chapter 4 a**, new jetty will be constructed for the proposed operation of the Proposed Scheme, as well as a temporary jetty for the purposes of construction. The permanent jetty is expected to be piled and banks potentially strengthened.
- 13.20 During construction there would be a permanent footprint of the works on the seabed in the area underneath the piles and potentially a change in the estuary bank (although it is noted that much of the bank already comprises man-made structures). The habitat that would be lost within the footprint is not protected and based on the DDV survey is likely to support a relatively impoverished benthic community. It is also considered unlikely that the habitat is important in supporting the wider ecological community or as a prey resource. If works are carried out from the water, e.g. from a jack-up barge, the footprint of plant on the seabed would be temporary. Given the extent of loss and the habitat quality, this effect is unlikely to be significant.
- 13.21 The piling works will result in mobilisation of sediment which will resettle on the seabed, however, the amount of sediment is likely to be too small to result in smothering of benthic species or to result in any indirect habitat loss or change. Therefore, direct or indirect loss of habitats and species is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Loss or damage of habitats from changes in physical processes

- 13.22 The new piles required to reinforce the jetty will cause little deviation of the present profile of the quayside. Therefore, during operation of the jetty, there are no anticipated long-term changes to hydrodynamics or wave patterns within Port Talbot Docks. In addition, piling will only cause highly localised and temporary changes in suspended sediment concentrations and negligible changes in sedimentation patterns. Therefore, loss or damage of habitats from changes in physical processes is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Impacts on habitats and species from a deterioration in water quality from seabed disturbance

- 13.23 Piling works during construction will result in a temporary increase in suspended sediment concentration but given the limited nature of works the effects would be localised and would rapidly return to baseline conditions whether they are carried out from land or from the water. The works do not involve dredging or removal of sediments and there is therefore no pathway to an effect on water quality from the release of sediment-bound contaminants.
- 13.24 In relation to the WFD it is considered that there is no potential for the works to cause deterioration in the status of any quality elements in the water body in which the activity takes place (the 'Afan Estuary Incl Docks') nor would the works prevent this, or any other water body from achieving WFD status objectives²⁰².
- 13.25 Therefore, impacts on habitats and species from a deterioration in water quality from seabed disturbance are not considered to be significant and will not be considered further in the EIA or reported in the ES.

Impacts on habitats and species from a deterioration in water quality from discharges

- 13.26 As described in **Chapter 4** measures will be put in place to control site surface water during construction. A site drainage strategy will prevent uncontrolled runoff and water will be treated where necessary. In addition the Proposed Scheme will include pollution prevention and control measures to mitigate the risk of acute water pollution from spillage events **[P3]**.
- 13.27 During operation there may be a need to discharge water to the Afan Estuary at Phoenix Wharf. Discharge of process effluent that is not directed to the on-site wastewater treatment works or re-used in site operations, and the treatment of foul drainage, will be managed by DCWW consenting requirements.
- 13.28 Given the control measures for discharge to surface waters during construction and operation stages the potential for effects on water quality is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Disturbance of benthic invertebrates through underwater noise and vibration

- 13.29 During construction piling may be required to construct a new jetty which would result in an increase in underwater noise and vibration. Scientific understanding of the potential effects of underwater noise on invertebrates is relatively underdeveloped²⁰³ however there is limited research to suggest that exposure to near-field low-frequency sound may cause anatomical damage²⁰⁴. Observed behavioural reactions of benthic invertebrates includes variation in response of bivalves and decapods, although it considered that the impacts would have to be of a high magnitude in close proximity to

²⁰² A WFD Compliance Assessment would need to be carried out to support this statement as part of any proposed Marine Licence, if required.

²⁰³ Hawkins, A. D., Pembroke, A., & Popper, A., (2015). Information gaps in understanding the effects of noise on fishes and invertebrates. *Reviews in Fish Biology and Fisheries*, 25: 39–64.

²⁰⁴ Carrol, A.G., Przeslawski, R., Duncan, A., Gunning, M. and Bruce B. (2017). A critical review of the potential impacts of marine seismic surveys on fish & invertebrates. *Marine Pollution Bulletin* 114:9-24.

benthic communities to see any measurable effects. The benthic community in the vicinity of the Proposed Scheme does not comprise significant numbers of benthic invertebrates and given the physical extent and nature of the works it is considered that disturbance of benthic invertebrates through underwater noise and vibration is not considered significant and will not be considered further in the EIA or reported in the ES.

Disturbance of species from airborne noise and visual disturbance

- 13.30 During construction the works, which include piling on land and in Port Talbot Docks, will result in an increase in airborne noise and visual disturbance within the Port Talbot Docks. However, the area surrounding Phoenix Wharf has limited extent of habitats suitable for feeding and roosting and a high level of existing operational noise disturbance stimuli. The piling works for the jetty are approximately 1.2km from the nearest intertidal area that is commonly utilised by coastal waterbirds for feeding. Any birds that are present around Port Talbot Docks are likely to be habituated to a level of disturbance by people and equipment. Considering the species present, the absence of supporting habitat in the immediate vicinity of the works, and the scale and duration of the works, the effects are anticipated to be negligible. Therefore, disturbance of species from airborne noise and visual disturbance is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Biological disturbance due to potential introduction and spread of non-native species

- 13.31 As with most activities which occur in aquatic environments, there is a potential risk that the proposed works could result in the introduction or spread of invasive non-native species (INNS). During construction this could include the use of plant and machinery which have operated in differing water bodies, and also the addition of new hard substratum which could be colonised by aquatic INNS. To minimise the risk during construction of the proposed works, biosecurity procedures will be followed and captured within a EMP. This will outline the requirements for marine construction equipment and plant sourced from outside the area, including a jack-up barge if used, to be checked for INNS and cleaned prior entering the water at Port Talbot Docks (e.g. following the 'Check, Clean and Dry' method²⁰⁵ [T2]. This procedure is repeated prior to equipment/plant leaving site.
- 13.32 With the inclusion of best practice measures the risk of introduction of INNS is low and the potential effect is considered to be negligible. Therefore, biological disturbance due to potential introduction and spread of non-native species is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Effects Likely / Significant

- 13.33 **Table 13.2** outlines the effects (and associated receptors) that are considered to be likely and significant and therefore will be assessed within the EIA and reported in the ES.

²⁰⁵ RYA (Royal Yachting Association) (2023). *Advice on preventing the spread of invasive non-native species*. Available at: <https://www.rya.org.uk/knowledge/environment/invasive-non-native-species> (accessed 2 February 2023).

Table 13.2: Potential Likely Significant Effects and Sensitive Receptors

Effect	Receptor(s)	Applicable Stage(s)
Entrapment of fish during abstraction of water	Fish	Construction and Operation
Disturbance through underwater noise and vibration	Fish	Construction

Assessment Methodology of Effects Likely / Significant

13.34 The impact assessment will be carried out in line with CIEEM guidelines²⁰⁶, and will be prepared alongside the ES which will consider all effects on scoped in marine ecology receptors, focusing on those effects where there is potential for a significant effect.

13.35 The impact assessment methodology will follow the overall EIA methodology as outlined in **Chapter 2** and will be carried out in line with CIEEM guidelines²⁰⁶ and the Institute of Environmental Management and Assessment (IEMA) guidelines²⁰⁷.

13.36 The effect of the proposed works on the relevant environmental receptors will be assessed by describing in turn: the baseline environmental conditions of each receiving environment; the 'impact pathway(s)' by which the receptors could be affected; the significance of the impacts occurring; and the measures to mitigate for significant adverse impacts where these are predicted. The impact assessment comprises the following stages:

- **Stage 1 – Identify receptors and changes.** The receptors likely to be affected and the potential impact pathways are identified.
- **Stage 2 – Understand change and sensitivity.** Consideration of the scale of the impacts via the impact pathways which depends upon a range of factors including:
 - Magnitude (local/strategic): Spatial extent (small/large scale); duration (temporary/short/intermediate/long-term); Frequency (routine/intermittent/occasional/rare);
 - Reversibility;
 - Probability of occurrence;

²⁰⁶ CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland (Terrestrial, Freshwater, Coastal and Marine)*. Available at: <https://www.cieem.net/data/files/ECIA%20Guidelines.pdf> [Accessed 2 February 2023].

²⁰⁷ IEMA (2016). *Environmental Impact Assessment Guide to: Delivering Quality Development*.

- The margins by which set values are exceeded (e.g. water quality standards);
 - The baseline conditions of the system;
 - Existing long-term trends and natural variability;
 - The sensitivity of the receptor (resistance/adaptability/recoverability);
 - The importance of the receptor (e.g. designated habitats and protected species); and
 - Confidence, or certainty, in the impact prediction
- **Stage 3 – Impact assessment.** To assess the significance of effects, the magnitude of the impact pathway and the probability of it occurring is evaluated to understand the exposure to change, and this is assessed against the sensitivity of a receptor/feature to understand its vulnerability. Finally, this is compared against the importance of a receptor/feature to generate a level of significance for effects resulting from each impact pathway. The levels of effect and the matrix which is used to guide the determination of significance is shown in **Table 2.2**. The matrix is a guide and the determination of significance is based on professional judgment. The assessment of impacts will consider primary and tertiary mitigation measures (i.e. those built into the Proposed Scheme) that help to avoid and reduce impacts and incorporate opportunities for ecological and biodiversity enhancement.
 - **Stage 4 – Impact management (mitigation).** The final stage is to identify any impacts that are found to be significant and require mitigation measures to reduce residual impacts, as far as possible, to environmentally acceptable levels. Mitigation to address significant impacts is classed as secondary (see definitions in **Chapter 2**). The mitigation hierarchy which, from the guidance on ecological impact assessment²⁰⁶, can be summarised as follows:
 - Seek to adopt options that avoid harm in the first instance;
 - Identify ways to minimise adverse effects that cannot be completely avoided;
 - Undertake compensation where there are significant residual adverse effects despite the mitigation proposed; and
 - Provide net benefits (for biodiversity) above requirements for avoidance, mitigation or compensation where relevant.

Limitations and Assumptions

13.37 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- Works to the jetty may be carried out from land or water.

- The works do not include dredging within the Old Dock.
- The project would not result in a notable change in the current operation of the lock gates at the dock entrance.
- Pending further information on abstraction requirements the need to collect baseline data for fish will be reviewed.

14. Methodology for the Assessment of Cumulative Effects

- 14.1 Cumulative effects comprise the combined effects of reasonably foreseeable human induced changes within a specific geographical area and over a certain period of time, and can be both direct and indirect. An assessment of the significance of cumulative effects needs to be undertaken in the context of the characteristics of the existing environment.
- 14.2 To accord with the EIA Regulations and best practice guidance, the following types of cumulative effects will be considered within the EIA:
- **Effect interactions:** different effects within the Proposed Scheme itself affecting the same receptor, either within the Site or in the local area; and
 - **In-combination effects:** effects with other project(s) planned in the wider area.

Assessment Methodology

- 14.3 At present, there is no widely accepted methodology or best practice for the assessment of cumulative effects although there are a number of guidance documents available. The following approach that will be adopted is based on previous experience at Turley, the types of receptors being assessed and the nature of the Proposed Scheme being considered.
- 14.4 The assessment will principally be a qualitative assessment based on the available information. For some environmental topics, quantitative data may be available (i.e. where modelling work is undertaken) facilitating a quantitative analysis of cumulative effects, which will be fully set out within the assessment within the ES. Where information is not available, assumptions will be made based on professional judgement and clearly stated alongside any uncertainty as part of the assessment.

Effect Interactions

- 14.5 The approach to the assessment of effect interactions considers the changes in baseline conditions at common sensitive receptors due to overlapping effects arising from the Proposed Scheme. The assessment will include an initial stage of evaluating all environmental effects associated with the Proposed Scheme, including those 'scoped out', and their categorisation into receptor groups to identify potential effect interactions at the receptor level. This will be done for both the construction and operational stages of the Proposed Scheme.
- 14.6 An overall qualitative assessment of the cumulative effect on the common sensitive receptors identified will then be made using professional judgement and informed by the technical information provided in the ES and supporting appendices where appropriate, as well as evidence set out within this EIA Scoping Report.

14.7 A qualitative evaluation at the receptor level will be undertaken and will consider the following: combined magnitude of change; sensitivity/value/importance of the receptor/receiving environment to change; or/and duration and reversibility of effect.

In-Combination Effects

14.8 Assessment of potential in-combination effects will be undertaken using the methodology outlined below.

Step 1: Identification of Projects for Consideration

14.9 In order to inform potential 'Approved Projects', a review of planning applications submitted to NPTCBC²⁰⁸ was undertaken (May 2023) in order to identify potential projects that could give rise to in-combination interactions with the Proposed Scheme. A review of the Planning Inspectorate Nationally Significant Infrastructure Project portal was also undertaken.

14.10 Applicable projects for consideration of in-combination effects were determined using the following criterion:

- Permitted application(s) submitted to NPTCBC from May 2017 onwards. It is anticipated that application(s) prior to this date will already have been built out (and therefore part of the baseline) and/or where a subsequent application(s) has been submitted this would be captured within the search dates;
- Permitted applications(s), either under construction or not yet implemented, unless already considered as part of the baseline scenario;
- Submitted applications(s) not yet determined but which have the potential to be determined prior to the planning determination of the Proposed Scheme (and thus become an 'Approved Project');
- The project being of a relevant scale: the threshold for consideration has been the Schedule 2 criteria in the EIA Regulations, at which there is a potential for 'likely significant effects' (however, it is recognised that this needs to be applied with caution); Schedule 1 projects and nationally significant infrastructure projects; and
- Applications within a 5km radius of the Site, with consideration given to projects on the periphery of this.

14.11 It is assumed that where projects have not been considered by NPTCBC as EIA development they do not give rise to significant environmental effects as they would have been 'screened' by NPTCBC at point of a request for an EIA Screening Opinion or upon receipt of a planning application. Nonetheless, as set out above, this criteria is applied with caution.

²⁰⁸ The planning portal for Bridge End County Borough Council and Swansea Council was also reviewed but discounted due to distance from the Proposed Scheme (i.e., being beyond 5km).

- 14.12 Utilising the above approach, the Approved Projects identified for consideration have been documented in **Table 14.1**, and are shown on **Figure 14.1**.
- 14.13 The above methodology was shared with NPTCBC in a Technical Note in November 2022 for their comment (**Appendix 14.1**). An informal response was received that NPTCBC were happy with the approach set out.
- 14.14 It should be noted that since the submission of the technical note with a initial search result, the more recent search undertaken in May 2023 led to the removal of a previously identified Approved Project. Swansea Bay Tidal Lagoon (Ref: P2014/0145) was original identified, however, it is understood that the DCO for the project, agreed by the UK Government in June 2015, has lapsed as its conditions hadn't been compiled with. As such, the Court of Appeal has also ruled that as work on the project did not commence within five years of receiving approval and the DCO is no longer valid (confirmed December 2022). On this basis, it will not be considered within the assessment of cumulative effects.
- 14.15 Prior to the submission of the EIA, the identified projects within **Table 14.1** an updated search for Approved Projects will be undertaken at 8 weeks prior to submission of the planning application so an as up to date in-combination assessment as possible is presented. This duration is considered the minimum timescale between identification of an Approved Project with sufficient information and ensuring this is considered in any modelling (i.e., visual analysis).
- 14.16 We have assumed that if there is a requirement for any other projects to be considered, these will be defined in advance of or as part of NPTCBC's EIA Scoping Opinion. This is to ensure there is sufficient time for them to be considered within any modelling that may underpin the assessments within the ES.

Table 14.1: Approved Projects Identified for In-Combination Assessment

ID	Planning Ref	Location	Description	Distance from Site	Status	EIA/ Not EIA
1	P2021/1255	Land West Of Junction 38 Of The M4 Port Talbot Margam SA13 2NU	Full planning application of the development of a metal processing facility totalling 28,500sq.m of floorspace comprising a powder processing plant (17,377sq.m), warehouse and store (5,428 sq.m) office building (1,442 sq.m), amenity building (776 sq.m), laboratory (200 sq.m), services building (470 sq.m), substation (107 sq.m), phase 2 (2,700 sq.m), CCTV, storage tanks and plant, parking, servicing and roads and associated works.	3.3 km southeast	Awaiting decision	EIA
2	P2022/0470	Land At Baglan Way Port Talbot	Erection of an industrial unit (use class B2) (GIA 25,545sqm) with associated works including sustainable drainage, car parking, cycle storage and landscaping.	2.6km northwest	Approved	Not EIA
3	P2018/1036	Land Adjacent To The Existing Sinter Plant Port Talbot Steelworks Margam Port Talbot SA13 2NG	Demolition of existing structures accommodating the secondary dust extraction system for the sinter plant and installation of a replacement secondary system, including a bag filter system comprising a 6 storey structure, pipework and ducting, chimney stack (55m tall), electrical equipment, hard and soft landscaping and associated development.	400m south	Approved	Not EIA
Projects to Monitor						
4	P2021/0057 (DNS/3264571)	Land At Bryn And Penhydd Forest Located Between Port Talbot And Maesteg	Consultation Request from the Welsh Ministers on the content of a Scoping Direction (EIA Development) relating to a proposed application to be made for a Development of National Significance (DNS) in relation to a proposed Wind farm of up to 26 turbines (6.6 MW per turbine) with a maximum height of 250m in height and 170m in rotor	3km east	Pre-application stage	

ID	Planning Ref	Location	Description	Distance from Site	Status	EIA/ Not EIA
			diameter, transformer housing, battery storage, permanent anemometry masts, access tracks, crane pads and borrow pits.			
5	P2023/0181	Eirlys Solar Farm Land To The South Of Moel Ton-mawr And West Of Mynydd Margam	Request for Information to Inform a Scoping Opinion from the Development of National Significance Team of PEDW under Regulation 33(7) of the Town and Country Planning (Environmental Impact Assessment)(Wales) Regulations 2017 for construction of a solar farm (79MW) on a site area of 99.5ha with associated Battery Energy Storage System and Sub-station for a period of 40 year	5km south-east	Scoping report submitted	

*It should be noted that as part of initial consultation with NPTCBC (i.e., **Appendix 14.1**) Approved project 5 was subject to a request for an EIA Screening Direction, however, a more recent request for an EIA Scoping Opinion has been submitted. As such, the application reference and details have been updated according to the latest application information.*

Step 2a: Identification of Common Receptors

- 14.17 For there to be an in-combination effect between the Proposed Scheme and an Approved Project, there needs to be a common receptor that will experience effects from the Proposed Scheme and Approved Project for a similar duration. Following the identification of the initial list of approved projects, a further stage of analysis has been undertaken to establish if the approved projects (**Table 14.1**) are likely to share a common receptor with the Proposed Scheme. To inform the likelihood of potential common receptors, a further stage of analysis has been undertaken utilising ‘zones of influence’²⁰⁹ (ZOIs) for both the Proposed Scheme and the identified approved projects, on a topic-by-topic basis.
- 14.18 ZOIs for the Proposed Scheme have been informed by the likely scope of technical assessment works²¹⁰ and the ‘study areas’²¹¹ applied for each technical topic, as these are the extents to which receptors of the Proposed Scheme are expected to be contained. The Proposed Scheme ZOIs are set out in **Table 14.2** for reference. Where a technical topic is absent from **Table 14.2** it is not expected to be assessed through the EIA (i.e., scoped out).

Table 14.2: Zone of Influences for Topics Scoped in for the Proposed Scheme

Topic	Study Area	ZOI
Air Quality	The assessment will consider impacts at human receptors within Port Talbot. <i>Impacts to designated ecological receptors have been consider below as part of Terrestrial Ecology.</i>	2km ²¹²
Terrestrial Ecology	Internationally designated sites – 5km; Nationally designated sites – 5km; Non-statutory designated site – 2km; and Protected and notable species / habitats – within / adjacent to the Site.	10km
Climate Change	No specific study area applied.	N/A ²¹³
Noise and Vibration	1.3km radius	1.3km

²⁰⁹ i.e. the extent to which effects may extend from the specific project.

²¹⁰ As informed by the EIA Scoping process for the project, that commenced in July 2022 and is due to be concluded with the formal submission of the EIA Scoping Report to NPTCBC in December 2022.

²¹¹ The relevant study areas have been informed by the appointed technical teams through their input to the EIA Scoping process.

²¹² This is applied for human receptors only, it is assumed ecological receptors are capture through the ZOI for ecology set out in **Table 2**.

²¹³ Climate Change does not have a geographical boundary and therefore it will be assumed that all Approved Projects will exhibit a potential in-combination effect.

Topic	Study Area	ZOI
Socio-Economics and Human Health	Local impact area, defined as NPTCBC; and Wider impact area defined as Wales	N/A ²¹⁴
Landscape and Visual	2km	2km
Major Accidents and Disasters	No specific study area applied	1.5km ²¹⁵

14.19 Additionally, ZOI's have been determined for the Approved Projects, again on a topic-by-topic basis²¹⁶. These have been informed by a review of technical information submitted in support of each approved project and their corresponding study areas. Where no technical information for a specific topic has been submitted or where technical information has been prepared but is not explicit in defining a study area, an element of judgement has been applied to establish a reasonable ZOI. The identified ZOI's for each Approved Project and relevant technical topic is set out within **Appendix 14.1** for reference.

14.20 All ZOI's have subsequently been mapped using GIS software and then analysed to determine where there is an overlap in ZOI's between the Proposed Scheme and Approved Project²¹⁷, thus identifying the potential for a common receptor and a possible in-combination cumulative effect. Such potential will be explored in more detail as part of the ES following the conclusions of the technical assessment work for the Proposed Scheme. The output of this process is set out in **Table 14.3**.

Table 14.3: Potential for Common Receptors between the Proposed Scheme and Approved Projects

Topic	Approved Project				
	1	2	3	4	5
Air Quality	Y	N	Y	N	Y
Terrestrial Ecology	Y	N ²¹⁸	Y	Y	Y
Climate Change ²¹³	Y	Y	Y	Y	Y

²¹⁴ Given the extent of the study areas, which will encompass all Approved Projects, no ZOI has been mapped and it is assumed that all Approved Projects will exhibit a potential in-combination effect.

²¹⁵ Precautionary ZOI applied based on specifics of the Proposed Scheme.

²¹⁶ Only those topics that overlap with the expected scope of topics for the Proposed Scheme have been identified. Where an Approved Project has identified a potential effect for a topic that is not expected for the Proposed Scheme it has been assumed there is no potential in-combination cumulative effect.

²¹⁷ Mapping has not been provided at this time as it amounts to a sizable number of images.

²¹⁸ Terrestrial ecology was not considered as part of the application for Approved Project 2 and therefore there is not anticipated to be any in-combination effects.

Topic	Approved Project				
	1	2	3	4	5
Noise and Vibration	Y	N	Y	Y	N
Socio-Economics and Human Health ²¹⁴	Y	Y	Y	Y	Y
Landscape and Visual	Y	Y	Y	Y	Y
Major Accidents and Disasters ²¹⁹	Y	N	Y	N	N

Step 2b: Assessment of In-Combination Effects

- 14.21 The shortlist outlined in **Table 14.1** will be further evaluated in the ES where common receptors have been identified in **Table 14.2** using the available documentation which supported the planning applications. Where available, consideration will also be given to whether there is a concurrent construction or operational stage with the Proposed Scheme.
- 14.22 There may be effects at the project level which require due consideration and management but these effects will not be reconsidered as part of the in-combination assessment.
- 14.23 Where there are common receptors, a qualitative evaluation at the receptor level will consider the following:
- Magnitude of change identified in the relevant technical assessments;
 - Sensitivity/value/importance of the receptor/receiving environment to change; and/or
 - Duration and reversibility of effect.
- 14.24 Through a combination of the qualitative evaluation and mitigation identified in the EIA and presented in the ES, conclusions will be drawn as to the likelihood for in-combination environmental effects, whether these are significant or not and how such effects differ from those reported for the Proposed Scheme

²¹⁹ The potential for in-combination effects has been determined by applied the Proposed Scheme ZOI and where it interacts with an Approved Project's boundary, rather than a corresponding technical ZOI for the Approved Projects. This is because no other Approved Project has considered this topic.

15. Summary

15.1 **Chapter 5** identified 7 environmental topics that are not considered to be significant based on the evidence base provided, and are therefore excluded from the EIA, comprising:

- Built Heritage and Archaeology;
- Ground Conditions;
- Flood Risk and Hydrology;
- Transport;
- Marine Navigation and Marine Recreational Resource;
- Lighting; and
- Waste.

15.2 **Table 15.1** provides a summary of all the environmental effects which are not considered to be significant and are therefore scoped out of the EIA, as well as the likely significant environmental effects identified that will be assessed within the EIA and reported in the ES.

Table 15.1: Summary of Topics and Effects to be Considered in the Environmental Statement

Topic	Effects which are Not Significant and are Proposed to be Scoped out of the EIA	Likely Significant Environmental Effects to be Considered in the ES
Built Heritage and Archaeology	Direct impacts upon designated historic assets	
	Indirect impacts upon designated historic assets through changes to setting	
	Direct impacts upon non-designated historic assets	
	Indirect impacts upon non-designated historic assets through changes to setting	
Ground Conditions, Soils and Contamination	Impacts upon Soils and soil resources	
	Direct effects to human health due to existing on-	

Topic	Effects which are Not Significant and are Proposed to be Scoped out of the EIA	Likely Significant Environmental Effects to be Considered in the ES
	<p>site contamination (construction and operation)</p> <hr/> <p>Accidental release of contamination (construction and operation)</p> <hr/> <p>Direct effects to Controlled Waters (Secondary Aquifer and docks) due to migration of existing leachable contamination (construction)</p> <hr/> <p>Indirect effect to human health due to potential ingress and accumulation of bulk ground gas (construction and operation)</p> <hr/> <p>Direct effects to human health due to presence of UXO</p>	
Flood Risk and Hydrology	<p>Flood risk</p> <hr/> <p>Water quality</p>	
Transport	<p>Increase in driver delay as a result of temporary construction traffic</p> <hr/> <p>Delay in journey times of public transport as a result of temporary construction traffic</p> <hr/> <p>Changes to pedestrian amenity and delay as a result of temporary construction traffic</p> <hr/> <p>Increase in fear and intimidation as a result of temporary construction traffic</p>	

Topic	Effects which are Not Significant and are Proposed to be Scoped out of the EIA	Likely Significant Environmental Effects to be Considered in the ES
	<p>Increase in severance as a result of temporary construction traffic</p> <hr/> <p>Increase in accidents and safety as a result of temporary construction traffic</p> <hr/> <p>Increase in hazardous loads during construction stage</p> <hr/> <p>Increase in driver delay; delays to journey times of public transport users; pedestrian amenity and delay; fear and intimidation; severance; and accidents and safety as a result of operational traffic</p> <hr/> <p>Increase in hazardous loads during the operational stage</p>	
Marine Navigation and Marine Recreational Resource	<p>Impacts on Marine Navigation (and safety) associated with additional ship movements</p> <hr/> <p>Impacts upon marine recreational resources associated with additional ship movements</p>	
Lighting	<p>Disturbance to nearby residents due to obtrusive light during construction</p> <hr/> <p>Disturbance to residents due to obtrusive light during operation</p>	
Waste	<p>Waste generation during construction</p> <hr/> <p>Waste generated during operation</p>	

Topic	Effects which are Not Significant and are Proposed to be Scoped out of the EIA	Likely Significant Environmental Effects to be Considered in the ES
Major Accidents and/or Disasters	Major road traffic accident resulting in death or permanent injury to members of public (<i>construction</i>)	Operational plant/infrastructure failure (i.e. structure/building collapse, human error, explosion, non-descriptive accident)
	Major road traffic accident resulting in death or permanent injury to members of public (<i>operational</i>)	Fire event occurring on-site and impacting operational activities on-site, as well as consequential chain reaction events
	Pollution event / migration of existing contamination from the Site to controlled waterbody (<i>construction</i>)	Fire event occurring during ship transportation of input/output material
	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 (<i>operation</i>)	
	Pollution event occurring during ship transportation of input/output material	
	Natural disasters events (i.e. hurricanes and earthquakes) impacting users of the site and on-site operations (<i>construction and operation</i>)	
Terrestrial Ecology	Direct loss, injury and/or disturbance to Hazel Dormouse, Great Crested Newts, Bat Roosts and Badgers	Habitat loss Disturbance to Schedule 8 plant population

Topic	Effects which are Not Significant and are Proposed to be Scoped out of the EIA	Likely Significant Environmental Effects to be Considered in the ES
		<p>Removal of invasive non-native plant species</p> <hr/> <p>Habitat loss and displacement of reptiles</p> <hr/> <p>Disturbance as a result of construction noise and vibration</p> <hr/> <p>Disturbance as a result of artificial lighting</p> <hr/> <p>Loss of bird nesting sites and foraging areas</p> <hr/> <p>Loss of bat foraging habitat</p> <hr/> <p>Disturbance arising from general site construction activities including piling (Phoenix Wharf Ship Unloading/Loading Facility and Temporary Construction Area)</p> <hr/> <p>Disturbance as a result of operational noise, artificial lighting and general site activities</p> <hr/> <p>Degradation of qualifying features in designated sites due to air emissions</p>
Landscape and Visual	<p>Changes to the special qualities and landscape characteristics of the Margam Special Landscape Area and Margam Mountain Registered Landscape of Outstanding Special Interest in Wales</p> <hr/> <p>Changes to local landscape character areas surrounding the Site</p> <hr/> <p>Changes to visual amenity experienced by private</p>	<p>Changes to the character and amenity of views</p> <hr/> <p>Changes to Landscape components within the Site</p>

Topic	Effects which are Not Significant and are Proposed to be Scoped out of the EIA	Likely Significant Environmental Effects to be Considered in the ES
	residents due to the introduction of the Proposed Scheme	
Socio-Economics and Human Health	Access to quality housing, healthcare services, open space and nature, and other social infrastructure	Employment generated in the construction stage
	Access to healthy food	Employment generated in the operation stage
Climate Change	Increased risk of flooding	GHG emissions (construction)
	Heat stress during construction	GHG emissions (operation)
	Extreme weather	Net GHG Emissions
		Changes to seasonal weather including temperature and rainfall
		Water availability
		Summer overheating
Air Quality	Nuisance, disturbance and a reduction in human health as a result of dust and particulate matter	Change to local air quality in terms of human health and ecology (particularly, but not limited to, nitrogen

Topic	Effects which are Not Significant and are Proposed to be Scoped out of the EIA	Likely Significant Environmental Effects to be Considered in the ES
	emissions from construction activities and NRM	<p>dioxide and particulate matter) 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</p> <hr/> <p>Change to local air quality in terms of human health and ecology (particularly, but not limited to, nitrogen dioxide and particulate matter) due to on-Site emissions associated with flare</p> <hr/> <p>Change to local air quality in terms of human health and ecology (particularly, nitrogen dioxide and particulate matter) due to transport emissions²²⁰ to include vehicle and shipping emissions</p> <hr/> <p>Changes to local air quality due to fugitive on-site emissions (dust, odour, gas emissions), where identified²²¹</p>
Noise and Vibration	<p>Operational noise [Mumbles – 13km west]</p> <hr/> <p>Operational road traffic noise [surrounding residential receptors]</p>	<p>Generation of noise from construction activities and construction traffic</p> <hr/> <p>Generation of noise from plant during operation</p>

²²⁰ Traffic data will be screened against currently available screening criteria to determine if there is a risk of significant effects and whether detailed assessment needs to be undertaken in relation to either human or ecological receptors.

²²¹ The process is largely a closed loop system and therefore fugitive emissions are unlikely but these will be considered to ensure any potential fugitive source are identified).

Topic	Effects which are Not Significant and are Proposed to be Scoped out of the EIA	Likely Significant Environmental Effects to be Considered in the ES
	Vibration from construction activities [surrounding residential receptors]	
Marine Ecology	Direct or indirect loss of habitats and benthic species	Entrapment of fish during abstraction of water
	Loss or damage of habitats from changes in physical processes	Disturbance through underwater noise and vibration
	Impacts on habitats and species from a deterioration in water quality from seabed disturbance	
	Impacts on habitats and species from a deterioration in water quality from discharges	
	Disturbance of benthic invertebrates through underwater noise and vibration	
	Disturbance of species from airborne noise and visual disturbance	
	Biological disturbance due to potential introduction and spread of non-native species	

Appendix 1.1: Record of Consultation

Consultee (Body / Organisation)	Date and Form of Consultation	Summary and Outcome of Consultation
Built Heritage and Archaeology		
Cadw	27 th July 2022, email	To identify study area for sensitive receptors with regard to effects upon the setting of designated heritage assets. Agreed study area defined as 3km (see Plan EDP2 in Appendix 5.1), assets beyond this were considered not to be sensitive to the development given their distance from the Site.
GGAT	12 th July 2022, Written Scheme of Investigation (WSI) ²²²	WSI agreed with Glamorgan Gwent Archaeological Trust, advisors to the local planning authority, to determine scope and methodology of the Heritage and Archaeology Assessment. This WSI is included as Appendix 5.2 .
Socio-Economics and Human Health		
NPTCBC	28 th June 2022	Too early a stage in NPTCBCs understanding of the scheme for NPTCBC to advise on approach. Recommended to engage with the Port Authority on health matters.
Landscape and Visual		
NPTCBC	4 th August 2022, meeting with landscape officer and planning team	Agreed on visual receptors and discussed location of representative viewpoints. Three more viewpoints were added as result of the discussion to be confirmed at Site visit.
NPTCBC	13 th October 2022, meeting with landscape officer and planning team; followed by 10 th November 2022, email with landscape officer	Location of 10 no. representative viewpoints were agreed following Site visit.
Noise and Vibration		
NPTCBC / Red Twin Ltd	08 July 2022 (Technical Note from Red Twin Limited)	Proposed baseline noise monitoring locations confirmed acceptable. Sound sensitive receptor locations agreed however Red Twin also identified 2no park areas that are defined 'quiet areas' in the NPT LDP Policy EN10 which are to be assessed.

²²² EDP, 2022b. *Phoenix Wharf, Port Talbot; Written Scheme of Investigation for an Archaeology and Heritage Assessment*

Consultee (Body / Organisation)	Date and Form of Consultation	Summary and Outcome of Consultation
		Proposed assessment methodology for construction and operational stages also confirmed acceptable. Red Twin requested the baseline noise survey to be repeated in autumn/winter months and also for the assessment to take into account Mumbles located approximately 13-15km away.
NPTCBC / Red Twin Ltd	29 th July 2022 (email from Red Twin Limited)	<p>A response to the above consultation was undertaken by Hunter Acoustics which stated repeat survey at a different time of year appeared excessive and impractical due to timescales on the project, and that summer periods are likely to be calmer and therefore quieter. In their response Red Twin Limited replied with <i>"I take your point relating to seasonal variations in terms of winter / summer baseline levels."</i></p> <p>Hunter Acoustics had also challenged the need for assessment of Mumbles Consultation feedback stated, <i>"some analysis of potential high levels of noise over the sea may be prudent, if only to scope out form further work."</i>²²³</p>
Flood Risk and Hydrology		
NPTCBC SuDS Approval Body (SAB)	12 th August 2022, MS Teams meeting.	Verbal in-principle agreement was provided by the SAB to the conceptual drainage strategy proposals, as outlined in Appendix 5.5 .
Transport		
NPTCBC	18 th August 2022, meeting to discuss submitted Scoping Note	<p>Committed developments accepted.</p> <p>Discussions on acceptability of traffic surveys ongoing.</p> <p>Trip distribution / generation analysis requested before the TA study area is formally agreed / operational stage capacity assessments discounted.</p>
Terrestrial Ecology		
NPTCBC Ecologist and Countryside and Wildlife Lead	21 st June 2022, Meeting with Associated British Ports (ABP) and NPTCBC	<p>Presentation to NPTCBC in relation to the redevelopment of the whole of the Harbourside redevelopment, biodiversity features effected, outline mitigation and compensation proposals.</p> <p>Informal outputs</p>

²²³ **Paragraphs 12.8 – 12.10** have looked to address the identified receptor and discount the need for assessment as part of the EIA or reporting within the ES.

Consultee (Body / Organisation)	Date and Form of Consultation	Summary and Outcome of Consultation
		<p><i>Habitats</i></p> <p>Naturally regenerated grassland supports a OMH is the key S7 habitat to be affected by the development of the Harbourside site as a whole. Any loss of OMH as part of the development will need to be compensated for in the proposals – measures within the application site include the provision of brown/green roofs and stone/soil filled gabion walls.</p> <p>Reedbed is also a S7 habitat and mitigation for loss should be reflected in the proposals.</p> <p><i>Reptile populations</i></p> <p>Precautionary approach required for reptile species (population size and relocation site). A relocation strategy will be required as part of application. Margam Park has low suitability as an off-site receptor site as it is principally managed as a venue for events.</p> <p><i>Off-site Compensation/Enhancement</i></p> <p>The proposed off-site compensation site is designated a SINC but has significant potential for enhancement</p>
<p>NPTCBC and Countryside and Wildlife Lead</p>	<p>31st August 2022. Site Meeting with ABP, Turley, Ebsford and NPTCBC</p>	<p>Walkover of Production Development Zone and Japanese knotweed stands. Discussion habitat types, value and the need for compensation for loss</p> <p>Informal outputs</p> <p><i>Habitats</i></p> <p>Potential loss of OMH in Temporary Construction Area 1 can be avoided through reinstatement of pioneer habitat following its temporary use</p> <p>Compensation for the loss of scrub woodland requires consideration of off-site tree planting (derived from LPA calculations) with the potential for enhancement of existing woodland to reduce tree planting requirement, depending on habitat and location</p> <p>Dune slack vegetation is a small area of high value habitat. Limited options within the wider port. Consider last resort off-site translocation as the only practical compensation.</p>

Consultee (Body / Organisation)	Date and Form of Consultation	Summary and Outcome of Consultation
		<p>JKW eradication to be carried out as advanced site management by ABP with a reptile relocation required as part of these works</p> <p>Requirement for port-wide strategy including brown/green corridors</p> <p>Reptile relocation from the Production Development Zone aligned to the JKW eradication and will be undertaken by ABP</p> <p>The presence/absence of great crested newts should be assessed in waterbodies within the Tata Steel site located within 250m of the Site.</p>
NPTCBC Ecologist and Countryside and Wildlife Lead	2 nd November 2022, Site Meeting with ABP and NPTCBC	<p>Walkover of proposed off-site compensation site. Review compensation and enhancement potential.</p> <p>Loss of naturally regenerating grassland – compensation through enhancement of low value semi-improved grassland and green/brown corridors in wider port.</p> <p>Loss of willow scrub – compensation through enhancement of plantation on ancient woodland site (PAWS) and adjoining woodland</p>
NPTCNC Ecologist and Countryside and Wildlife Lead	2 nd November 2022, Meeting with ABP and NPTCBC	<p>Discussions around the framework for the Port-wide Biodiversity Strategy, JKW eradication by ABP and an additional off-site compensation site.</p> <p>S7 Habitats</p> <p>The second off-site compensation site is a potential receptor for translocated dune slack vegetation due to optimal ground conditions</p>
ABP	Ongoing	Active engagement with ABP on a package of off-site compensation for proposed development.
National Broomrape Expert	Ongoing	There is ongoing engagement with the national broomrape expert, who is providing specialist advice in relation to the conservation of populations of oxtongue broomrape which is widespread in the docks at Port Talbot and also occurs in the immediate surroundings.

Appendix 2.1: Preliminary Environmental Management Plan

Project specific measures to avoid and / or prevent significant adverse environmental effects (i.e. mitigation measures) have been considered through the EIA Scoping process, when appraising likely environmental effects.

At this stage, this has focussed on 'primary mitigation' (i.e. inherent mitigation, comprising fundamental aspects of the project design) and 'tertiary mitigation' (i.e. standard environmental commitments / practices or measures required by other legislation/regulation that would occur regardless of an EIA being undertaken).

It should be noted that when describing primary mitigation below, it is only aspects incorporated into the design of the Proposed Scheme that directly reduce, avoid or offset a possible adverse environment effect, or enhance a beneficial environmental effect. As such, the PEMP does not reiterate the design specifics of the Proposed Scheme, which are set out in full within **Chapter 4: High Level Development Specification**.

In order to support NPTCBC and other stakeholders, the mitigation measures that have been identified at this stage have been collated into a single preliminary Environmental Management Plan set out below. This will be developed further as part of the ES and incorporated into a project specifics Environmental Management Plan (EMP) as set out within **Chapter 2: Approach to EIA**.

It is envisaged that mitigation will be secured through suitably worded planning conditions or other mechanism, where appropriate, and the Environmental Management Plan will be utilised by the Applicant and appointed contractor(s) to control mitigation commitments and assurance over their implementation.

Table 1.1 Preliminary Environmental Management Plan (PEMP)

Ref	Mitigation Measures	Description / details of measure(s)	Mechanism to Secure Mitigation
Primary Mitigation			
P1	Enclosed Ground Flare	The Proposed Scheme will use an enclosed ground flare (up to 45m in height). This element of the Proposed Scheme has been proposed to minimise visual envelope of the development (in comparison to a more standard Flare Stack) and thus intervisibility between the Proposed Scheme and community receptors further afield.	Approval of design plan submitted with application, which will be subject to planning condition.
P2	Minimum Ground Elevation/Levels within Production Development Zone (PDZ)	<p>Earthworks within the PDZ will be undertaken to ensure a ground level of 7.5mAOD or above, in order to be flood free in the 0.1% AEP + climate change event (for fluvial and tidal flooding)²²⁴.</p> <p>It is expected that a development platform of 8mAOD will be created across the PDZ to ensure such levels are achieved.</p>	Approval of design plan submitted with application, which will be subject to planning condition.
P3	Operational Drainage Strategy Principles	<p>The Proposed Scheme will adopt a drainage strategy to include two main surface water drainage systems, comprising:</p> <ul style="list-style-type: none"> • In ancillary areas, where contamination risk is low, SuDS will be used for water quality treatment²²⁵ of runoff before being discharged to the Afan Estuary at Phoenix Wharf; and • In areas where contamination is anticipated, surface water shall be directed to the on-site wastewater treatment works. 	Approval of Drainage Strategy, which will be subject to planning condition and SAB approval.

²²⁴ It should be noted that much of the PDZ is above 7.5mAOD already, however, some areas are below this level and hence the need for a minimum level of be established across the Site. See **Chapter 4: High Level Development Specification** for more details.

²²⁵ Designed to meet the Welsh Government Statutory Standards for Sustainable Drainage Systems and The SuDS Manual (C753).

		<p>A Drainage Strategy will be prepared, in line with the above principles, and will be submitted to NPTCBC SAB for approval as part of the Application.</p> <p>The required water quality treatment processes have been designed to meet the Welsh Government Statutory Standards for Sustainable Drainage Systems and The SuDS Manual (C753) as appropriate for the industrial nature of the Site.</p> <p>All SuDS assets shall be lined to reduce the risk of downward infiltration of water into underlying soils, which would increase the risk of mobilisation of existing contaminants.</p> <p>Furthermore, a Flood Consequence Assessment (FCA) will be prepared and submitted as part of the Application, utilising the drainage strategy principles set out above, and demonstrate the management of the risk of flooding on the Site and the potential for detrimental impacts off-site for the lifetime of the Proposed Scheme, in accordance with the requirements of Welsh Government Technical Advice Note 15 (TAN15).</p>	
P4	Operational Lighting Strategy Principles	<p>The Proposed Scheme will ensure that all external (operational) lighting will be designed and installed in line with relevant British Standards (i.e. BS 5489-1:2020, BS EN 13201-2 – Road lighting and BS EN 12464-2 – Lighting of Work Places) and guidance (e.g. ILP’s Guidance Notes for the Reduction of Obtrusive Light, Lighting Guide 1: The industrial environment and LG6: The exterior environment; ILP’s PLG04; and ILP Guidance Note GN01), and or mitigation measures set out within the guidance so as to mitigate effects from obtrusive light.</p> <p>A Preliminary Lighting Strategy will be prepared, in line with the above principles of design, and will be submitted to NPTCBC for approval as part of the Application.</p>	Approval of Preliminary Lighting Strategy submitted with application, which will be subject to planning condition.
P5	Operational Waste Management Strategy	A Preliminary Operational Waste Management Strategy will be prepared and submitted with the Application. This will set out all waste	Approval of Preliminary Waste Strategy

		arisings from the Proposed Scheme (including any potentially was that would be classified as hazardous waste) and the way in which each waste arising will be managed on-site, transported and disposed of, including compliance with relevant legislation, regulation or guidance for each waste arising (i.e. detailed responsible persons, necessary carriage certificates/duty of care notification or documentation needing to be implemented).	submitted with application, which will be subject to planning condition.
P6	Operational Transportation Management Plan	A Framework Operational Transportation Management Plan (or similar) will be prepared and submitted within the Application. This will set out all forms of transportation to be used during the operation of the Proposed Scheme (and associated materials to be transported), including details of safety measures/procedures to be deployed to ensure safe transportation and compliance with any relevant legislation, regulation or guidance (i.e. UN Model Regulations, The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009, The International Convention for the Safety of Life at Sea, 1974 (SOLAS), The International Carriage of Dangerous Goods by Inland Navigation (ADN) and International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 relating thereto (MARPOL)).	Approval of Framework Operational Transportation Management Plan (or similar), which will be subject to planning condition.
Tertiary Mitigation			
T1	Construction Environmental Management Plan (CEMP)	<p>A Framework CEMP will be prepared by the appointed contractor in line with key legislation and guidance, as well as industry standards, codes of practice and best practice measures. Once prepared the CEMP will be submitted with the Application for approval.</p> <p>The CEMP will be informed by and consider the following measures, as identified within this EIA Scoping Report.</p> <p><u>Key legislation, guidance, industry standards and codes of practices will be adopted where applicable:</u></p>	<p>Approval of Framework CEMP submitted with planning application.</p> <p>Final Detailed CEMP will be subject to planning condition.</p>

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- Health and Safety at Work Act 1974.
 - The Construction (Design and Management) Regulations 2015.
 - Control of Pollution Act 1974.
 - Control of Asbestos Regulations 2012.
 - Confined Space Regulations 1997.
 - Environmental Protection Act 1990.
 - Environmental Protection (Duty of Care) Regulations 1991.
 - Hazardous Waste (England and Wales) Regulations 2005.
 - CIRIA 733 Asbestos in Soil and Made Ground.
 - CIRIA C741 Environmental Good Practice on Site Guide.
 - CIRIA C624 Development and Flood Risk.
 - CIRIA C670 Site Health Handbook.
 - CIRIA C532 Control of Water Pollution from Construction Sites.
 - Guidance for Pollution Prevention (GPPs).
 - CL: AIRE Development Industry Code of Practice.
 - Fire Prevention on Construction Sites: Joint Code of Practice.
 - BS 6031:2009 Code of Practice for Earthworks.
 - BS 42020: 2013 Biodiversity. Code of practice for planning and development.
 - BS 5228 1:2009 + A1:2014 Code of practice for noise and vibration control on construction and open sites Part 1 - Noise and Part 2 – Vibration.
 - BS 12464-2:2014 – Lighting of Work Places – Part 2: Outdoor Work Places.
 - CIE Technical Report Document 129.
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- Institution of Lighting Professionals (ILP) Guidance Notes for Reduction of Obtrusive Light.
 - Bat Conservation Trust and ILP Bats and Artificial Lighting in the UK Guidance Note 08/18 – Bats and the Built Environment Series.
 - IAQM Guidance on the Assessment of Dust from Demolition and Construction.
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T2

General Construction Management Practices

As above

- Implementation of appropriate Site hoarding.
 - Set out necessary site security measures (such as security lighting, CCTV and on-site personnel) in order to reduce potential crime.
 - Good construction site housekeeping.
 - Setting out key construction hours and protocols/working method practices for extended works where necessary.
 - Provision of tool-box talks.
 - Requirements for marine construction equipment and plant sourced from outside the area, including a jack-up barge if used, to be checked for INNS and cleaned prior entering the water at Port Talbot Dock (e.g. following the 'Check, Clean and Dry' method).
 - Preparation of specific method statements.
 - Define a stakeholder communications plan to be adopted during construction works and procedures for logging and responding to all environmental-related issues and complaints (e.g. in respect to dust, air quality, vibration, noise and lighting) where relevant or arise.
 - Sequencing of drainage features.
 - Use of best practice guidance such as the Pollution Prevention Guidelines (Environment Agency) and Control of Water Pollution
-

	from Construction Sites (CIRIA), and incorporate on-going monitoring by the environmental clerk of works.	
T3	<p><u>Preparation of Construction Traffic Management Plan (CTMP), to include:</u></p> <ul style="list-style-type: none"> • Details of proposed vehicle routing, including implementation of appropriate signage. • Provisions for temporary car parking arrangements. • Outline delivery procedures and protocols. • Management practices to ensure off-site roads always remain clean and clear of debris during the works. • Procedures for loading and transportation of contaminated material in line with relevant legislation (i.e., The Dangerous Substances (Conveyance by Road in Road Tankers and Tank Containers) Regulations 1981). • Procedures relating to Abnormal Indivisible Load (AIL). 	As above
T4	<p><u>Management of dust and particulate matter</u></p> <ul style="list-style-type: none"> • Preparation of a Dust Management Plan (DMP) in line with IAQM Guidance on the Assessment of Dust from Demolition and Construction and identification of measures to deployment on-site. • Implementation of wheel washing facilities. • Details of procedures for the management of dust arising from stockpiles or exposed soils (i.e. screening or dampening down). • Interaction with the stakeholder communication plan (set out above). 	As above
T5	<u>Management of light pollution</u>	As above

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- Where practicable, construction lighting in the Site would be designed to comply with Environmental Zone E3 in accordance with ILP Guidance Note GN01.
 - Illuminance levels arising from temporary lighting to be designed in accordance with BS EN 12464-2: 2014 and CIE 129.
 - Placement of temporary lighting required to ensure safe working conditions and to maintain security, to have due regard of sensitive receptors (i.e. occupied residential properties).
 - Lighting to be directed so as avoid unnecessary Light Spill outside of construction areas and to ensure that the light distribution is toward the task area.
 - Lighting to be switched off when not required for safe working conditions and Site security.
 - Use of light shields/baffles to control upward light to within the maximum 2.5% set out in the ILP Guidance Note GN01, where possible.
 - Lighting to be kept at 0° tilt to avoid Sky Glow, where practicable.
 - Light dimming and automatic switch off would be used (where appropriate).

T6

Management of existing contamination and occurrence of accidental contamination events

As above

- Define appropriate PPE; monitoring equipment, safe-entry procedures and use of Respiratory Protective Equipment (RPE) where required; provision of on-site washing facilities; and good house-keeping practices for all construction workers and contractors.
 - Environmental awareness training for all on-site construction workers and contractors.
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- Asbestos Management Plan, including procedures for identification, removal, handling, and disposal in line with appropriate guidance and regulations (i.e., The Hazardous Waste (England and Wales) Regulations 2005, Control of Asbestos Regulations 2012 and CIRIA C733).
 - Requirements and detailed of settling basins (if appropriate or required).
 - Details of preventative measures to avoid accidental spillages (such as bunded storage and general safe storage of materials, fuels and oils) and details of emergency spill kits and procedures.
 - Details of proposed use of impermeable materials (temporary or permanent) to prevent ingress into the ground.
 - Details of proposed earthworks and working method statements for the management of earthworks, including consideration of measures to reduce the risk of silt combining with run-off.
 - Washing down/equipment cleaning associated with concrete or cementing processes and provision of facilities to remove sediment prior to disposal.
 - Temporary drainage management strategy, including details for the management of sediment and contaminants (i.e., through the implementation of sediment traps, etc.).
-

T7

Construction Waste Management Plan

As above

All material removal (including hazardous waste), handling (including details of any waste segregation or recycling practices to be implemented) and disposal to be in line with appropriate legislation and guidance.

Appropriate targets to be set for the reduction, diversion from landfill and reuse of waste.

T8		<p><u>Managing impacts of climate change</u></p> <p>Provision of shaded refuges and drinking water supplies to avoid health and safety risks associated with high summer temperatures.</p>	As above
T9		<p><u>UXO Working Method Statement</u></p> <p>UXO Safety Awareness Briefings.</p> <p>Non-Intrusive Magnetometer Probe Survey.</p> <p>Intrusive Magnetometer Probe Survey, comprising CPT testing at 2m centres to depth of 12m within the purposed pile layout.</p> <p>EOD Engineer - On Site Supervision.</p>	As above
T10	Archaeological 'Investigations'	<p>The appropriate level of proposed archaeological investigations will be set out within a Written Scheme of Investigation and submitted to NPTCBC for approval prior to construction works commencing on-site. This will include details of any necessary mitigation required upon encountering archaeological assets.</p> <p>The need, extent and type of archaeological investigations will be informed by a Archaeology and Heritage Assessment submitted with the Application.</p>	Written Scheme of Investigation to be approved by NPTCBC, prior to works commencing on-site, secured through planning condition.
T11	Additional ground investigation(s) and preparation of Remediation Strategy and Validation Reporting (where applicable)	<p>Complete additional ground investigation(s) works on-site, to be undertaken in accordance with BS 8485:2015+A1:2019, to determine/validate the presence/absence of the exact extent and nature of existing contamination across the Site.</p> <p>Preparation of a Remediation Strategy²²⁶ outlining site specific remedial activities (if deemed necessary following ground investigation works), and submission to NPTCBC for approval.</p>	Approval of Ground conditions Report and Remediation Method Statement submitted with planning, which will be will be subject to planning condition.

²²⁶ Informed by the existing and supplementary ground investigation works to understand exact extent and nature of existing contamination in relation to the developable areas.

		Completion of a corresponding Validation Report, to ensure that the remedial concentrations set out in the remediation scheme have been achieved.	Validation/verification report submitted for approval following implementation of remediation – secured through planning condition.
T12	Securement of Environmental Permits, Licenses and Consents (where applicable)	<p>All regulatory environmental permits, licenses and consents will be obtained from NRW and the applicable regulatory regimes.</p> <p>All applicable permits, licenses and consents will be identified as part of the ES and subsequent EMP (for information purposes), including details of the documentation prepared and submitted as part of any application process for each permit, license and/or consent.</p>	Approval of permit applications by NRW.
T13	Operational Safety Protocols	<p>Outline operational safety protocols to be implemented as part of the operation of the Proposed Scheme (in line with relevant legislation, regulations and/or guidance) will be set out as part of the ES.</p> <p>Details of each protocol will be established separately through the relevant compliance mechanisms under the individual environmental permits, licenses and consents (where applicable).</p> <p>All hazardous loads will be transported in appropriate vehicles, such as tankers, in accordance with the agreement concerning the International Carriage of Dangerous Goods by Road (ADR) / Regulation 5 of the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (CDG).</p> <p>All storage tanks will be industry standard tanks with appropriate bunding.</p>	Approval of permit applications by NRW and HSE as necessary.
T14	Building/Structure Design and Construction	All buildings/structures (including plant and equipment) are to be designed in accordance with (where required and applicable):	Approval of Plan(s), submitted with Application, which will be

		<ul style="list-style-type: none"> • HSE Design Codes – Plant • BS 8485: Ground gas membranes. • CIRIA C735 Good practice on the testing and verification of protection systems for buildings against hazardous ground gases. • CIRIA Report C572: Treated ground engineering properties and performance. • British Research Establishment document FB75: Building on Fill – Geotechnical Aspects • BS 6031:2009: Code of Practice for Earthworks. • Building Regulations and associated Approved Documents. • Technical Measures Document ‘Design Code – Plant’. <p>Protection against lightning strikes on process plant located outside buildings is also required.</p> <p>All proposed buildings/structures (including process plant and equipment) will undergo necessary checks and measures as part of the design process (i.e., review of design and associated risk assessment by Design Safety Engineer), third party independent check of design or within conjunction with relevant authority (i.e. HSE).</p>	<p>subject to planning condition.</p> <p>Approvals of permit applications by HSE as necessary.</p>
T15	Japanese Knotweed Management Plan	Preparation of a long-term Japanese Knotweed management plan (by a suitably qualified consultant) in compliance with Environmental Protection Act 1990 (EPA 1990) and the Wildlife and Countryside Act 1981 (WCA 1981).	Approval of long-term Japanese Knotweed management plan, which will be subject to planning condition.

Appendix 2.2: Structure of the Environmental Statement

Volume 1: Primary Report and Supporting Graphics

Chapter 1: Introduction

Chapter 2: Approach to EIA

Chapter 3: Site Context

Chapter 4: Development Specification

Chapter 5: Consideration of Alternatives

Chapter 6: Major Accident and/or Disasters

Chapter 7: Terrestrial Ecology

Chapter 8: Landscape and Visual

Chapter 9: Socio-Economics and Human Health

Chapter 10: Climate Change

Chapter 11: Air Quality

Chapter 12: Noise and Vibration

Chapter 13: Marine Ecology

Chapter 14: Assessment of Cumulative Effects

Chapter 15: Summary of ES

Volume 2: Technical Appendices

Volume 3: Environmental Management Plan

Volume 4: Non-Technical Summary

Appendix 14.1: Approved Projects ZOI's

All terms used in the below are based on the reporting provided as part of the applicable Approved Project.

Table 1: P2021/1255 ZOIs per relevant technical topic

Technical Topic	Study Area	Adopted ZOI
Ecology	1km for Statutory and non-statutory designated sites. Site and immediately adjacent land for habitat and species	1km
Socio-Economics	Local Impact Area of Margam and Port Talbot District Impact Area of Neath Port Talbot CBC.	- *
Air Quality	Most distance receptor assessed located approximately 1.6km from project boundary	2km
Landscape and Visual Impact	3km	3km
Noise	Most distance receptor assessed located approximately 70m from project boundary	0.1km

** Given extent of study area for the project it is assumed there will be an overlap with the ZOI for the Proposed Scheme*

Table 2: P2022/0470 ZOIs per relevant technical topic

Technical Topic	Study Area	Adopted ZOI
Air Quality	Most distance receptor assessed located approximately 0.37km from project boundary	0.4km
Landscape and Visual Impact	2km	2km
Noise	Most distance receptor assessed located approximately 0.34km from project boundary	0.4km
Ecology	2km for national statutory and non-statutory designated sites. ²²⁷	2km

²²⁷ International statutory designated where studied up to 10km, however, the appraisal found no impacts upon the two designated sites within this extent and therefore discounted from the applicable ZOI.

Technical Topic	Study Area	Adopted ZOI
	Site and immediately adjacent land for habitat and species	

Table 3: P2018/1036 ZOIs per relevant technical topic

Technical Topic	Study Area	Adopted ZOI
Ecology	Varies study areas used to inform baseline investigations, however, conclusion of preliminary ecological appraisal suggested potential ecological impacts limited to site specific habitats.	0.1km
Air Quality	Assessment focused primarily on construction dust, with no specific study area for receptors applied.	0.25km
Landscape and Visual Impact	2km	2km
Noise	Most distance receptor assessed located approximately 1.4km from project boundary	1.5km

Table 4: P2014/0145 ZOIs per relevant technical topic

Technical Topic	Study Area	Adopted ZOI
Air quality	Most distance receptor assessed located approximately 4km from Kings Dock	4.5km (from Kings Dock)
Noise	Most distance receptor assessed located approximately 5.4km from project Kings Dock	5.5km (from Kings Dock)
Terrestrial Ecology	5km for designated sites and 2.5km for protected/notable species.	5km (from Kings Dock)
Economy, Tourism and Recreation	Multiple study areas defined.	- *

** Given extent of study area for the project it is assumed there will be an overlap with the ZOI for the Proposed Scheme*

Table 5: P2021/0057 ZOIs per relevant technical topic

Technical Topic	Study Area	Adopted ZOI
Ecology	Proposed scope of receptors limited to habitats and species on / adjacent to project boundary; and SINCS within 2km	2km
Landscape and Visual Assessment	45km	- *
Noise	Receptor locations identified, the furthest south-west (i.e. toward the Proposed Scheme) being approximately 0.35km from project boundary.	0.5km
Socio-Economics	3 spatial boundaries identified, local, regional and national.	- *

**Given extent of study area for the project it is assumed there will be an overlap with the ZOI for the Proposed Scheme.*

Table 6: P2022/0567 ZOIs per relevant technical topic

Technical Topic	Study Area	Adopted ZOI
Nature Conservation and Biodiversity	Not specified	2km *
Population and Human Health		

** Precautionary study area based on experience of solar projects.*

Turley Office
18 Windsor Place
Cardiff
CF10 3BY

T 029 2034 4445