

# 9 SURFACE WATER, FLOOD RISK AND DRAINAGE

## CONTENTS

|          |                                                             |            |
|----------|-------------------------------------------------------------|------------|
| <b>9</b> | <b>SURFACE WATER, FLOOD RISK AND DRAINAGE.....</b>          | <b>9-I</b> |
| 9.1      | Introduction.....                                           | 9-1        |
| 9.2      | Statutory and planning context.....                         | 9-1        |
| 9.3      | Consultation undertaken .....                               | 9-4        |
| 9.4      | Approach to the assessment.....                             | 9-4        |
| 9.5      | Established, interim and future environmental baseline..... | 9-11       |
| 9.6      | Project characteristics and embedded mitigation.....        | 9-30       |
| 9.7      | Assessment of potential effects.....                        | 9-37       |
| 9.8      | Further survey and monitoring requirements .....            | 9-46       |
| 9.9      | Opportunities for enhancement.....                          | 9-46       |
| 9.10     | Cumulative effects .....                                    | 9-47       |
| 9.11     | Summary of effects.....                                     | 9-50       |
| 9.12     | References .....                                            | 9-53       |

## TABLES

|            |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Table 9-1  | Legislation and policy relevant to surface water, flood risk and drainage .....                                                                                                                                                                                                                                                                                                                                       | 9-1  |
| Table 9-2  | Estimating significance of water environment receptors (adapted from DMRB Highways Agency 2020) .....                                                                                                                                                                                                                                                                                                                 | 9-6  |
| Table 9-3  | Estimating the magnitude of an impact on an attribute (adapted from DMRB Highways Agency 2020) .....                                                                                                                                                                                                                                                                                                                  | 9-8  |
| Table 9-4  | Matrix of determining significance of effect .....                                                                                                                                                                                                                                                                                                                                                                    | 9-10 |
| Table 9-5  | Hydrological features at or close to the Site .....                                                                                                                                                                                                                                                                                                                                                                   | 9-16 |
| Table 9-6  | WFD Waterbody Cycle 3 Status.....                                                                                                                                                                                                                                                                                                                                                                                     | 9-18 |
| Table 9-7  | Licensed water abstraction under baseline conditions .....                                                                                                                                                                                                                                                                                                                                                            | 9-22 |
| Table 9-8  | Effluent discharge constituents under established baseline operations.....                                                                                                                                                                                                                                                                                                                                            | 9-24 |
| Table 9-9  | Summary of baseline water environment receptors .....                                                                                                                                                                                                                                                                                                                                                                 | 9-28 |
| Table 9-10 | Effluent discharge - EAF/Casting From EU Iron and Steel BAT Conclusions, 2012 and NRW Emissions Guidance 31/05/24.....                                                                                                                                                                                                                                                                                                | 9-34 |
| Table 9-11 | Effluent discharge – Hot Mill and Cold Mill From UK FMP – F BAT Conclusions, DRAFT .....                                                                                                                                                                                                                                                                                                                              | 9-34 |
| Table 9-12 | Significance of potential effects from construction phase .....                                                                                                                                                                                                                                                                                                                                                       | 9-40 |
| Table 9-13 | Licensed water abstraction under EAF operations.....                                                                                                                                                                                                                                                                                                                                                                  | 9-43 |
| Table 9-14 | below provides a summary of the residual effects from impacts on water environment receptors during the operational phase. The operational phase impacts have been assessed to cause one moderate beneficial (significant) effect on water environment receptors; all other effects are classified as negligible or minor (not significant). Table 9-14 Significance of potential effects from operational phase..... | 9-45 |

|                                                                                                             |      |
|-------------------------------------------------------------------------------------------------------------|------|
| Table 9-15 Zone of Influence of water related environmental aspects for cumulative effects assessment ..... | 9-47 |
| Table 9-16 Approved (committed) developments within water Zol .....                                         | 9-48 |
| Table 9-17 Summary of residual effects .....                                                                | 9-51 |

## FIGURES

|                                                                                     |      |
|-------------------------------------------------------------------------------------|------|
| Figure 9-1 Topography from NRW 1m LiDAR DTM .....                                   | 9-12 |
| Figure 9-2 Watercourses and waterbodies in and around the Site.....                 | 9-13 |
| Figure 9-3 Land at Port Talbot Steelworks surface water drainage .....              | 9-15 |
| Figure 9-4 Drainage points A and B at the Steelworks.....                           | 9-16 |
| Figure 9-5 Location of WFD waterbodies .....                                        | 9-19 |
| Figure 9-6 Nearby sites designated for wetland habitat features .....               | 9-21 |
| Figure 9-7 Location of abstraction licences for Land at Port Talbot Steelworks..... | 9-23 |
| Figure 9-8 Flood Map for Planning – rivers.....                                     | 9-25 |
| Figure 9-9 Flood Map for Planning – sea.....                                        | 9-26 |
| Figure 9-10 Flood Map for Planning - surface water and small watercourses .....     | 9-27 |
| Figure 9-11 Flood Risk Assessment Wales (FRAW) Mapping - reservoirs .....           | 9-28 |

Presented in Volume 4 of this Environmental Statement:

Figure 9.12 Watercourse diversion

## 9.1 Introduction

- 9.1.1 Regulation 4(2) of the Town & Country Planning EIA (Wales) Regulations 2017 requires that the EIA ‘must identify, describe and assess... the direct and indirect significant effects of the Proposed Development on [inter alia]... water...’. Specifically, this chapter of the Environmental Statement (ES) assesses the likely significant effects of the Proposed Development with respect to surface water, flood risk and drainage.
- 9.1.2 This chapter is supported by two key documents, which form part of the Planning Application for the Proposed Development:
- FCA - EAF Project - TATT3054 - Rev E - 18 October 2024 prepared by JBA Consulting in May 2024. 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.
  - Outline Drainage Strategy Report - Rev D - 01 November 2024 - EAF prepared by JBA Consulting in June 2024. It contains a Sustainable Drainage System (SuDS) strategy, previously submitted for pre-application consultation with NPTC’s SuDS Approval Body (SAB). Herein preferred to as the Outline Drainage Strategy.
- 9.1.3 These documents should be referred to for all detailed assessment data and read in conjunction with the summary information provided in this chapter. Information relevant to this assessment can also be found in other chapters in the ES, in particular **Chapter 8 Biodiversity** and **Chapter 10 Land, Soil and Groundwater**.

## 9.2 Statutory and planning context

- 9.2.1 Legislation, policy and guidance related to the management of surface water, flood risk and drainage are outlined in **Table 9-1** below.

**Table 9-1 Legislation and policy relevant to surface water, flood risk and drainage**

| Document                                                    | Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flood and Water Management Act 2010                         | The Flood and Water Management Act (FWMA) 2010 places a duty on Local Authorities to prepare a local flood risk management strategy (LFRMS) and sets out the duties of lead local flood authorities (LLFA).<br><br>Schedule 3 of the FWMA requires surface water drainage for new developments to comply with statutory national standards for sustainable drainage systems (SuDS). Schedule 3 to the FWMA 2010 places a duty on local authorities as SuDS approving body (SAB) to approve, adopt and maintain systems compliant with section 17 of the Schedule. Under Schedule 3, as of 7th January 2019, all new developments of more than 1 dwelling house or where the construction area is 100 m2 or more, require SuDS for surface water. |
| Water Environment (WFD) (England and Wales) Regulation 2017 | The EU Water Framework Directive (WFD) (2000/60/EC) is transposed into law in England and Wales by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Member States must establish river basin districts and prepare a river basin management plan (RBMP), which is prepared, implemented and reviewed every six years.                                                                                                                                                                                                                                                                                                                                                                                     |

| Document                                                             | Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                      | <p>The WFD includes statutory objectives for water quality elements in all waterbodies, including an objective for the waterbody as a whole. The default objective requires all watercourses that are not designated as artificial or heavily modified water bodies (A/HMWB) to achieve both good chemical status (GCS) and good ecological status (GES) by 2027. All HMWB's are required to achieve good ecological potential (GEP) and GCS, through the implementation of mitigation measures. All waterbodies have been assessed and are included within the local RBMP. The Proposed Development is within the Western Wales RBMP, which is led by National Resources Wales (NRW). The Western Wales RBMP for 2021–2027 was published in July 2022. NRW updates the classification data every 3 years. The Cycle 3 Interim classification for 2024 is now available. New activities and schemes that affect the water environment have the potential to adversely impact biological, hydro-morphological, physico-chemical and/or chemical quality elements (WFD quality elements), leading to a deterioration in water body status. They may also render proposed improvement measures ineffective. Under the WFD, activities and schemes must not cause deterioration in water body status or prevent a water body from meeting GES/GEP by invalidating improvement measures.</p> |
| <p>Environmental Permitting (England and Wales) Regulations 2016</p> | <p>The aim of the Environmental Permitting (England and Wales) Regulations 2016 (the EP Regulations) is to streamline the legislative system for industrial and waste installations into a single permitting structure for those activities which have the potential to cause harm to human health or the environment.</p> <p>it is an offence to cause or knowingly permit an entry or discharge to inland freshwaters, coastal waters or relevant territorial waters of any poisonous, noxious or polluting matter; waste matter; trade effluent or sewage effluent except under and to the extent authorised by an environmental permit.</p> <p>The Environmental Permit sets out the conditions for permitted emissions to air, water and land. Including requirements for site management such as the implementation of an Environmental Management System (EMS) and pollution prevention and control measures.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>Planning Policy Wales (PPW) 2024 Edition 12</p>                   | <p>Chapter 6 of PPW provides guidance to the issues relating to water and flood risk. Including an aim for the provision of water services whilst minimising adverse impacts on the environment, amenity, health and communities in light of the consequences of climate change. This should be achieved by ensuring that infrastructure is adequate to accommodate Proposed Development, ensuring sustainable drainage systems are an integral part of the design approach for new development, and ensuring the protection of the quantity and quality of surface and ground water supplies as part of development proposals.</p> <p>Sections of PPW of particular relevance to sustainable water management and water quality are given below:</p> <p>Section 6.6.6 The ability of the planning system to protect water features and foster sustainable water management as key attributes of attractive and resilient places. Embracing integrated approaches, make a contribution toward achieving the requirements imposed by EU Water Framework Directive and</p>                                                                                                                                                                                                                                                                                                                |

| Document                                       | Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                | <p>Welsh Government policy for integrated management of water in urban and rural areas.</p> <p>Section 6.6.9 The adequacy of water supply and sewerage infrastructure should be fully considered when proposing development, both as a water service and because of the consequential environmental and amenity impacts associated with a lack of capacity.</p> <p>Section 6.6.18 The provision of SuDS must be considered as an integral part of the design of new development and considered at the earliest possible stage.</p> <p>Section 6.6.19 Development proposals should incorporate design for surface water management, based on principles which work with nature to facilitate the natural functioning of the water cycle, providing issues such as land contamination would not result in the mobilisation of contaminants which may have an impact over a wider area.</p> <p>With regards to development and flood risk, planning authorities should take a precautionary approach of positive avoidance in areas of flooding from the sea or from rivers. Surface water flooding should affect the choice of location and layout of scheme designs.</p> <p>Sections of PPW with particular relevance to flood risk are quoted below:</p> <p>Section 6.6.25 Development should reduce, and must not increase, flood risk arising from river and/or coastal flooding on and off the development site itself. The priority should be to protect the undeveloped or unobstructed floodplain to prevent the cumulative effects of incremental development.</p> <p>Section 6.6.27 Planning authorities should be aware of the risk of surface water flooding and ensure developments are designed and planned to minimise potential impacts and not cause additional run-off, by controlling surface water as near to the source as possible by the use of SuDS.</p> <p>PPW uses a series of Technical Advice Notes to provide more guidance on areas of planning and development in Wales. Technical Advice Note 15 (TAN-15) provides technical guidance relating to development planning and flood risk in Wales. The initial requirements of TAN-15 are to identify the vulnerability classification(s) and flood zones relevant to the Proposed Development, and to apply this to the application of the Justification Tests. The requirements of the TAN-15 are discussed within the Flood Consequences Assessment: Land at Port Talbot Steelworks.</p> |
| Neath Port Talbot Local Development Plan (LDP) | <p>Neath Port Talbot Council Local Development Plan (LDP), adopted in January 2016, includes specific policies regarding the sustainable management of the water environment and flood risk. These are outlined below.</p> <p>As part of Policy BE1 the LDP requires that:</p> <p>‘Development have no detrimental effects on the water environment or on flood risk. Normally this will involve the use of Sustainable Drainage Systems (SuDS) techniques’...</p> <p>drainage systems are designed to limit surface water run-off and flood risk and prevent pollution.’</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

| Document | Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | <p>SP1: Climate Change Policy aims to reduce the consequences from climate change and stipulates the following:</p> <p>'Likely increased flood risk will be taken into account and addressed by ensuring that there is a greater resilience by avoiding development on land that is at risk of flooding in the first instance in accordance with the sequential approach set out in national guidance or in locations that could increase the risk of flooding elsewhere'</p> <p>SP16: Environmental Protection aims to protect and where feasible improve the environment including water quality.</p> <p>'Ensuring that proposals have no significant adverse effects on water, ground or air quality and do not significantly increase pollution levels'</p> <p>Land at Port Talbot Steelworks is identified within SP5 Coastal Corridor Strategy Area.</p> |

## 9.3 Consultation undertaken

- 9.3.1 Informal consultation has been undertaken in the form of a meeting on 11<sup>th</sup> April 2024 with NRW, Neath Port Talbot Council Local Planning Authority (LPA) and the Neath Port Talbot SuDS Approval Body (SAB). The impacts of the development on flood risk and drainage were discussed and the general approach to mitigation was presented. The content of the ES chapter was discussed and agreed in principle. To facilitate discussions the methodology for assessment was summarised in an informal flood risk and drainage EIA scoping consultation note which is provided in **ES Appendix 4.1**. The LPA informally agreed to the approach on 29<sup>th</sup> May 2024.

## 9.4 Approach to the assessment

### Scope of assessment

- 9.4.1 The temporal scope of the operational stage of the Proposed Development includes the life of the development, incorporating an allowance for the predicted impacts of climate change on rainfall, rivers flows and sea level rise. This is taken to be 75 years from present day, in accordance with the level recommended in the Welsh Government Guidance on Climate Change Allowances for Planning Purposes for any non-residential development. The impact of climate change does not affect the assessment for the construction phase.
- 9.4.2 The spatial scope of assessment for flooding and drainage impacts extends to any area affected by the scheme in the 0.1% annual exceedance probability (AEP) event including climate change allowances (75 years).
- 9.4.3 The spatial scope of assessment regarding water quality and fluvial morphological impacts is extended to environmentally designated sites within a 2 km radius of the Site and the nearby waterbodies that are hydrologically linked to the Site or used for process abstraction. A 2 km radius was used as this incorporates nearby sites designated for water related attributes and encompasses distinct river catchments from the north, east and south of the Site. Notably this includes Swansea Bay, Afon Cynffig, Afon Afan and

Nantffrwdwyllt rivers, and a number of ordinary watercourses at the Site, including those connected to Margam Moors Site of Special Scientific Interest (SSSI).

- 9.4.4 The scope of assessment includes environmental impacts and likely significant effects to these waterbodies from point source and diffuse discharges to surface water from site processing or site drainage. It does not include hydrogeological impacts associated with existing ground contamination as this has been considered within a standalone chapter of the ES (**Chapter 10 Land, soil and groundwater**). The assessment also includes the impacts on waterbodies from water abstraction for industrial processing on site.
- 9.4.5 The environmental impacts and likely significant effects associated with the supply of Dŵr Cymru Welsh Water (DCWW) potable water to the Proposed Development has not been considered in detail within the scope of assessment. Similarly, the strategic impact of foul discharge connections to Dŵr Cymru Welsh Water (DCWW) foul network has not been considered in detail within this ES chapter. As part of the proposals a foul and potable water supply connection shall be required by DCWW. No pre-application advice has yet been sought by DCWW. However, given the total reduction in site workers as a result of the EAF, it is foreseeable that total foul flows and clean water consumption shall be significantly reduced from the existing scenario. It is therefore envisaged that there shall be no capacity issues for DCWW as a result of the proposals. The assessment of these issues is carried out by Dŵr Cymru Welsh Water (DCWW) as the potable water and sewerage undertaker. It is the statutory responsibility of DCWW to ensure that their functions are carried out as part of a strategic assessment of water resource capacity, taking into account the environmental impacts, including environmental consent for abstraction and discharges. The detailed environmental assessment of these impacts is therefore not within the scope of this assessment.
- 9.4.6 The likely cumulative effects of the proposal with other development proposals near the Site has been assessed in **Section 9.10** with regards to surface water, flood risk and drainage.

### Assessment methodology

- 9.4.7 Baseline conditions regarding water receptors have been established via a desk based assessment by reviewing the following sources of information:
- Western Wales River Basin Management Plan, including the NRW Water Watch Wales data viewer.
  - Magic maps, [www.magic.defra.gov.uk](http://www.magic.defra.gov.uk).
  - NRW Flood Map for Planning web-based resource.
  - NRW Flood Risk Assessment Wales Map web-based resource.
  - NRW Data Map Wales Web Viewer.
  - British Geological Survey GeoIndex.
  - Cranfield University Soilscape.
  - Outline Drainage Strategy: Land at Port Talbot Steelworks Revision A (EAF project – TATT3054 – Rev A – 28<sup>th</sup> June 2024) prepared by JBA Consulting in June 2024.
  - Flood Consequence Assessment: Land at Port Talbot Steelworks Revision B (EAF Project - TATT3054 - Rev B – 28<sup>th</sup> June 2024) prepared by JBA Consulting in May 2024.
  - Tata Steel UK Limited (Tata Steel) Water Review (May 7<sup>th</sup> 2024), including Abstraction Assessment and Effluent Impact Assessment.

- Neath Port Talbot County Borough Council Margam Moors Feasibility Study, May 2008.
- 9.4.8 The water assessment has been adapted from methodology for assessment of impacts to the water environment as outlined in the industry recognised guidance in LA113 of the Design Manual for Roads and Bridges (DMRB, Highways Agency, 2020).
- 9.4.9 The assessment will give consideration to two baselines. The established baseline refers to the steel works as operating in early 2024 and the majority of the preceding 50+ years (with 'heavy end' operations). Heavy end activities are defined as including the operation of the stockyard, sinter plant, coke ovens, blast furnaces and steel converter. This will form the primary baseline for the impact assessment for the EAF construction and operation phases as it most appropriately reflects the situation that has occurred at the Site for many years and is the prevailing position.
- 9.4.10 Consideration will also be given to an interim baseline in the impact assessment. This reflects a situation of closure of all heavy end infrastructure. This could be classified as a 'do nothing' scenario, in which closure of the existing facilities is not assumed to be replaced by heavy industry.
- 9.4.11 A future baseline has not been explicitly referenced in this chapter. The relevant future baseline with respect to the water environment refers to the impacts of climate change, which has been discussed in **Section 9.5**.

### Value of receptor

- 9.4.12 Water environment receptors have been identified based on the value of the feature or resource using the criteria described in **Table 9-2**, a version the DMRB LA 113 Table 3.70 was adapted for use in this chapter. The sensitivity is determined through a combination of professional judgement and the environmental value of receptors, as recognised or determined by criteria from the WFD classifications and flood risk vulnerability classifications specified in Planning Policy Wales TAN-15. Each receptor may be categorised as being of negligible, low, moderate or high importance or sensitivity. Examples of the classification of receptors are outlined in **Table 9-2**.

**Table 9-2 Estimating significance of water environment receptors (adapted from DMRB Highways Agency 2020)**

| Value | Description                                                             | Examples      |                                                                                                                                                                                                                                  |
|-------|-------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High  | Internationally or nationally significant attribute of high importance. | Surface Water | Watercourses having a WFD classification shown in a RBMP.<br>Site protected/designated for international importance (SAC, SPA, Ramsar site) or national importance (SSSI, NNR) for water related species (e.g. salmonid waters). |
|       |                                                                         | Groundwater   | Principal aquifer providing a regionally important resource and/or supporting a site protected under UK legislation as referenced in DMRB LA 108.                                                                                |

| Value      | Description                                       | Examples      |                                                                                                                                                                                                                                                                 |
|------------|---------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                                                   |               | Groundwater supports groundwater dependant terrestrial ecosystems (GWDTE).<br>Source protection zone (SPZ)1.                                                                                                                                                    |
|            |                                                   | Flood risk    | Emergency services or highly vulnerable as defined by TAN-15.                                                                                                                                                                                                   |
| Medium     | Locally significant attribute of high importance. | Surface Water | Watercourses having a WFD classification shown in a RBMP. With species protected under UK legislation as referenced in DMRB LA 108.<br>Or watercourses not having a WFD classification, but form part of a locally significant water habitat in good condition. |
|            |                                                   | Groundwater   | Principal aquifer providing locally important resource or supporting a river ecosystem.<br>Groundwater supports GWDTE.<br>SPZ 2.                                                                                                                                |
|            |                                                   | Flood risk    | Less vulnerable development as defined by TAN-15.                                                                                                                                                                                                               |
| Low        | Of moderate quality and rarity                    | Surface Water | Watercourses not having a WFD classification shown in a RBMP.                                                                                                                                                                                                   |
|            |                                                   | Groundwater   | Aquifer providing water for agricultural or industrial use with limited connection to surface water or SPZ 3.                                                                                                                                                   |
|            |                                                   | Flood risk    | Water compatible development.                                                                                                                                                                                                                                   |
| Negligible | Low quality                                       | Surface Water | Urban/industrial surface water drainage not having a WFD classification shown in a RBMP. In moderate/poor condition.                                                                                                                                            |
|            |                                                   | Groundwater   | Unproductive strata                                                                                                                                                                                                                                             |
|            |                                                   | Flood risk    | Undeveloped land e.g. agricultural land.                                                                                                                                                                                                                        |

### Magnitude of impact

- 9.4.13 Impact magnitude has been assessed following the criteria outlined in **Table 9-3** (adapted from the DMRB LA 113 Table 3.71).
- 9.4.14 Assessment of impact magnitude has been based on the risk of flooding from all sources to the Site. Further consideration has been given to flooding impacts caused from the Site during both construction and operational phases of the Proposed Development. The assessment of surface water flood risk impacts from development is based on the Welsh Government requirements to limit post-development surface water discharge rate to greenfield rates or provide betterment for already developed land using SuDS (a 30% drainage betterment in comparison to the existing land use for brownfield sites, such as the proposed development).

9.4.15 Assessment of impacts on water quality receptors is based on the potential to impact downstream water bodies protected under the WFD, and the Welsh Government requirement that policies within the LDP help deliver WFD requirements through biodiversity and water quality benefits. Where water quality is assessed on a watercourse that is not classified under the Water Environment (WFD) Regulations 2017, an assessment of overall water quality that is consistent with the WFD approach is applied (e.g. inclusion of ecological, chemical, hydro-morphological supporting quality elements).

**Table 9-3 Estimating the magnitude of an impact on an attribute (adapted from DMRB Highways Agency 2020)**

| Value            | Description                                                                | Examples      |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------|----------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Large – adverse  | Results in loss of attribute and/or quality and integrity of the attribute | Surface Water | Acute-soluble and chronic sediment related pollution.<br>High risk of pollution from spillage.<br>Loss or extensive change to a fishery.<br>Loss of regionally important public water supply.<br>Loss or extensive change to a designated nature conservation site.<br>Reduction in water body WFD classification.                                                                                                                                    |
|                  |                                                                            | Groundwater   | Loss of or extensive change to an aquifer.<br>High risk of pollution from spillage.<br>Loss of regionally important water supply.<br>Potential high risk of pollution to groundwater from routine runoff.<br>Loss of or extensive change to GWDTE or baseflow contribution to protected surface water bodies.<br>Reduction in water body WFD classification.<br>Loss or significant damage to major structures through subsidence or similar effects. |
|                  |                                                                            | Flood risk    | Increase in peak flood level (>100mm).                                                                                                                                                                                                                                                                                                                                                                                                                |
| Medium - adverse | Results in effect on integrity of attribute, or loss of part of attribute. | Surface Water | Acute-soluble and chronic-sediment related pollution.<br>Partial loss in productivity of a fishery.<br>Degradation of regionally important public water supply or loss of major commercial/industrial/agricultural supplies.<br>Contribution to reduction in waterbody WFD classification.                                                                                                                                                            |
|                  |                                                                            | Groundwater   | Partial loss or change to an aquifer.<br>Degradation of regionally important public water supply or loss of significant commercial/industrial/agricultural supplies.                                                                                                                                                                                                                                                                                  |

| Value               | Description                                                                                   | Examples                                                                          |                                                                                                                                                                                                                                                                                                      |
|---------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                                                               |                                                                                   | <p>Potential medium risk of pollution to groundwater from routine runoff.</p> <p>Partial loss of the integrity of GWDTE.</p> <p>Contribution to reduction in water body WFD classification.</p> <p>Damage to major structures through subsidence or similar effects of loss of minor structures.</p> |
|                     |                                                                                               | Flood risk                                                                        | Increase in peak flood level (>50mm).                                                                                                                                                                                                                                                                |
| Small - adverse     | Results in some measurable change in attributes, quality or vulnerability                     | Surface Water                                                                     | <p>Acute soluble or chronic sediment related pollution.</p> <p>Low calculated risk of pollution from spillages.</p> <p>Minor effects on water supplies.</p>                                                                                                                                          |
|                     |                                                                                               | Groundwater                                                                       | <p>Potential low risk of pollution to groundwater from routine runoff.</p> <p>Low probability of pollution from spillages.</p> <p>Minor effects on an aquifer, GWDTEs, abstractions and structures.</p>                                                                                              |
|                     |                                                                                               | Flood risk                                                                        | Increased in peak flood level (>10mm).                                                                                                                                                                                                                                                               |
| Negligible          | Results in effect on attribute, but of insufficient magnitude to affect the use or integrity  | The proposed project is unlikely to affect the integrity of the water environment |                                                                                                                                                                                                                                                                                                      |
|                     |                                                                                               | Surface Water                                                                     | No risk identified from acute soluble or chronic sediment related pollutants.                                                                                                                                                                                                                        |
|                     |                                                                                               | Groundwater                                                                       | Very low risk of pollution from spillages.                                                                                                                                                                                                                                                           |
|                     |                                                                                               | Flood risk                                                                        | Negligible change to peak flood levels ( $\leq \pm 10$ mm).                                                                                                                                                                                                                                          |
| Small - beneficial  | Results in some beneficial effect on attribute or a reduced risk of negative effect occurring | Surface Water                                                                     | <p>Acute soluble or chronic sediment related pollution becomes pass from previous fail.</p> <p>Calculated reduction in risk of pollution from spillages.</p>                                                                                                                                         |
|                     |                                                                                               | Groundwater                                                                       | <p>Calculated reduction in risk of spillages.</p> <p>Reduction in groundwater hazards to existing structures.</p> <p>Reduction in waterlogging and groundwater flooding.</p>                                                                                                                         |
|                     |                                                                                               | Flood risk                                                                        | Creation of flood storage and decrease in peak flood level (> 10mm).                                                                                                                                                                                                                                 |
| Medium - beneficial | Results in moderate improvement of attribute quality                                          | Surface water                                                                     | <p>Acute soluble or chronic sediment related pollution becomes pass from previous fail.</p> <p>Calculated reduction in risk of pollution from spillages.</p> <p>Contribution to improvement in water body WFD classification.</p>                                                                    |
|                     |                                                                                               | Ground water                                                                      | Calculated reduction in risk of spillages.                                                                                                                                                                                                                                                           |

| Value              | Description                                       | Examples      |                                                                                                                                                                                                 |
|--------------------|---------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Large - beneficial | Results in major improvement of attribute quality |               | Contribution to improvement in water body WFD classification.<br>Improvement in waterbody CMAS classification.<br>Support to significant improvements in damaged GWDTE.                         |
|                    |                                                   | Flood risk    | Creation of flood storage and decrease in peak flood level (> 50mm).                                                                                                                            |
|                    |                                                   | Surface Water | Removal of existing polluting discharge to an aquifer or removing the likelihood of polluting discharges occurring.<br>Recharge of an aquifer.<br>Improvement in water body WFD classification. |
|                    |                                                   | Groundwater   | Removal of existing polluting discharge to an aquifer or removing the likelihood of polluting discharges occurring.<br>Recharge of an aquifer.<br>Improvement in water body WFD classification. |
|                    |                                                   | Flood risk    | Creation of flood storage and decrease in peak flood level (> 100mm).                                                                                                                           |
|                    |                                                   |               |                                                                                                                                                                                                 |

### Determination of significance

- 9.4.16 Significance of an effect is determined in accordance with the methodology outlined in **Chapter 4 Environmental Assessment Methodology**. A matrix is applied to the determination of significant effects by appraising the value of the receptor against the magnitude of likely impacts, as outlined in **Table 9-4** below. Major and moderate effects, which are likely to be factors in deciding whether a development is acceptable, are considered to be significant effects.
- 9.4.17 Significance of effects is assessed for the construction and operational phases, taking into account embedded mitigation that forms part of the scheme design. Effects can be beneficial or adverse, direct or indirect, temporary or permanent. Intense impacts that would only persist for the duration of the construction works or a short time afterwards are considered temporary, while impacts that are complex, irreversible or would persist for a long time during the operation of the development are considered permanent. Where a likely effect would fall between significance scores a professional judgement has been made on which to apply. Residual effects refer to effects that would remain following the implementation of the additional mitigation measures.

**Table 9-4 Matrix of determining significance of effect**

| Importance/<br>sensitivity | Impact magnitude |        |          |                  |
|----------------------------|------------------|--------|----------|------------------|
|                            | Large            | Medium | Small    | Negligible       |
| High                       | Major            | Major  | Moderate | Negligible/minor |

|            |                  |            |            |            |
|------------|------------------|------------|------------|------------|
| Medium     | Major            | Moderate   | Minor      | Negligible |
| Low        | Moderate         | Minor      | Negligible | Negligible |
| Negligible | Negligible/minor | Negligible | Negligible | Negligible |

### Limitations of the assessment

- 9.4.18 The following assumptions have been made in this assessment.
- 9.4.19 The scheme will be implemented and constructed in accordance with project design as outlined in **Chapter 2 Proposed Development**. Embedded mitigation measures will be implemented as outlined in this chapter.
- 9.4.20 The scheme will be implemented and constructed in accordance with an approved SAB compliant drainage strategy in accordance with the guidance provided in the CIRIA SuDS Manual and Statutory Standards for SuDS in Wales. In particular, applying the water quality treatment train and the control of surface water quantity from the Site for small (1 in 1 year) and large (1 in 100 year) magnitude events with an allowance for climate change, as per the Welsh Government Guidance on Climate Change Allowances for Planning Purposes.
- 9.4.21 Construction mitigation measures will follow standard industry best practice for environmental management and be incorporated into the Construction Environment Management Plan (CEMP).
- 9.4.22 The FCA has been informed by the latest release of the Flood Map for Planning by NRW. The Flood map for Planning has been informed by updated detailed hydraulic modelling, undertaken by JBA Consulting, and accepted by NRW in the form of a Flood Map Challenge. The FCA, and the Flood Map for Planning therefore represent the most likely scenario for flood risk to and from the Proposed Development site.
- 9.4.23 The WFD Cycle 3 information for the relevant waterbodies is the latest information available regarding water quality data.
- 9.4.24 All environmental regulatory consents will be gained prior to construction and adhered to throughout.
- 9.4.25 DCWW will continue to manage the necessary mitigation measures for water supply and sewerage discharge under their existing statutory responsibilities and will meet all consenting requirements.
- 9.4.26 These assumptions are considered to be appropriate for the type of assessment, the Proposed Development and the importance of the baseline water environment.

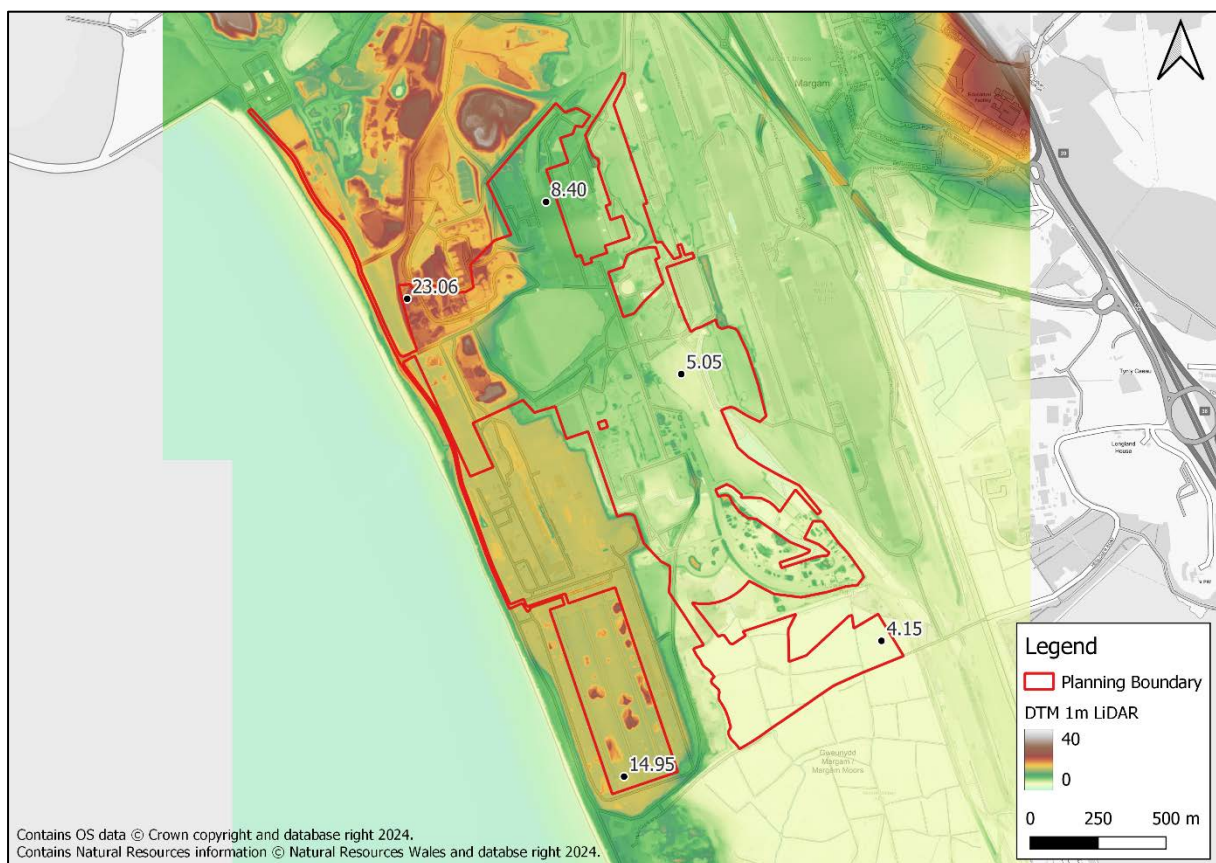
## 9.5 Established, interim and future environmental baseline

### Topography and land use

- 9.5.1 The Land at Port Talbot Steelworks is located south of Port Talbot, is bound to the south-west by the Bristol Channel, and to the east by Margam and the M4. The Network Rail Swansea to London mainline generally forms the eastern part of the Site, with some small areas of the Applicant's owned land beyond this. The town of Port Talbot and Port Talbot Docks is located to the north of the Site, with the southern part of the Site encompassing

Margam Moors SSSI. The steelworks is approximately 5.8 km from north to south and 1.9 km from east to west.

- 9.5.2 The majority of the Site consists of industrialised areas involved in the production of steel. These areas contain existing buildings and structures, hardstanding storage areas and infrastructure such as access roads and a rail corridor to the south-east.
- 9.5.3 Within the south of the Site is open coastal floodplain grassland, which is connected to the northern areas of Margam Moors SSSI.
- 9.5.4 The topography of the Site is relatively flat, gently sloping in a south-easterly direction. The eastern side of the Site is generally lower than the west, with site levels typically remaining below 10 mAOD. The lowest site levels are found in the south-east, adjacent to Margam Moors wetlands at 4.15 mAOD. The west of the Site is shown to have typically higher ground levels, likely due to existing material and scrap storage areas. Levels in the south-west of the Site are approximately 14.95 mAOD, with the highest levels shown to be in the north-west of the Site at around 23.06 mAOD. Natural Resources Wales (NRW) 1m LiDAR data has been used to illustrate the topography of the Site, as show in **Figure 9-1.**



**Figure 9-1 Topography from NRW 1m LiDAR DTM**

### Soils and geology

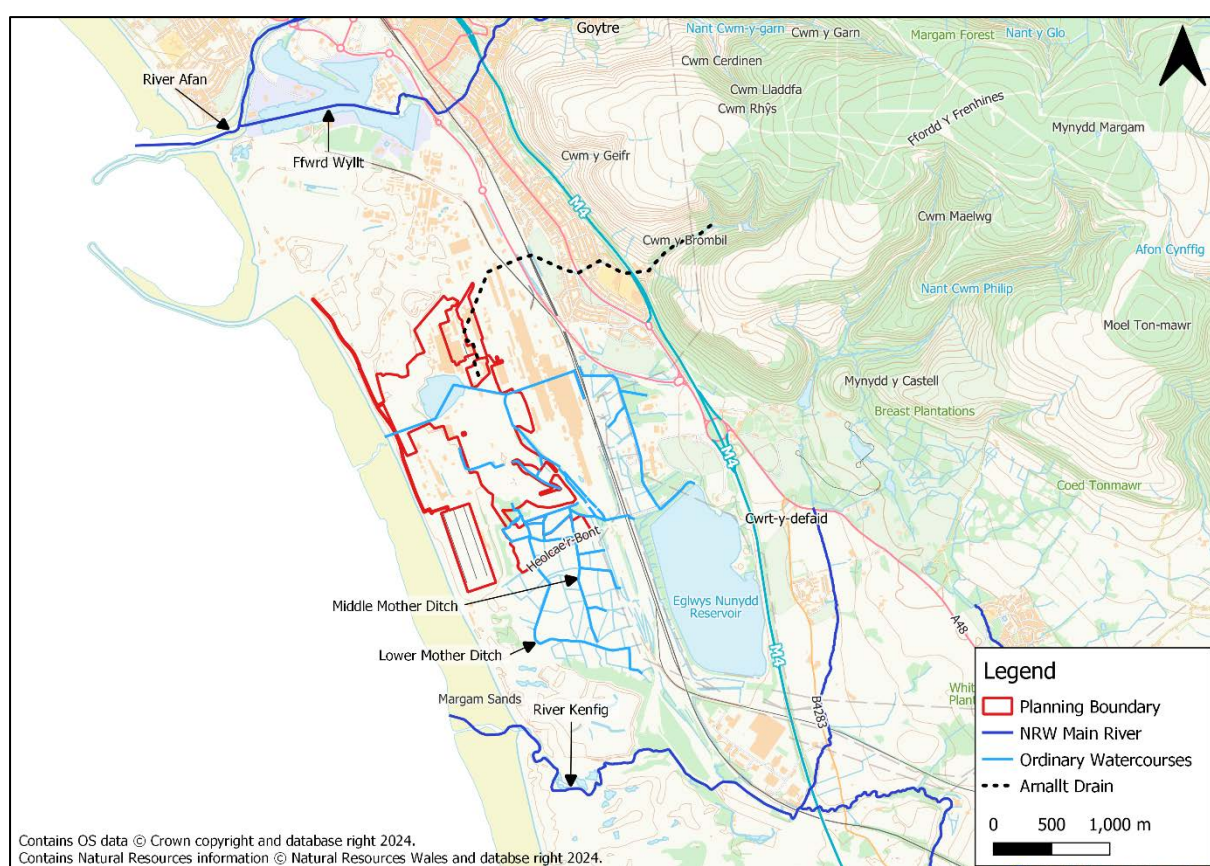
- 9.5.5 According to British Geological Survey GeoIndex the majority of the Site's underlying bedrock geology is South Wales Middle Coal Measures Formation comprised of mudstone, siltstone and sandstone. Superficial geology at the Site is comprised of Tidal

Flat deposits made up of clay, silt and sand. The soils have been assessed on the Cranfield University Soilscape viewer and shown to be loamy and clayey soils of coastal flats with naturally high groundwater.

- 9.5.6 Due to the long-term use as a steelworks, in practice, most of the Site is overlain by superficial deposits of made ground. This is typically comprised of waste generated during the steel process, such as slag.
- 9.5.7 The groundwater levels at the Site are expected to be relatively high in some areas; expected to be 1-2 m from the surface in the lower lying areas.

### Waterbodies and hydrological features

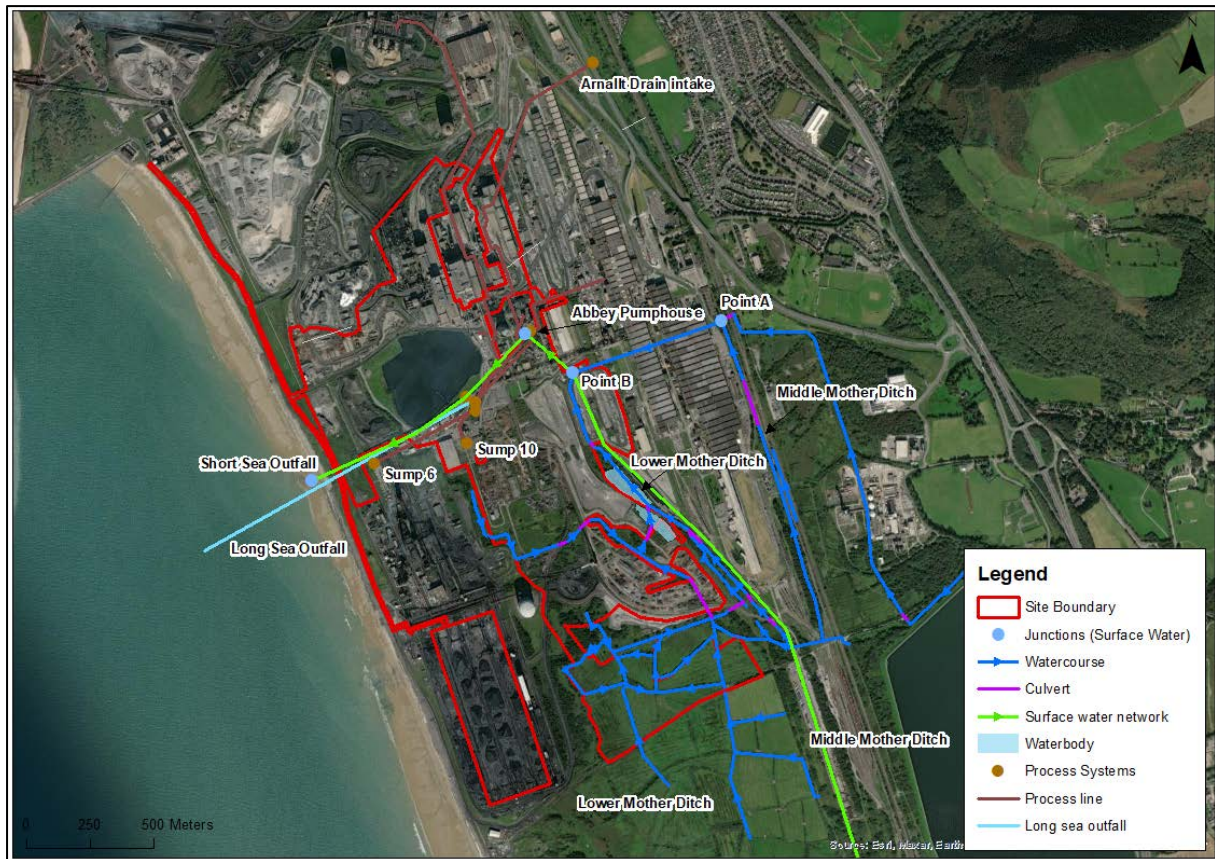
- 9.5.8 The Site is located adjacent to Swansea Bay on the western part of the Site. There are no NRW Main Rivers within the part of the Site. A number of NRW Main Rivers are located within 2 km of the Site, including the Afon Cynffig to the south and the Afon Afan and Nantffrwdwyllt to the north. Under the established baseline, all three of these rivers are used for process water abstraction at the Site. The Eglwys Nunydd Reservoir, which is a SSSI, is located southeast of the Site. **Figure 9-2** shows the location of these waterbodies.



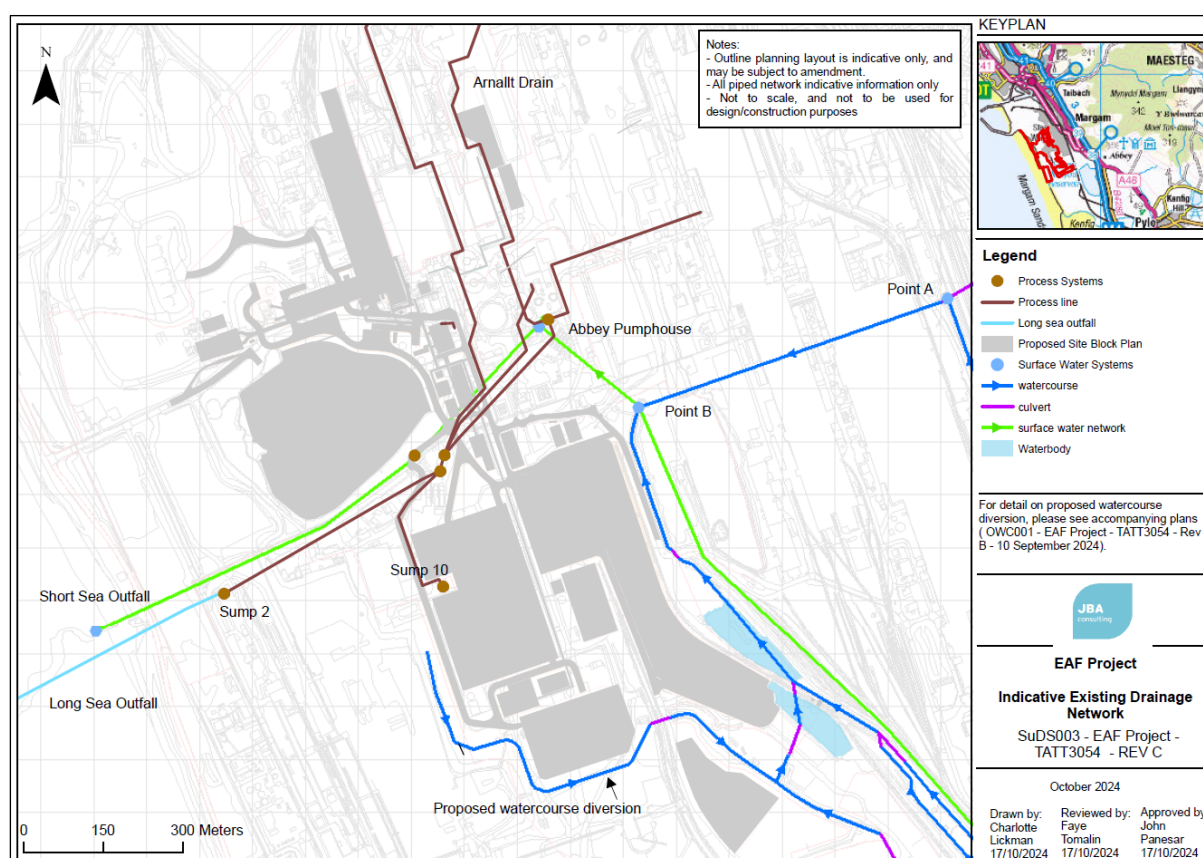
**Figure 9-2 Watercourses and waterbodies in and around the Site**

- 9.5.9 The site itself has a complex network of surface water drainage with several ordinary watercourses crossing the Site. Along with a number of watercourses, the Site has an extensive piped drainage network to manage surface water runoff, foul drainage, and process water. These systems interact, as detailed in **Figure 9-3**.

- 9.5.10 The Arnallt drain intake is located to the north of the Site and is an ordinary watercourse which is culverted through the Site to the Abbey Pumphouse, as shown in **Figure 9-3**. The intake from the Arnallt drain is used in the process system associated with the operation of the steelworks, before flowing to the short sea outfall.
- 9.5.11 To the south of the development site, Margam Moors drains in a northerly direction towards the Site. The reen network of the moors comprises a SSSI and site of importance for nature conservation (SINC), with the extent of the SSSI boundary Heolcae-r Bont, at the southern extent of the Applicant's land ownership. The reen network drains in a northerly direction, through the development site, and ultimately drains to the Lower Mother Ditch.
- 9.5.12 The Lower Mother Ditch drains in a northerly direction through a small lake towards 'Point B', a pumping station serving the wider Tata Steel UK Limited (Tata Steel) infrastructure. Point B also receives flows from the Middle Mother Ditch via 'Point A'. These are shown in **Figure 9-4** below. Under the established baseline, flows from the Middle Mother Ditch are abstracted and used in site processing. Point B is a Tata Steel UK Limited (Tata Steel) owned structure that culverts surface water towards the Abbey Pumphouse. The Abbey Pumphouse directs surface water to the short-sea outfall into Swansea Bay. When water levels across the moors are high, water within the Lower Mother Ditch is pumped from Point B to the pumphouse. This manages optimum water levels on the moors.
- 9.5.13 Several small ditches flow along the Site's eastern part of the Site and are culverted to the Lower Mother Ditch south of the existing lake. A ditch also runs from the western part of the Site in an easterly direction to the Lower Mother Ditch. This ditch only receives flows from the Site, including land drainage and groundwater from the Coke Ovens area, which is elevated some 7m above local ground levels. The ditch is partially culverted along its route to the Lower Mother Ditch.
- 9.5.14 Some of the surface water within the Site therefore flows into the surface watercourses within the Site, all of which are ultimately discharged to Swansea Bay through the site outfall.



**Figure 9-3 Land at Port Talbot Steelworks surface water drainage**



**Figure 9-4 Drainage points A and B at the Steelworks**

**9.5.15** Surface water features of interest have been listed and described in **Table 9-5** below.

**Table 9-5 Hydrological features at or close to the Site**

| Hydrological feature          | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Watercourse</b>            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Swansea Bay / Bristol Channel | Along the south-western part of the Site.<br>The Steelworks discharges combined surface water/effluent discharge into the bay.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Afon Afan                     | NRW main river located 1.6 km to the north of the Site and separates the Site and the docks area from the urban extent of Port Talbot. The Afon Afan rises on the northern slopes of Mynydd Llangeinwyr to the east of Blaengwynfi and generally flows in a south westerly direction outfalling to Swansea Bay at Aberavon/Port Talbot.<br><br>Surface water and drainage from the Site is not considered to be hydrologically linked to the river. However, flows from the Afon Afan are abstracted for process use immediately upstream of Green Park Weir. |
| Nantffrwdwyllt                | NRW main river located 1.6 km to the north of the Site. The Nantffrwdwyllt rises in the vicinity of Bryn approximately 7 km to the north-east of the Site. The watercourse flows in a south-westerly direction before discharging into the Port Talbot docks.                                                                                                                                                                                                                                                                                                 |

| Hydrological feature                                               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                    | Surface water and drainage from the Site is not considered to be hydrologically linked to the river. Flows from the river are abstracted for process use.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Afon Cynffig (Kenfig)                                              | <p>An NRW main river located approximately 1.3 km to the south of the Site. The Afon Cynffig rises in the hills to the east of the Site and flows in a southerly then westerly direction before discharging into Swansea Bay.</p> <p>The site not within Afon Cynffig catchment, although in extreme flood conditions it may be possible for floodwater to enter Margam Moors from the Afon Cynffig. Flows from the river are used for abstraction to provide process water to the Site.</p>                                                                                                                                                                                                                           |
| Tu Du Brook (Nant Cwm Phillip)                                     | <p>An NRW main river located approximately 1.7 km to the east of the Site. The watercourse rises in the hills to the east of the Site and flows in a southerly direction before discharging into the Afon Cynffig to the south of Kenfig Industrial Estate. Flows from the Tu Du Brook catchment are also connected to the Eglwys Nunydd Reservoir, which feeds the ordinary watercourses on the Site and is used for abstraction. The ordinary watercourses flowing from Eglwys Nunydd Reservoir are the primary source of water for Margam Moors.</p>                                                                                                                                                                |
| Margam Moors ditches (Lower Mother Ditch and Middle Mother Ditch)  | <p>Margam Moors SSSI wetlands is located to the south of the Site and consists of a series of small drains and ditches. The northern extent of the reed network is within the Site.</p> <p>Named ditches in this area include, Lower Mother Ditch flowing roughly northwards through the west of the moors and Middle Mother Ditch flowing northwards through the centre of the moors. A number of interlinked unnamed ditches are also present and connect into these larger ditches.</p> <p>Both Lower and Middle Mother Ditch flows into the southern extent of the Site. Flows from Middle Mother Ditch are used for abstraction at its northerly extent within the Site to provide process water to the Site.</p> |
| Ponds/lakes/reservoirs                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Tata Steel UK Limited (Tata Steel) operational lagoon (BOS lagoon) | <p>Located at the northern extent of the Site, within the Proposed Development. The operational lagoon is used for process water supply and forms an artificial water body constructed to support the operation of the steel works.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Eglwys Nunydd Reservoir                                            | <p>Located 360m to the south-east of the Site and is bounded to the west by the freight railway lines and to the east by the M4. The reservoir is 110 ha reservoir and designated a SSSI and was constructed to provide water for the steelworks. The steelworks maintain a licence to abstract from the Tu Du Brook to supply the reservoir.</p> <p>The reservoir is hydrologically linked to the Site through a drainage channel connected to Point A.</p>                                                                                                                                                                                                                                                           |
| Pond on Lower Mother Ditch                                         | <p>Lower Mother Ditch flows in a northerly direction through a pond within the Site, located in the east of the Site.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Docks and surface drainage                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Steelworks drainage                                                | <p>Due to the nature and operational use of the Site, a substantial drainage system is in place to process surface water and effluent in a combined network within the Applicant's operational facility.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Hydrological feature | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      | <p>Surface water enters the Site from ordinary watercourses to the south (Lower Mother Ditch), east (Middle Mother Ditch) and north (Arnallt drain). The surface water is culverted into the combined network. Other drainage ditches are present on site, connecting to the main network.</p> <p>The combined surface/effluent outfall is via the Long Sea Outfall, which discharges approximate 2 km offshore in the Swansea Bay. A second excess surface water outfall discharges via the Abbey Beach outfall (Short Sea Outfall).</p> |
| Port Talbot Docks    | <p>Port Talbot Docks are located 1.3km north of the Site. Site surface water drainage does not directly link to the Port Talbot docks. However, the docks is a permitted abstraction points for process water to the Site. The docks are a freshwater waterbody fed by the Afon Afan and Nantffrwdwyllt watercourses.</p>                                                                                                                                                                                                                 |

## Water quality and WFD

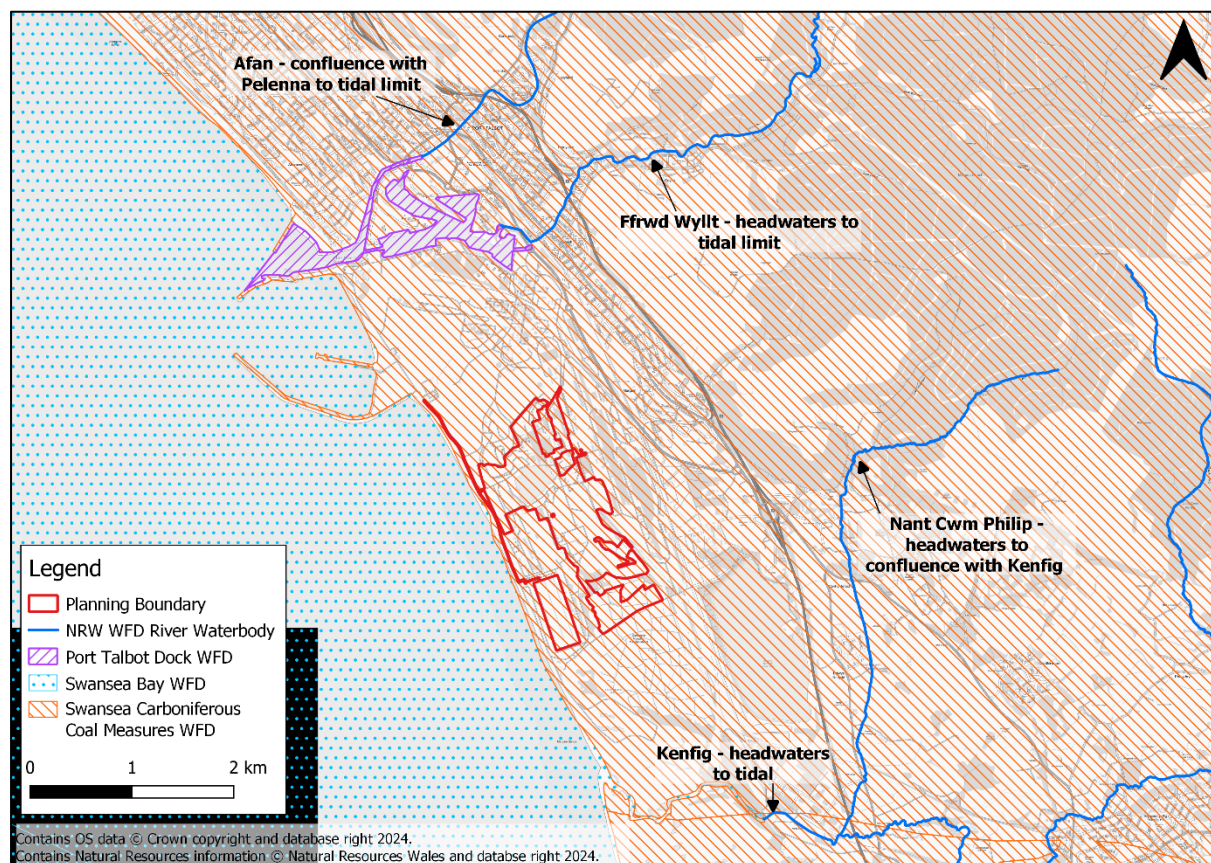
### WFD waterbodies

- 9.5.16 The NRW Watch Water Wales data viewer provides WFD classification data for the nearby surface waterbodies. The WFD Cycle 3 status of the waterbodies within the vicinity of the Site are given in **Table 9-6**. A map showing the location and boundary of the waterbodies is given in **Figure 9-5**.

**Table 9-6 WFD Waterbody Cycle 3 Status**

| WFD Waterbody                                     | WFD Ref.        | Distance from site (m) | Description                               | Cycle 3 2021 Overall Status | Cycle 3 2021 Ecological Status | Cycle 3 2021 Chemical Status |
|---------------------------------------------------|-----------------|------------------------|-------------------------------------------|-----------------------------|--------------------------------|------------------------------|
| Watercourse                                       |                 |                        |                                           |                             |                                |                              |
| Swansea Bay                                       | GB641008260000  | 0                      | Coastal – Heavily Modified                | Moderate                    | Moderate                       | Moderate                     |
| Ffrwd Wylt - headwaters to tidal limit            | GB 110058026100 | 1600                   | River - Heavily Modified Waterbody        | Moderate                    | Moderate                       | High                         |
| Nant Cwm Phillip – headwaters to conf with Kenfig | GB10058026190   | 1700                   | River - Natural                           | Poor                        | High                           | Poor                         |
| Kenfig - headwaters to tidal                      | GB110058026170  | 1300                   | River – Natural                           | Moderate                    | Moderate                       | High                         |
| Afan Estuary including Docks                      | GB 541005800600 | 1300                   | Transitional - Heavily Modified Waterbody | Moderate                    | Moderate                       | Good                         |

| WFD Waterbody                       | WFD Ref.        | Distance from site (m) | Description           | Cycle 3 2021 Overall Status | Cycle 3 2021 Ecological Status | Cycle 3 2021 Chemical Status |
|-------------------------------------|-----------------|------------------------|-----------------------|-----------------------------|--------------------------------|------------------------------|
| Swansea Carboniferous Coal Measures | GB 41002G201000 | 0                      | Groundwater - Natural | Poor                        | Good                           | Poor                         |



**Figure 9-5 Location of WFD waterbodies**

9.5.17 The 'Swansea Bay' coastal waterbody is immediately adjacent to the permanent and temporary development areas and receives all site drainage via the site outfalls. The waterbody is therefore identified as a water quality receptor to the impacts of the Proposed Development. There are three driving elements for the overall 'Moderate' WFD classification for the 'Swansea Bay' waterbody; DIN (Dissolved Inorganic Nitrogen), Mercury and Mitigation Assessment which are all classified as Moderate. Higher levels of DIN can impact the ability of aquatic animals to survive. Typical sources are from anthropogenic nutrient input of nitrogen compounds (including industrial discharges, agriculture and wastewater treatment). Swansea Bay has a long history of such source inputs. A Moderate classification for Mercury is presumed to be a result of contaminant accumulation in the estuary from historic sources. It is worth noting that the majority of estuary/bay coastal waterbodies in Wales are categorised as Moderate for Mercury. Finally, Mitigation Assessment is classified as Moderate and relates to actions in place to

improve the waterbody status. This classification is likely to be a direct result of the waterbody being classified as Heavily Modified.

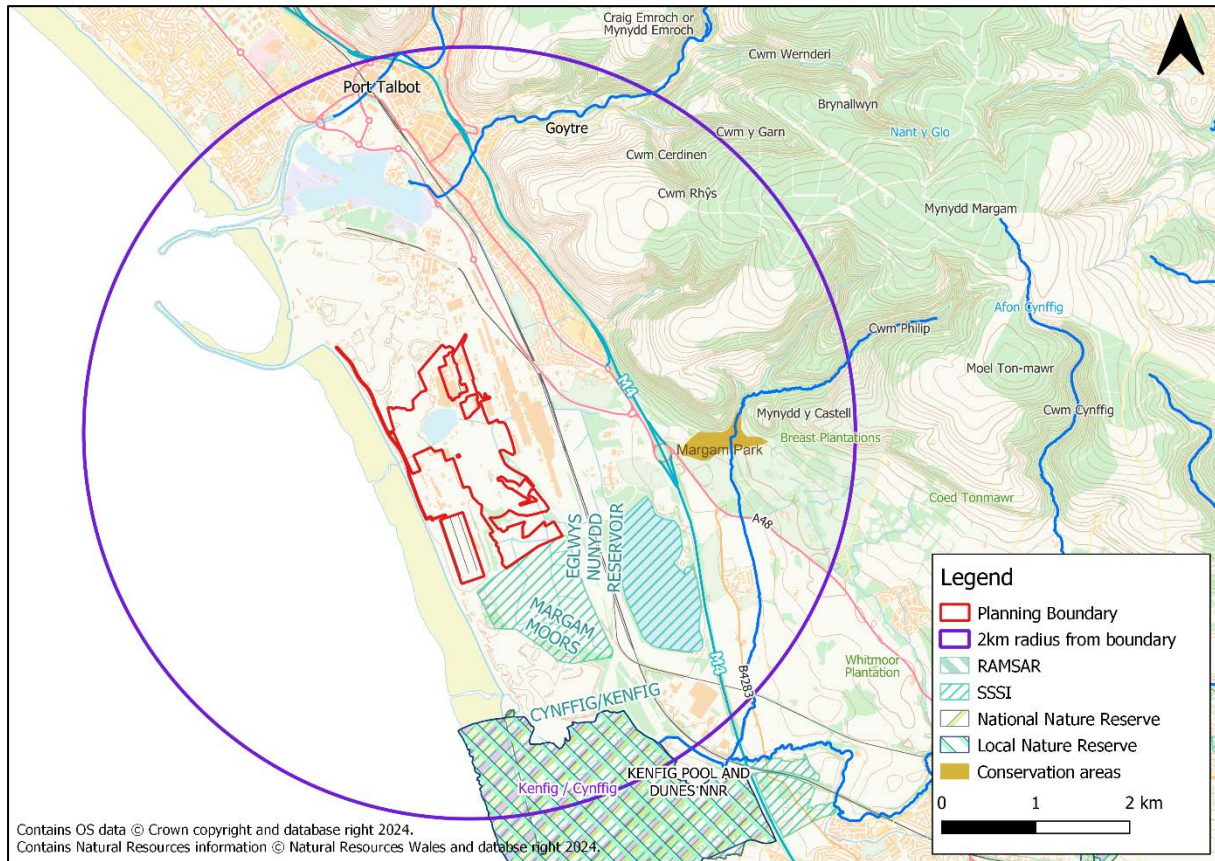
- 9.5.18 The Afan Estuary including Docks is a transitional water body with a Moderate overall WFD status due to a Moderate ecological status. The driving element for the water body not achieving good status is the mitigation assessment. Mitigation to improve the status is hindered by the heavily modified nature of the docks and the existing operational requirements. The waterbody is not impacted by surface water runoff and drainage from the Site. However, as site operations abstract water from the docks it is a sensitive receptor for the purpose of this assessment.
- 9.5.19 The 'Ffrwd Wyllt – headwaters to tidal limit' is located within a different hydrological catchment to the Proposed Development. The waterbody is not impacted by surface water runoff and drainage from the Site. However, as site operations abstract water from the docks it is a sensitive receptor for the purpose of this assessment.
- 9.5.20 Flows from the 'Nant Cwm Phillip – headwaters to conf with Kenfig' waterbody (Tu Du Brook) are connected to the Eglwys Nunydd Reservoir via the Nant Ffroga, the reservoir feeds the ordinary watercourses on the Site. As site operations abstract water from this watercourse, it is identified as a sensitive receptor for the purpose of this assessment. The Nant Cwm Phillip discharges into the 'Kenfig - headwaters to tidal' waterbody at its downstream extent, abstraction from the Nant Cwm Phillip has a small indirect effect on the 'Kenfig - headwaters to tidal' waterbody.
- 9.5.21 British Geological Survey maps show the Site and surrounding area is located on a highly vulnerable secondary aquifer but is not categorised as a Source Protection Zone for drinking water. The aquifer is designated as the 'Swansea Carboniferous Coal Measures' WFD Groundwater body. It 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 Development.

#### *Other waterbodies*

- 9.5.22 The site is adjacent to Margam Moors, which is designated as a SSSI and SINC. The SINC comprises wet woodland, reedbeds, ditches and marshy grassland. This type of complex is rare in Neath Port Talbot, with the only other known good quality example found at Crymlyn Bog Special Area of Conservation (SAC). The ditch system in this area is a key element of the complex, which forms part of a larger system that includes Margam Moors SSSI to the south. The wet and ancient semi-woodlands at this location are considered to be irreplaceable and not possible to re-create due to the complexities of the hydrology requirements of this habitat.
- 9.5.23 Although not designated as a WFD waterbody, the protected status of this wetland and inherent role of the ditch system in supporting the protected habitats and species, means that the baseline water quality and hydro-morphology status of the reen system can be assumed to be high.
- 9.5.24 1.3 km to the south of Margam Moors is the Kenfig/Cynffig SAC and SSSI, which is also designated for wetland habitat features. As the SAC wetland forms part of the Cynffig catchment it is not hydrologically linked to the development site, and not considered to be impacted by surface water runoff and site drainage. However, as site operations

abstract water from the Cynffig, the designated attributes of the Site are of interest to this assessment.

9.5.25 The relevant designated sites are presented in **Figure 9-6** below.



**Figure 9-6 Nearby sites designated for wetland habitat features**

#### *On site watercourses*

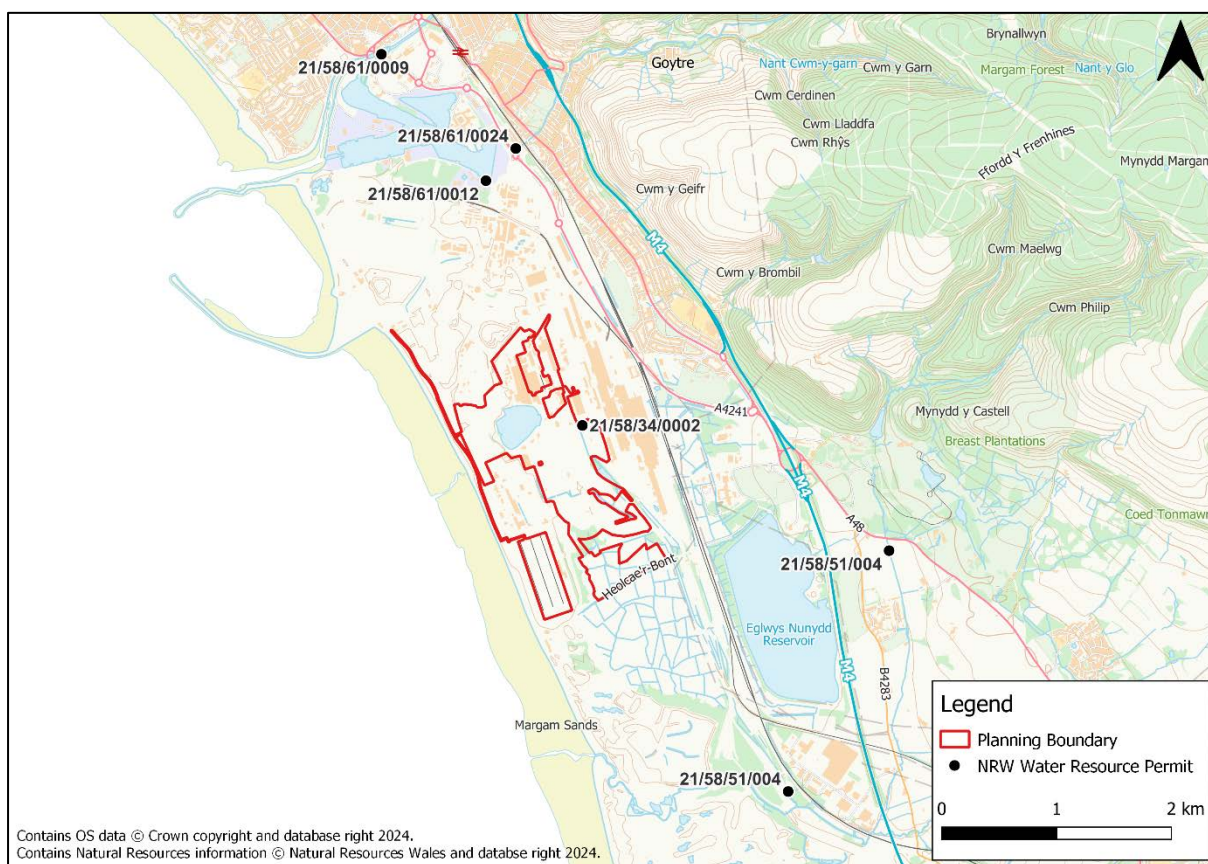
- 9.5.26 Limited water quality data is available for the watercourses and wetland/pond areas within the Site. Middle Mother Ditch is monitored for a restricted number of water quality analytes at Points A and B, most notably total suspended solids (TSS) which ranged from 2 – 25ppm across the year from June 2023 – June 2024. The water quality is generally considered to be relatively good in the ditches of the southern portion of the Site, as these flow through areas of coastal floodplain grassland and are fed by watercourses flowing from Margam Moors SSSI.
- 9.5.27 Further north, the watercourses flow through areas of significant historic industrial use, and much of the ground is expected to be contaminated. Surface water flowing across these areas into the on-site ditches will therefore entrain contaminants such as TSS, oil and other compounds and effect the overall water quality.
- 9.5.28 Within the main industrial complex to the north of the Site, the site drainage and effluent system becomes much more artificial. Historic contamination is known to significantly affect the water quality of these elements of the drainage system (notably the Site 'canals', such as Main Drain), where TSS and oil concentrations are very high and water quality is low.

## Abstraction

- 9.5.29 The established baseline for the Site includes abstraction of water for process use at the Applicant's facility. The licensed abstraction points and volumes are listed in **Table 9-7** below and shown in **Figure 9-7**.
- 9.5.30 All abstractions are well below the permitted limits except for abstraction from Mother's Ditch. Mother's Ditch is abstracted at higher levels as part of arrangements between NRW and the Applicant to manage water levels on Margam Moors SSSI. NRW has issued confirmation of this via a formal waiver. The additional abstraction is therefore not considered to cause significant impacts and provides benefit to the overall management of the moors water levels.

**Table 9-7 Licensed water abstraction under baseline conditions**

| Source                                 | Licence volume (m <sup>3</sup> /hr) | Use under established baseline (m <sup>3</sup> /hr) |
|----------------------------------------|-------------------------------------|-----------------------------------------------------|
| Afan (21/58/61/0009)                   | 1704.75                             | 1441                                                |
| Ffrwd (21/58/61/0024)                  | 259.5                               | 218                                                 |
| Dock (21/58/61/0012)                   | 4909.8                              | 2817.5                                              |
| Mother's Ditch (21/58/34/0002)         | 140.12                              | 1650                                                |
| Kenfig (21/58/51/004)                  | 1349.27                             | 311                                                 |
| Eglwys Nunydd Reservoir (21/58/51/004) | 1349.27                             | 845                                                 |



**Figure 9-7 Location of abstraction licences for Land at Port Talbot Steelworks**

### Effluent and foul drainage

- 9.5.31 As outlined in the sections above, the baseline conditions of the Site entail discharge of treated effluent to Swansea Bay via two outfalls the Long Sea Outfall and the Short Sea Outfall. The water quality associated with these outfalls is strictly monitored under the conditions of the Site Environmental Permit.
- 9.5.32 Data on water quality is available from the Effluent Impact Assessment completed as part of the Water Review by the Applicant in May 2024.
- 9.5.33 Under the established baseline concentrations of key contaminants in the effluent discharge must adhere to limits set in the Site Environmental Permit. A summary of discharge concentrations and discharge limits at the Long Sea Outfall for key contaminants under is given in **Table 9-8** (data provided from the Applicant) 2024 Water Review Effluent Impact Assessment). The results show that discharge concentrations are generally within the limits, with the exception of oil at 5.6ppm which slightly exceeds the permitted limit of 5ppm due to entrainment of historic contamination from site drains. The emission from water is reported to NRW on a six-monthly basis, including oil.

**Table 9-8 Effluent discharge constituents under established baseline operations**

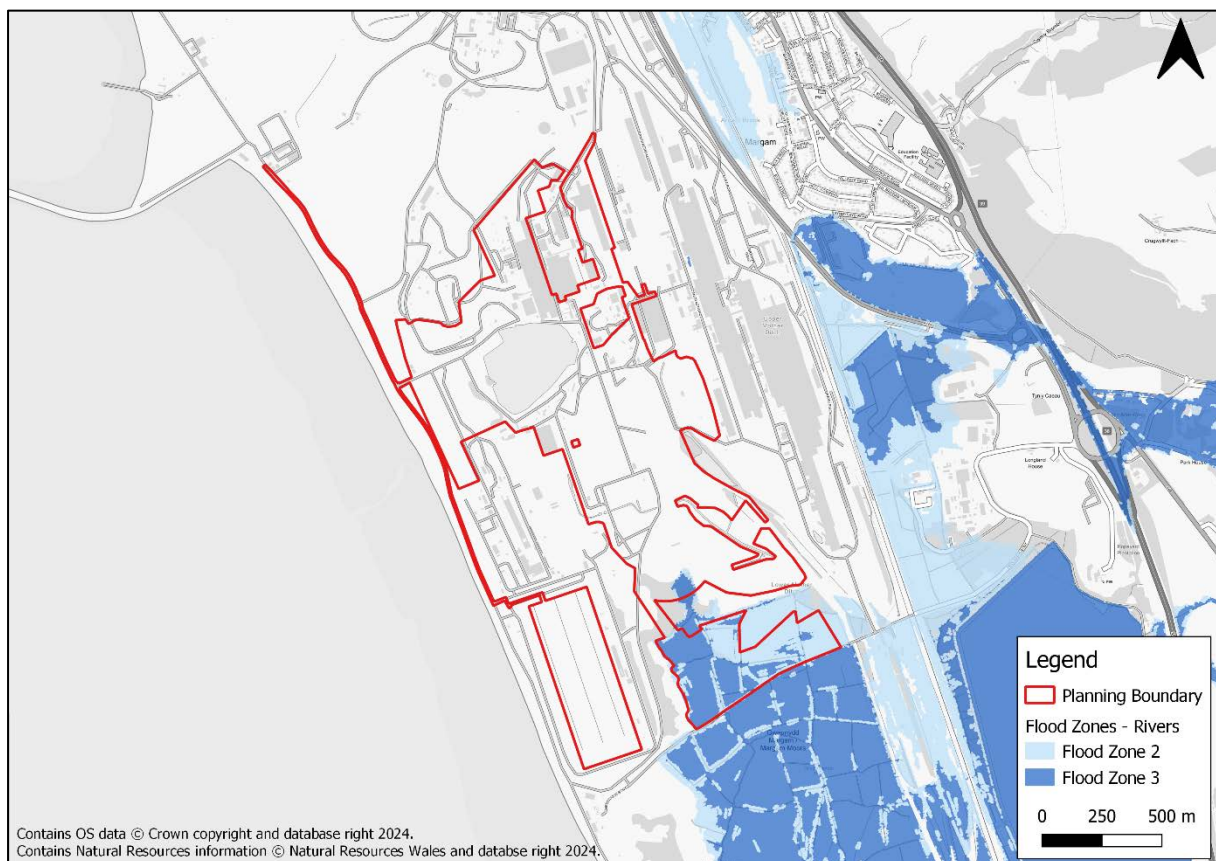
| Analyte at LSO (limit)          | Ppm in discharge (established baseline)*<br>(Average values from 2023) |
|---------------------------------|------------------------------------------------------------------------|
| Total Suspended Solids (150ppm) | 38.79                                                                  |
| Oil (5ppm)                      | 1.86                                                                   |
| NH3/Nox (50ppm)                 | 8.24                                                                   |
| Chlorine (No Limit)             | 101                                                                    |
| CNS (4ppm)                      | 0.35                                                                   |
| CN (0.1ppm)                     | 0.034                                                                  |
| Sulphide (0.1ppm)               | 0.02                                                                   |
| Phenol (0.5ppm)                 | 0.016                                                                  |
| Chromium (0.5ppm)               | 0.083                                                                  |
| Iron (5ppm)                     | 4.01                                                                   |
| Nickel (0.5ppm)                 | 0.092                                                                  |
| Zinc (2ppm)                     | 1.19                                                                   |

- 9.5.34 A foul network is also present within the Site, which connects to DCWW assets and is pumped to the Port Talbot sewage treatment works north of the Site.

### Flood risk

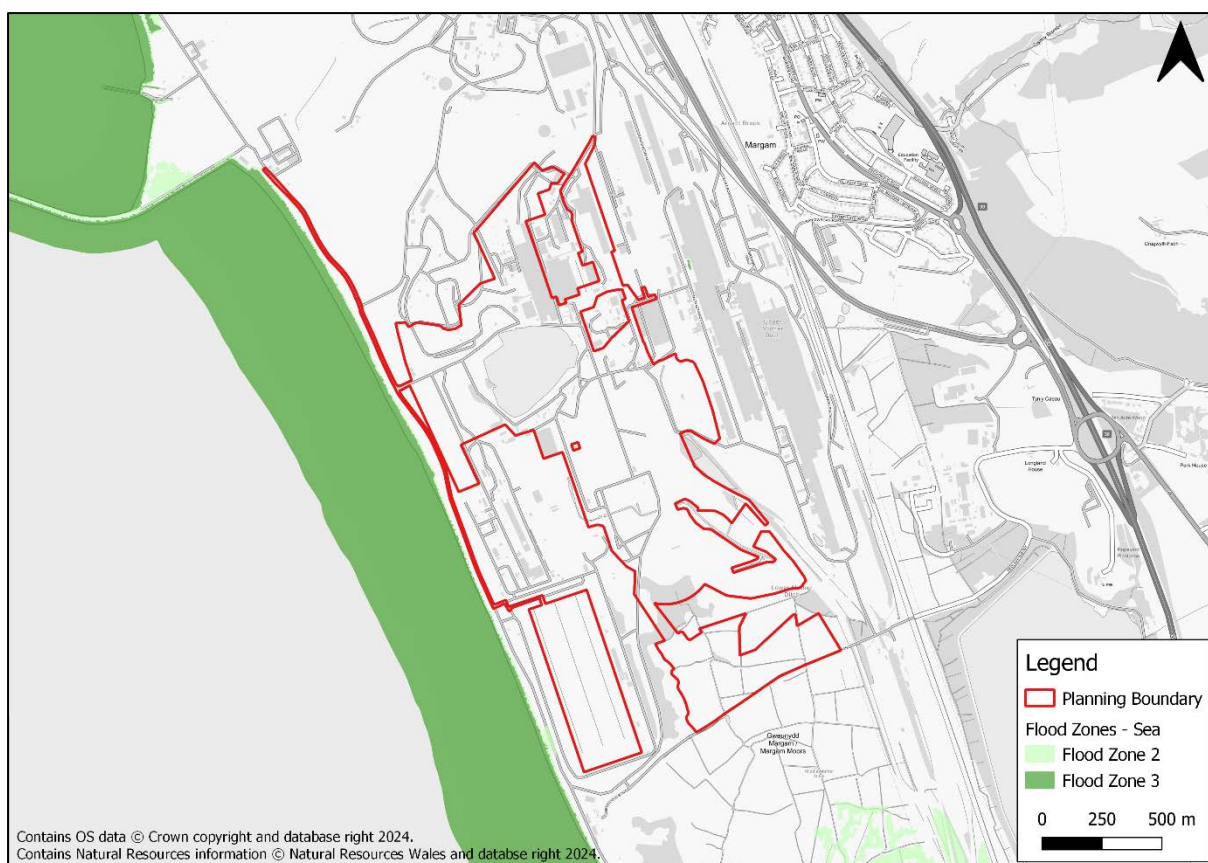
- 9.5.35 The Flood Consequences Assessment; Land at Port Talbot Steelworks completed by JBA Consulting Ltd provides a detailed description of the baseline flood risk from all sources at the Site and has been used to inform this ES chapter. The FCA uses a combination of sources, including the extant TAN-15 Development Advice Map (DAM), the Flood Map for Planning (FMfP) which supports the draft update to TAN-15 due to be finalised and implemented later in 2024, NRW Flood Risk Assessment Wales (FRAW) mapping and detailed site-specific hydraulic modelling.
- 9.5.36 **Figure 9-8** shows the results from the NRW Flood Map for Planning for Rivers (fluvial) and **Figure 9-9** shows the NRW Flood Map for Planning from the Sea (tidal) and **Figure 9-10** shows the NRW Flood Map for Planning - Surface Water and Small Watercourses. The FMfP results have been provided here as they are considered to comprise best available information and 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 where detailed modelling is not available; an allowance for 100 years of climate change as opposed to the 75 years required for industrial development; and by not including the operation of flood defences in the modelling process.
- 9.5.37 **Figure 9-8** indicates that the Proposed Development site is mostly located in Flood Zone 1 of the Flood Map for planning for Rivers. This means the Site has very low risk of flooding from rivers, less than a 0.1% AEP (1 in 1000 chance of flooding in any given year), with an allowance for climate change for the life of the development.

- 9.5.38 An area in the south of the Site is located within Flood Zones 2 and 3, which is associated with the Margam Moors reën network. Flood Zone 2 suggests that there is between a 0.1% - 1% AEP (1 in 1000 and 1 in 100) chance of flooding from fluvial sources in any given year, including climate change. Flood Zone 3 represents areas that have a greater than 1 in 100 (1% AEP) chance of flooding in any given year, including climate change. No built development is proposed within the extents of Flood Zone 2 and 3.
- 9.5.39 As mentioned above, abstraction of process water from Middle Mothers Ditch on site is used to manage water levels in Margam Moors SSSI and provide flood risk benefit to the moors under agreement with NRW. Water levels in the moors have an impact on ecological functioning as discussed in **Chapter 8 Biodiversity** e.g. wintering feeding ground and breeding bird habitat and protected invertebrate fauna. The management of water levels for flood benefit is restricted to the moors area and does not influence sensitive flood receptors upstream.



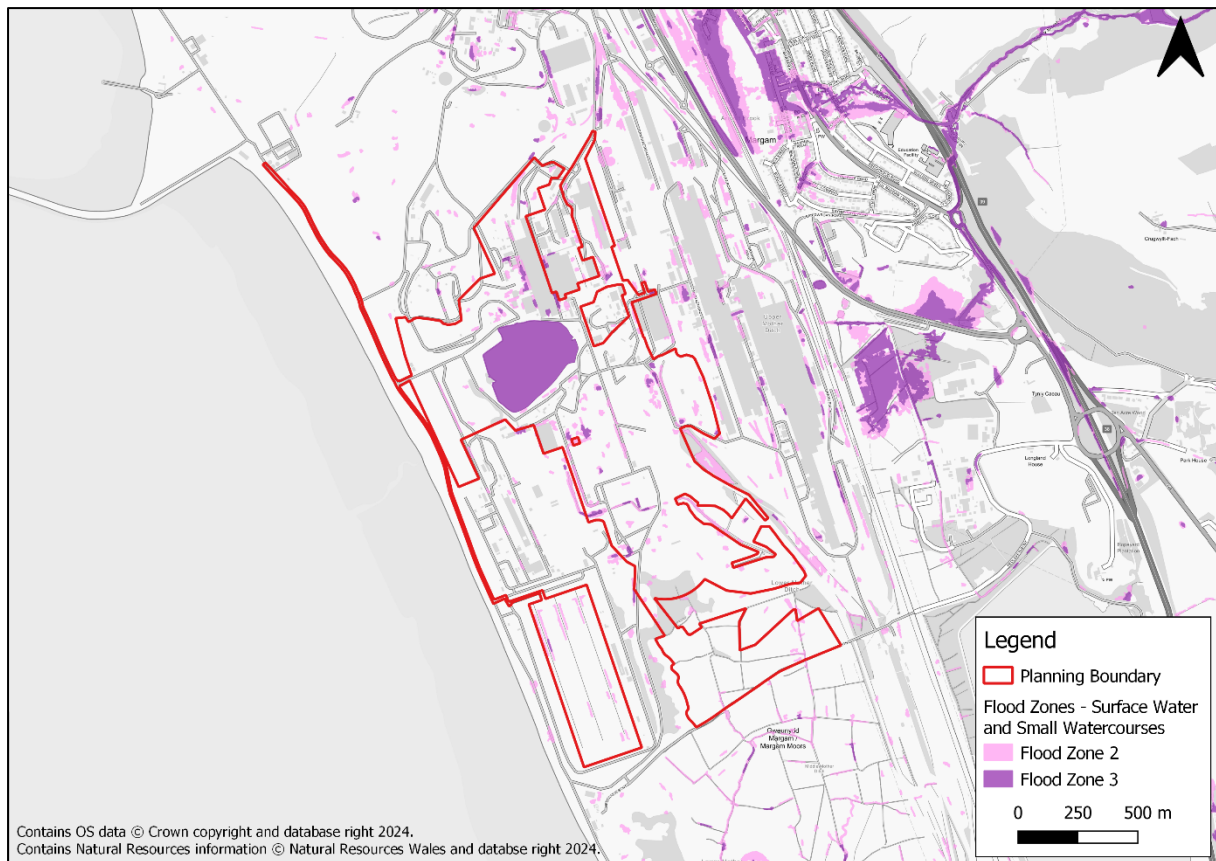
**Figure 9-8 Flood Map for Planning – rivers**

- 9.5.40 **Figure 9-9** shows that the Proposed Development site is entirely located in Flood Zone 1 of the Flood Map for planning for the Sea, with very low risk of flooding from tidal sources (less than a 0.1% AEP, including climate change).



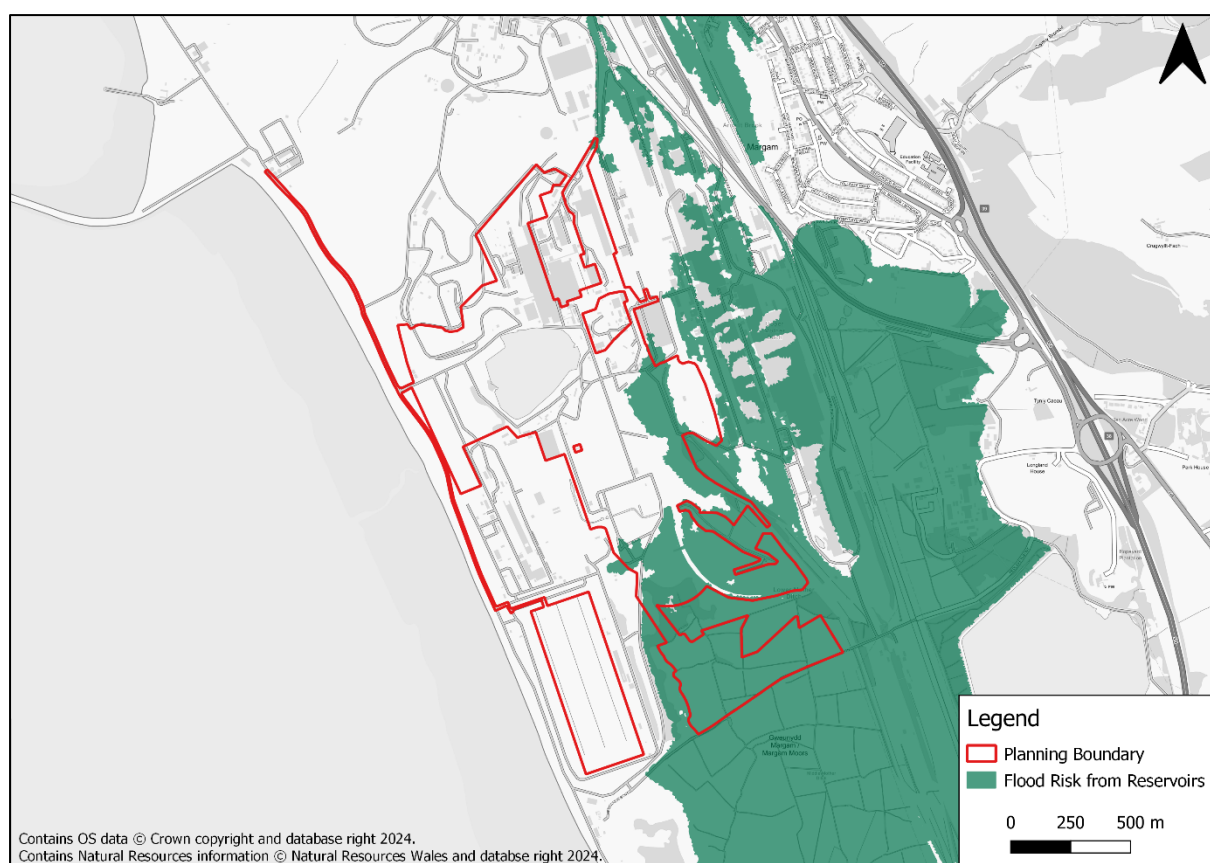
**Figure 9-9 Flood Map for Planning – sea**

9.5.41 **Figure 9-10** shows small areas within the Site at risk of surface water and small watercourse flooding in Flood Zone 3 (greater than 1% AEP, including climate change). The areas are generally associated with existing watercourses or small localised areas of ponding. Additionally, it is worth noting that the NRW Flood Map for surface water and small watercourses does not account for the comprehensive surface water drainage infrastructure at the Site, making only generalised assumptions for surface water drainage. As a result, the surface water flood risk can be assumed to be overstated.



**Figure 9-10 Flood Map for Planning - surface water and small watercourses**

- 9.5.42 The site is considered to be at potential risk of flooding from a failure of the Eglwys Nunydd reservoir, as shown in **Figure 9-11** below. The FCA notes that the risk of reservoir flooding is very low as a result of the regulatory requirements for reservoir safety, as set out in the Reservoirs Act 1975.
- 9.5.43 The site is not considered to be at risk of groundwater or sewer flooding. The Neath Port Talbot County Borough Council Flood Risk Management Plan, states that 'there are no specific areas of historical groundwater flooding recorded in the Neath and Port Talbot area'. It can therefore be concluded that the risk of groundwater flooding at the Site is very low. There is no evidence of historic sewer flooding on or close to the Site. The onsite drainage system is controlled by a pumping system. The potential for the proposals on site to affect sewer flood risk is very low.



**Figure 9-11 Flood Risk Assessment Wales (FRAW) Mapping - reservoirs**

### Baseline water environment receptors

9.5.44 The description of the established baseline given in the sections above allows the water related receptors to be identified. **Table 9-9** summarizes the relative value of baseline receptors on the basis of their importance and sensitivity relating to surface water, flood risk and drainage. As outlined in the methodology section above, this will be used in combination with the assessment of the magnitude of impacts to determine the likely significant effects arising from the Proposed Development.

**Table 9-9 Summary of baseline water environment receptors**

| Receptor type         | Receptor                                                                                                         | Importance/sensitivity |
|-----------------------|------------------------------------------------------------------------------------------------------------------|------------------------|
| Surface water quality | Swansea Bay WFD Waterbody.                                                                                       | High                   |
|                       | Margam Moors SSSI reen system forming Neath Port Talbot SINC (non-statutory designated site of local importance) | High                   |
|                       | NRW Main Rivers - Nantffrwdwyllt, Afon Cynffig (Kenfig), Afon Afan.                                              | Medium                 |
|                       | Afan Estuary Transitional Water Body                                                                             | Medium                 |
|                       | Ordinary watercourses on site (non-WFD classified or designated)                                                 | Medium                 |

| Receptor type       | Receptor                                                      | Importance/sensitivity |
|---------------------|---------------------------------------------------------------|------------------------|
| Water resources     | Nantffrwdwyllt                                                | Medium                 |
|                     | Afon Cynffig (Kenfig)                                         | Medium                 |
|                     | Port Talbot docks                                             | Medium                 |
|                     | Afon Afan                                                     | Medium                 |
|                     | Mothers Ditch                                                 | Medium                 |
|                     | Eglwys Nunydd Reservoir                                       | Medium                 |
| Groundwater quality | WFD Groundwater Body Swansea Carboniferous Coal Measures      | Low                    |
| Flood risk          | Less vulnerable development (on-site industrial development). | Low                    |

### Interim baseline

- 9.5.45 The interim baseline represents the scenario in which current 'heavy end' site activities are ceased and not replaced by the proposed EAF facility. This includes operation of the stockyard, sinter plant, coke ovens, blast furnaces and steel converter. These activities are due to be decommissioned irrespective of the EAF proposals. In this scenario, the Site continues to be operated by the Applicant and the areas of land proposed for the EAF becomes a brownfield site where the buildings remain in place.
- 9.5.46 Under this interim baseline the existing network of surface water drainage will stay in place and continue to be operated. However, the cessation of site activities will result in a significant reduction in process effluent discharge and the risk of pollution events from steelwork operations. This would provide an improvement to the established baseline in terms of water quality impacts to on-site and off-site water quality receptors.
- 9.5.47 Under the interim baseline, the flood risk to the Site will stay the same as the established baseline.
- 9.5.48 Water levels in Lower and Middle Mother Ditch within the Site are currently managed to control flood levels to Margam Moors SSSI. Under the interim baseline, it is unlikely that water abstraction will continue from Middle Mother Ditch, and therefore the fluvial flood risk benefit to the moors will no longer be in place. Under such a scenario, it is likely that NRW will formalise a Water Level Management Plan (WLMP) for the reens in the SSSI to ensure water levels continue to be managed for environmental benefit. The WLMP will outline responsibilities in accordance with land ownership and duties.
- 9.5.49 Any future development of the land under the interim baseline would be expected to require drinking water and foul drainage connection to DCWW assets, as per the established baseline.

### Climate change

- 9.5.50 With regards to flood risk, the impacts of climate change have been considered in the description of the established baseline due to referencing the NRW Flood Map for Planning, which incorporates the predicted impacts of 100 years of climate change and therefore provides a precautionary approach.

- 9.5.51 Climate change may also lead to negative impacts on the baseline water quality receptors such as aquatic fauna (fish, invertebrates) and flora as a result of impacts on water temperature, shading, invasive species and summer flows.
- 9.5.52 The impacts of climate change are expected to affect water resource availability for abstraction from on-site and off-site watercourses and from DCWW supplies. Increases in heat waves and low flow periods are predicted to reduce water availability. This is likely to affect both the quantity and the timing of water availability during low flow periods in order to maintain minimum flows for ecological functioning ('hands off' flows).
- 9.5.53 Similarly, the impacts of climate change are predicted to put pressures on the environmental management of the strategic foul drainage network operated by DCWW. Particularly with respect to the control of pollution from unplanned and planned discharges as a result of increased heavy rainfall events from CSO's and low flow periods reducing effluent dilution efficiency. The contribution to DCWW foul network from site operations is indirectly linked to these climate change impacts.

## 9.6 Project characteristics and embedded mitigation

### Project characteristics relevant to surface water and flood risk

- 9.6.1 The key element of the proposal relevant to the assessment of impacts on hydrology, flood risk and drainage are outlined below.

#### *Operation*

- 9.6.2 Fundamentally the land use will remain the same as the present categorisation, as a heavy industry site. There will be an increase to hard standing, areas currently characterised by made ground and used for materials storage will become hard standing for process areas or accommodate new buildings. There will be some further change in land use where the existing BOS lagoon will be partially infilled on the north-eastern extent.
- 9.6.3 Some of the existing buildings and structures on site will be demolished and replaced with a new electric arc furnace-based steel production facility (1 no. arc furnace, 2 no. ladle furnaces). The development will include:
- Chemical/material storage and transfer infrastructure and pipework and cabling (above and below ground), buildings, fume and dust treatment plant.
  - Water treatment facility and material handling systems, electrical control rooms and power infrastructure.
  - Offices and ancillary facilities together with new and amended transport infrastructure, landscaping and green infrastructure, and associated development.
- 9.6.4 A small section of an unnamed drainage channel will be diverted to accommodate the new on-site national grid compound. The channel currently drains the surface water from the land surrounding the Morfa coke ovens and Regen Yard. The watercourse diversion will run around the new facility and will remain largely open channel with some culverted sections under road crossings, where required. The same dimension will be maintained as the baseline. The proposed diversion is illustrated in **Figure 9.12** (provided in **ES Volume 4**).

- 9.6.5 The activities carried out on site during operation have a high potential to cause contamination of surface water runoff from diffuse or point source pollution events (including process chemicals, suspended sediments and hydrocarbons), with potentially significant effects on water quality receptors.
- 9.6.6 The operation of the proposed facility will also entail controlled discharge of process effluent to water at the Site outfalls, as managed under the Site Environmental Permit. This has the potential to cause pollution from the continuous emission to water within the permitted limits, or due to exceedance events causing non-compliance of permitted limits.
- 9.6.7 The increase to hard standing will result in some increase to surface water runoff from pluvial (rainfall) sources. As the area of development within the Site is not located in area of flood risk from fluvial and tidal sources, the change in building footprint is not considered to impact flood risk from these sources both to the users of the facility itself and off-site receptors.
- 9.6.8 The new EAF facility will require continued abstraction of water for process use. The Proposed Development would require continued discharge connection to DCWW assets.

#### *Construction*

- 9.6.9 A large portion of the Site will be used for construction site lay down and compound. These areas have been clarified in document *TCE.13602A-ME-7005-MP-60325 - Future Footprint Area (Laydown and Site Compound)*.
- 9.6.10 The potential for impacts during the construction phase relate to the following site activities:
- Demolition of existing buildings/facilities: including storage and removal of potentially contaminating materials.
  - Infilling site reservoir: sheet piling, infilling with site won material.
  - Site grading and levelling: removal of Harsco Bank to level of existing BOS plant and movement of material across the site for re-use.
  - Groundworks for foundations and services.
  - Construction of hard standing across the Site, process infrastructure and buildings; and
  - New material export and import.
  - Temporary storage of materials.
  - Increased vehicle movements with the potential to track polluting materials.
- 9.6.11 During these activities, there will be considerable disturbance to the existing ground and the creation of dust and silt.
- 9.6.12 The construction of the EAF facility will involve a dewatering system like deep bore wells to be installed at some areas of the Site to ensure that the groundwater level is maintained at least 2 to 3 m below the excavation level. Pumped water will be discharged to the existing surface water system for the duration of pumping.
- 9.6.13 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.

- 9.6.14 Approximately 250 m<sup>3</sup>/day of water is required during plant construction for production of concrete, washing of construction equipment, testing, earthwork. This will be supplied via site water supply from abstraction. Approximately, 200 m<sup>3</sup>/day of potable water will be utilised from DCWW supply.
- 9.6.15 A new National Grid cable is proposed to be laid through Margam Moors and the southern extent of the Site, connecting to the National Grid Margam Substation. The proposed cable route is expected to cross under a number of reens in the southern extent of the Site.

#### **9.6.16 Embedded mitigation - surface water and flood risk**

##### *Surface water drainage strategy*

- 9.6.17 A surface water drainage strategy has been developed for the Site and will be incorporated into the Site design and construction. This will aim to control surface water runoff without increasing flood risk or impacting on water quality downstream using SuDS where possible.
- 9.6.18 SuDS aim to mimic the natural processes of Greenfield surface water drainage by allowing water to flow along natural flow routes, and also aims to reduce the runoff rates and volumes during storm events, whilst providing water treatment benefits. Schedule 3 of the Flood and Water Management Act 2010 was enacted in Wales in January 2019, leading to the requirement for all new developments to incorporate the four pillars of SuDS design.
- 9.6.19 The SuDS can be regarded as tertiary mitigation when approved by the relevant authorising body, as defined in the Institute of Environmental Management and Assessment (IEMA) 2016 guidance on EIA. Tertiary mitigation includes actions that have been undertaken regardless of the EIA process, due to other legislative requirements or standard practices.
- 9.6.20 The principles of the SuDS surface water drainage strategy are outlined as follows:
- Areas of development and new facilities located on existing impermeable surfacing will be drained via the existing systems towards the onsite wastewater treatment works.
  - For new areas of development, two main surface water systems will be operated across the Site: the 'contaminated stream' and the 'clean water stream'. Both streams shall ultimately be pumped to the Site outfall into Swansea Bay.
- 9.6.21 The 'clean water stream' shall accept surface water from areas with a low and medium risk of contamination, these will flow into the SuDS system for water treatment and be discharged directly into designated on-site surface water bodies where possible (e.g. unnamed watercourse, BOS Lagoon).
- 9.6.22 The 'clean water stream' is defined in accordance with the pollution hazard classification for the land use type as outlined in the CIRIA SuDS Manual (C753) 2015. This includes proposed areas of low traffic highways, offices, car parks and other low or medium risk process units. This stream shall be drained via above ground SuDS wherever feasible, comprising of filter strips and gravel-based rain gardens with self-seeded vegetation. The SuDS features will be designed in compliance with the SuDS treatment train and contamination removal efficiency required for the proposed land use type, as recommended in the Simple Index Approach of the CIRIA SuDS Manual (C753) 2015.

Approval of the SuDS strategy by the Neath Port Talbot SAB against the requirements of the Welsh Government Statutory Standards for Sustainable Drainage Systems ensures compliance with the requirements for best practice.

- 9.6.23 The waterbodies receiving the 'clean water stream' ultimately drain to a further stage of water quality treatment through the existing drainage network (via the lagoon, or nautilus building), prior to discharge at the Long Sea or Short Sea Outfall.
- 9.6.24 The 'contaminated stream' shall drain surface water from high-risk process areas and haulage routes, and direct flows within a piped system directly to the on-site wastewater treatment works.
- 9.6.25 A detailed management and maintenance plan for the proposed system shall be in place under the responsibility of the Applicant, as required under Schedule 3 of the Flood and Water Management Act and the approval of the SAB.
- 9.6.26 The SuDS surface water drainage system will aim to manage the risk of surface water flooding through the collection and conveyance of surface water up to the 1 in 100 year rainfall event with an allowance for climate change, where possible. As a brownfield site, the proposed drainage system shall provide a 30% drainage betterment compared to the existing land-use to consider the impact of climate change, as a minimum. Surface water will be discharged at the Site outfall at an unattenuated rate. As Swansea Bay is a tidal waterbody, there is no requirement to control the rate and volume of flow from the development site, in line with Standard G2.1 of the Statutory Standards for SuDS.
- 9.6.27 Areas of the Site shown to currently be at flood risk from surface water and small watercourses are generally associated with small, localised areas of ponding. Where these extents of ponding are located in areas proposed for new development, the SuDS system will ensure conveyance of surface water flows away from on-site flood risk receptors into the Site drainage system therefore mitigating the risks from this impact.

#### *Environmental permitting*

- 9.6.28 The site currently operates under an Environmental Permit (EPR/BL7108IM\_V017). The Environmental Permit will be varied in accordance with the change to site operations. The conditions of the Environmental Permit can be regarded as tertiary mitigation, as these must be approved and monitored by NRW as the relevant authorising body under the Environmental Permitting 2016 legislation.
- 9.6.29 Surface and process water with the potential to be significantly contaminated will be treated via the on-site wastewater treatment works. The treated surface water effluent will be discharged via the Site outfalls (Long and Short Sea Outfalls) to Swansea Bay. Treatment methods will be implemented to ensure concentrations are below the limits set in the Environmental Permit for key contaminants.
- 9.6.30 Measures will be put in place to monitor and ensure compliance of the EAF effluent discharge with the limits specified in the Environmental Permit and for EAF Best Available Techniques (BAT). Submission of monitoring data will be in accordance with the requirements set out in the Environmental Permit.
- 9.6.31 The BAT limits for the Site with the EAF in operation are not yet confirmed with NRW as the regulator. However, they are expected to be lower for key contaminants than the historic limits set under the established baseline and permit requirements. The EU Iron

and Steel BAT (JRC, 2012) and guidance provided by NRW on 31/05/2024 for effluent discharge from the EAF/Casting and the Hot Mill/Cold Mill have been provided in Table 9-10 and Table 9-11. For example, the BAT Associated Emissions Level (AEL)- for TSS is 20ppm for EAF and 5 – 30 ppm for the Hot Mill and Cold Mill process (compared to 150 ppm limit at the LSO under the established baseline).

**Table 9-10 Effluent discharge - EAF/Casting From EU Iron and Steel BAT Conclusions, 2012 and NRW Emissions Guidance 31/05/24**

| Source                              | Parameter                     | Current (LSO) | BAT-AEL     | NRW           | Averaging period                                    |
|-------------------------------------|-------------------------------|---------------|-------------|---------------|-----------------------------------------------------|
| Waste water from continuous casting | Suspended solids              | 150 mg/l      | < 20 mg/l   | < 20 mg/l     | Qualified random sample or 24-hour composite sample |
|                                     | Iron                          | 5 mg/l        | < 5 mg/l    | <5 mg/l       |                                                     |
|                                     | Zinc                          | 2 mg/l        | < 2 mg/l    | <0.5 - 2 mg/l |                                                     |
|                                     | Nickel <sup>(1)</sup>         | 0.5 mg/l      | < 0.5 mg/l  | < 0.5 mg/l    |                                                     |
|                                     | Total Chromium <sup>(1)</sup> | 0.5 mg/l      | <0.5 mg/l   | 0.1 mg/l      |                                                     |
|                                     | Total Hydrocarbons            | 5 mg/l        | < 5 mg/l    | <5 mg/l       |                                                     |
|                                     | Total Cadmium                 | N/A           | Not defined | <0.5 mg/l     |                                                     |
|                                     | Total Copper                  | N/A           | Not defined | <0.1 mg/l     |                                                     |

Levels of Ni and Cr are expected to be much lower under operation of the constructed EAF facility

**Table 9-11 Effluent discharge – Hot Mill and Cold Mill From UK FMP – F BAT Conclusions, DRAFT**

| Source                              | Parameter              | Current (LSO) | BAT-AEL        | NRW      | Averaging period                                    |
|-------------------------------------|------------------------|---------------|----------------|----------|-----------------------------------------------------|
| Waste water from continuous casting | Suspended solids       | 150 mg/l      | 5 – 30 mg/l    | 5 mg/l   | Qualified random sample or 24-hour composite sample |
|                                     | Total Organic Carbon   | N/A           | 10 – 30 mg/l   | 10 mg/l  |                                                     |
|                                     | Chemical Oxygen Demand | 220 mg/l      | 30 – 90 mg/l   | 30 mg/l  |                                                     |
|                                     | Hydrocarbon Oil Index  | 5 mg/l        | 0.5 – 4 mg/l   | 0.5 mg/l |                                                     |
|                                     | Iron                   | 5 mg/l        | 1 – 5 mg/l     | 1 mg/l   |                                                     |
|                                     | Cadmium                | N/A           | 1 – 5 µg/l     | 1 µg/l   |                                                     |
|                                     | Chromium               | 0.5 mg/l      | 10 – 100 µg/l  | 10 µg/l  |                                                     |
|                                     | Mercury                | N/A           | 0.1 – 0.5 µg/l | 0.1 µg/l |                                                     |
|                                     | Nickel                 | 0.5 mg/l      | 10 – 200 µg/l  | 10 µg/l  |                                                     |
|                                     | Lead                   | 0.5 mg/l      | 5 – 20 µg/l    | 5 µg/l   |                                                     |
|                                     | Zinc                   | 0.5 mg/l      | 50 – 1000 µg/l | 50 µg/l  |                                                     |

9.6.32 Comparison of expected analyte concentrations under the operation of the EAF facility with these BAT-AEL's demonstrates that emissions to water will comply with the limits for

all contaminants except for TSS. There is also a lesser potential for incidents of non-compliance from oil due to historic oil pollution within the drainage network on site.

- 9.6.33 Improvement measures have therefore been identified by the Applicant, to ensure effluent compliance with the BAT-AEL for emissions to water for TSS and oil during the operating phase of the facility. These include but are not limited to:
- Benchmarking and sampling to determine efficiency and evaluate condition of assets in the effluent plant and service water system.
  - Improvement programme for oil and TSS removal from the Site canals (particularly Main Drain) to reduce contamination to final outfall discharge.
  - Monitoring improvement programme.
- 9.6.34 Compliance with the requirements of the Environmental Permit for discharge to water is a legal requirement. As such, the effluent improvement programme is considered to be embedded tertiary mitigation. It is assumed that the improvement programmes will be carried out and effectively manage the reduction in TSS and oil concentrations prior to the operational phase of the facility.
- 9.6.35 The Environmental Permit requires operation of an EMS incorporating pollution prevention and control measures to mitigate the risk of acute water pollution from spillage events. 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. Surface water from these areas shall flow directly to the wastewater treatment works prior to being discharged to Swansea Bay.
- 9.6.36 The limits on water abstraction will continue to be subject to the requirements of the water abstraction licence.

#### *Construction Environment Management Plan*

- 9.6.37 During construction, mitigation of potential impacts to surface water will be implemented by adherence to strict protocols relating to the method of construction. A Detailed CEMP will be developed, agreed with appropriate stakeholders, and monitored for compliance throughout construction. An Outline CEMP has been provided in **Appendix 2.1** to this ES.
- 9.6.38 The CEMP will use best practice guidance such as the Guidance for Pollution Prevention (GPP) and Control of Water Pollution from Construction Sites (CIRIA) and incorporate on-going monitoring by the Environmental Clerk of Works throughout the construction phase. 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.
- 9.6.39 The measures incorporated into the Detailed CEMP will include reference to the requirements outlined in the following best practice guidance:
- CIRIA Report C532: Control of water pollution from construction sites – guidance for consultants and contractors (CIRIA, 2001);
  - CIRIA Report C624: Development and Flood Risk – guidance for the construction industry (CIRIA, 2004);
  - CIRIA Report C811: Environmental good practice on site (CIRIA, 2023);
  - NetRegs: Guidance for Pollution Prevention (GPP). With particular reference to:

- o GPP: 1 Understanding your environmental responsibilities
- o GPP: 2 Above ground oil storage
- o GPP: 5 Works and maintenance in or near water
- o GPP: 6 Working on construction and demolition sites
- o GPP: 8 Safe storage and disposal of oils
- o GPP: 13 Vehicle washing and cleaning
- o GPP: 20 Dewatering underground ducts and chambers
- o GPP: 21 Pollution incident response planning
- o GPP: 22 Dealing with spills
- o GPP: 27 Installation, decommissioning and removal of underground storage tanks

9.6.40 The Detailed CEMP will comprise a detailed plan of the mitigation measures and be divided into construction phase or zone as appropriate to the construction delivery plan.

9.6.41 Control measures include:

- Wherever temporary drainage is required for working platforms and temporary access roads, it will be aligned to the permanent works drainage as much as possible. Otherwise, temporary drainage consisting of local filter drains and earthworks channels will be used to manage surface water runoff. An oil water silt separator (OWSS) or settling tanks and interceptors will be used to protect existing drainage infrastructure from silt and other site debris. This may include use of temporary settlement basins to mitigate the risk of increased flows and sediment loads from construction activities.
- Covering/sealing exposed surfaces to minimise sediment load in runoff. Early re-seeding of cleared land where relevant (not planned as hardstanding) to minimise exposed land and the entrainment of sediment by overland flow.
- Construction plant/materials will be stored on hardstanding surfaces where possible; if this is not possible, the contractor will ensure any compacted topsoil is loosened as soon as possible following completion of the works and re-seeding.
- Controls on the use of potential pollutants such as cementitious materials.
- Correct storage, handling and use of hazardous substances (liquid and solid). Adequately bunded and secure areas with impervious walls and floor will be provided for the temporary storage of fuel, oil and chemicals on site during construction. Drip trays will be in place to collect leaks from diesel pumps / standing plant. Oil interceptor(s) will be fitted to all temporary discharge points and for discharge from any temporary oil storage / refuelling areas. Suitable spill kits will be available on site.
- Restrictions on use of unnecessary machinery near to adjacent water. Exclusion zones around sensitive areas (e.g. adjacent to ditches) may be implemented.
- Prevention of runoff from unaffected areas mixing with construction runoff. The relevant sections of BS6031:2009 Code of Practice for Earthworks will be followed and reference should be made to SuDS best practice during construction.

9.6.42 Method statements incorporating the necessary water pollution prevention measures will be produced and incorporated into the Detailed CEMP for operations at a higher risk of pollution to watercourses. This includes but is not limited to: partial infilling of the lagoon, dewatering, piling and drainage channel diversion.

- 9.6.43 A monitoring strategy will be included in the Detailed CEMP to ensure the effectiveness of water quality mitigation measures at controlling the risk of contamination to surface water during the construction phase and for a period post construction. The monitoring strategy will outline the methods to be applied, duration and responsibilities. The strategy will be agreed with NRW prior to construction.
- 9.6.44 The Detailed CEMP will include a requirement for habitat restoration wherever construction activities have resulted in a temporary negative impact on habitats flora/fauna. In particular, this relates to the following areas:
- Grassland re-seeding in the central affected areas of the Site.
  - Appropriate bank seeding along areas of channel diversion in accordance with the SuDS drainage strategy.
  - Restoration of reens in the coastal floodplain grassland within the Site to the south following National Grid cable laying.

#### *Abstraction licence*

- 9.6.45 Temporary dewatering activities required during the construction process will be managed under the requirements of an abstraction licence as advised and issued by NRW. The abstraction licence will ensure that abstraction volumes and duration are set to a level that will mitigate the potential for environmental impacts on the groundwater body.

#### *Watercourse consent*

- 9.6.46 The proposed National Grid cable route required as part of the Proposed Development is expected to cross a number of reens in the southern extent of the Site. The reen network is a system of ordinary watercourses and their regulation is the responsibility of the Lead Local Flood Authority (LLFA). Ordinary watercourse consents shall be gained prior to any works commencing on the cable routing within the Site. The consent will impose requirements for construction environmental management to protect water quality features from ecological, chemical and hydro-morphological impacts. Such requirements will form part of the CEMP.

#### *Site levelling and preparation*

- 9.6.47 Across the vast majority of the Site, and in all locations of sensitive development, ground levels will be raised. This ground raising forms a mitigation to the risk of flooding from Eglwys Nunydd reservoir failure.

## **9.7 Assessment of potential effects**

### **Construction effects**

#### *Predicted construction effects*

- 9.7.1 The construction phase has the potential for temporary effects on the water environment receptors, relating to the following impacts:
- Silt mobilisation causing sedimentation of on-site ordinary watercourses and Swansea Bay waterbody;

- Pollution of on-site ordinary watercourses, Swansea Bay waterbody and Swansea Carboniferous Coal Measures groundwater body from oil, hydrocarbon and hazardous or cementitious compounds due to a pollution/spillage event during construction activities;
- Increased overland flow entering on-site ordinary watercourses from site compaction;
- Impediments to flow pathways on site causing changes to drainage patterns;
- Morphological impacts to ordinary watercourses from re-routing the watercourse during construction of a section of new National Grid cable within the Site boundary, in the coastal floodplain grassland in the southern area of the Site; and,
- Abstraction of water for construction use.

9.7.2 These impacts are discussed below with reference to the embedded mitigation.

#### Water quality

- 9.7.3 During construction there will be considerable disturbance to the existing soils, made ground and superficial deposits during site levelling, preparing ground conditions and constructing foundations for buildings. The disturbance of the soils can cause an increase of sediment loads in surface water, which is deposited in the on-site watercourses of transported and deposited within the final surface water discharge location (Swansea Bay). High sediment load could have a negative impact on ecological quality status of the downstream receptors and entrain contaminants with negative consequences for chemical status.
- 9.7.4 Construction activities also cause a risk of uncontrolled discharge of hydrocarbon, hazardous or cementitious pollutants from both disturbance of existing deposits and use during construction of the Proposed Development. This could impact the water quality and ecology of the onsite ordinary watercourses, onsite lagoon, downstream receiving waterbody (Swansea Bay) and the Swansea Carboniferous Coal Measures WFD groundwater body. The main source of pollution risk is accidental spillages of hazardous substances from plant operation or cementitious materials from construction.
- 9.7.5 Further construction factors influence the risk of pollution to waterbodies. A large number of piles are required for laying of foundations, which creates a contamination pathway. The construction of piles can increase the risk of near-surface pollutants migrating to underlying aquifers if the new piles breach previously competent low-permeability strata. Dewatering of the Site for construction of foundations also has a risk of increasing sediment and pollutant loads in the outgoing discharge if not managed appropriately. Dewatering underground ducts and pipework during the demolition of existing structures also poses a risk of pollution to surface water and groundwater.
- 9.7.6 The risk of impacts from increased sedimentation and pollutants are medium term (1 to 5 years).
- 9.7.7 Measures are outlined in the Outline CEMP (**Appendix 2.1**) and **Paragraph 9.6.38** above to control the risk of sediment loading on watercourses and pollution events, including appropriate environmental controls in areas of high-risk activities such as piling and dewatering. The adoption of pollution prevention measures as specified in the CEMP would reduce the risk that oils, hydrocarbons or hazardous materials stored on site leak/spill onto the ground surface and are transported into waterbodies. The use of these measures will be regularly monitored by the Environmental Clerk of Works.

- 9.7.8 The effectiveness of CEMP procedures are well understood, and the construction industry is experienced at implementing such measures. Compliance with the relevant codes of practice is considered to mitigate these pollution risks to within acceptable levels.
- 9.7.9 Compliance with the procedures set out in the CEMP therefore reduces the magnitude of this environmental impact.
- 9.7.10 Furthermore, while sedimentation is likely to be one of the highest pollutant risks from construction, the water quality receptors are not of particularly high sensitivity to the impacts of sedimentation. The ordinary watercourses are not salmonid or gravel bed waterbodies and Swansea Bay has an existing high sediment loading due to the estuary location and significant tidal range/action.
- 9.7.11 The compaction of soils during construction could give rise to increased surface overland flows into the receiving watercourses. Increased surface water flows during surface water flood events has the potential to cause erosion of the ditches onsite and hydro-morphological features, with a corresponding negative impact on ecology and water quality within the ditches. The effects of such compaction are considered to be minimal because the construction areas, site compound and lay down areas are already largely comprised of compacted made ground. Therefore, natural attenuation from site soils is limited.
- 9.7.12 Construction within the Site reens has the potential to impact the hydro-morphology and water quality of these ordinary watercourses. Laying underground high voltage cables can involve substantial land disruption to excavate the cable trench and provide working areas. Depending on the methods applied (direct burial or ducted cables), this may require diversion of flows in the reens and result in the temporary destruction of sections of watercourse. This is dependent on whether more environmentally sensitive methods associated with ducted cable laying are applied. Mitigation of impacts is inherent in the requirements of the ordinary watercourse consent and the CEMP. This will include pollution prevention and control measures during construction (as per the CEMP), re-instatement of the reens where they have been negatively affected by construction and ecological mitigation measures as outlined in **ES Chapter 8 Biodiversity**. The magnitude of impacts is markedly reduced due to these measures. The impacts will be temporary following the reinstatement of the reens and associated flora and fauna.
- 9.7.13 The potential impacts on water quality receptors is assessed to be *negligible* as a result of the embedded mitigation measures in place and referenced in the sections above.

#### Flood risk

- 9.7.14 On-site surface water flood risk receptors during the construction phase refers to all construction personnel and site visitors. In the baseline flood risk it is noted that there are no surface water flow pathways which could result in off-site surface water flood risk receptors. Existing surface water flood risk is low and localised in nature. Mitigation measures are in place to manage the potential for increased surface water flows; permanent drainage will be constructed at the earliest onset wherever possible, and where this is not the case temporary drainage will be in place. Site procedures incorporated into the CEMP (and listed in **Paragraph 9.6.38** above) will appropriately manage risks to site staff from surface water/heavy rainfall flood events in the unlikely event this poses a risk to working areas. Consequently, the potential increase to surface

overland flows as a result of either ground compaction or construction of hardstanding is likely to have only a small impact.

- 9.7.15 Therefore, the potential environmental effects on flood risk receptors during construction are assessed to be negligible.

#### Water resources

- 9.7.16 As outlined in **Section 9.6**, construction of the Site will require approximately 250m<sup>3</sup> of water per day for construction use (separate to potable supply) supplied via the existing abstraction licenses defined in the Site Environmental Permit. The water requirements are well below the abstraction limits for the Site and would have a negligible effect on the water resource receptors.

#### *Proposed additional mitigation*

- 9.7.17 There is a potential for some negligible negative effects to water quality receptors during the construction phase. This would result from pollution and/or sedimentation to waterbodies from a failure in the CEMP measures or procedures.
- 9.7.18 Such events may result in an effect on the receptor attribute, but of insufficient magnitude to affect the use or integrity or be measurable in its effect. The effects are likely to be temporary in nature. The water quality receptors are considered to be resilient to such effects as a result of their nature/sensitivity and would recover to the baseline condition upon activities ceasing and/or remediation measures inherent in the embedded mitigation.
- 9.7.19 Consequently, additional mitigation measures are not considered necessary.

#### *Residual construction effects*

- 9.7.20 **Table 9-12** below provides a summary of the environmental effects from impacts on water environment receptors during the construction phase. The construction phase impacts are not assessed to cause significant effects on the water environment receptors; all environmental effects are classified as **negligible or minor (not significant)**.

**Table 9-12 Significance of potential effects from construction phase**

| Receptor type         | Receptor                                                                                                         | Importance/sensitivity | Impact magnitude | Significance of effect                     |
|-----------------------|------------------------------------------------------------------------------------------------------------------|------------------------|------------------|--------------------------------------------|
| Surface water quality | Swansea Bay WFD Waterbody                                                                                        | High                   | Negligible       | Negligible/minor adverse (not significant) |
|                       | Margam Moors SSSI reed system forming Neath Port Talbot SINC (non-statutory designated site of local importance) | High                   | Negligible       | Negligible/minor adverse (not significant) |
|                       | NRW Main Rivers - Nantffrwdwyllt, Afon Cynffig (Kenfig), Afon Afan, Tu Du Brook.                                 | Medium                 | Negligible       | Negligible adverse (not significant)       |

|                     |                                                                                                             |        |            |                                      |
|---------------------|-------------------------------------------------------------------------------------------------------------|--------|------------|--------------------------------------|
|                     | Ordinary watercourses on site (non-WFD classified or designated)                                            | Medium | Negligible | Negligible adverse (not significant) |
| Groundwater quality | WFD Groundwater Body Swansea Carboniferous Coal Measures                                                    | Low    | Negligible | Negligible adverse (not significant) |
| Water resources     | Nantffrwdwyllt, Afon Cynffig (Kenfig), Port Talbot docks, Afon Afan, Mothers Ditch, Eglwys Nunydd Reservoir | Medium | Negligible | Negligible adverse (not significant) |
| Flood risk          | Less vulnerable development (on-site industrial development)                                                | Low    | Negligible | Negligible adverse (not significant) |

## Operational effects

### *Predicted operational effects*

- 9.7.21 The operational phase has the potential for long term and permanent effects on the water environment receptors. These impacts are discussed below with reference to the embedded mitigation outlined in **Section 9.6**.

### Water quality

- 9.7.22 The operational phase has the potential for long-term effects on the water quality receptors, relating to the following impacts:
- Effluent discharge to Swansea Bay waterbody.
  - Pollution of on-site ordinary watercourses, Swansea Bay waterbody and Swansea Carboniferous Coal Measures groundwater body from oil, hydrocarbon and hazardous or cementitious compounds as a result of routine activities; and
  - Implementation of SuDS resulting in water quality improvements to on-site watercourses.
- 9.7.23 The Proposed Development will result in a change to the volume and contaminant concentration in effluent discharge from site processes when compared to the established baseline. There will be a significant reduction in effluent volume and therefore contaminant mass, and most analytes will reduce in concentration. TSS and oil are anticipated to increase in concentration due to a reduction in discharge volume and therefore reduced dilution effect.
- 9.7.24 The increase in suspended soils and oil is attributed to the large contribution of site drainage flowing through 'deep drain' under the EAF facility. Deep drain is currently in poor condition and contains historic contaminants which become entrained in the effluent discharge. Deep drain contains highway runoff, process water, and waste treatment plant effluent. Under the Proposed Development of the EAF facility, deep drain becomes the largest contributor of flows to sump 2 ahead of discharge to the Long Sea Outfall.

- 9.7.25 As outlined in **Section 9.6**, the EAF facility will require a variation to the Site Environmental Permit. BAT will be applied to environmental controls and conditions of the Environmental Permit. The Associated Emissions Limits (AEL) for key contaminants under BAT will decrease compared to the established baseline (existing limits provided in Table 9-8). Most notably the BAT-AEL for TSS will likely reduce to between 20ppm and 30ppm depending on emission point location. Mitigation measures have been identified to reduce the TSS to within these limits as part of the Applicant's Effluent Improvement Programme. Similarly, measures have been identified to remediate site ditches and Deep Drain to ensure that oil contamination remains within the respective hydrocarbon emissions limit. For all other analytes, emissions to water from the operation of the EAF facility will be well below the EAF BAT-AEL and additional measures to reduce concentrations are not required. This is considered as embedded mitigation that can be assumed to be implemented irrespective of the EIA process as part of the legal operation of the facility to operate within the conditions of the Environmental Permit.
- 9.7.26 Operation of the EAF facility to within the BAT-AEL will represent a beneficial effect on attributes of the Swansea Bay WFD waterbody receptor and reduce the risk of negative effects occurring. Reductions in the emissions limits for numerous chemical elements and chemical oxygen demand (COD) or total organic carbon (TOC) are expected through the application of BAT limits. The changes to effluent discharge constituents associated with the operation of the Proposed Development compared to the established baseline will also lead to a reduction in NH<sub>3</sub>/NO<sub>x</sub> emissions. The reasons for not achieving 'Good' status for Swansea Bay WFD waterbody includes elevated levels of dissolved inorganic nitrogen (DIN). A decrease in NH<sub>3</sub>/NO<sub>x</sub> (nitrous oxide and ammonia) associated with the EAF facility will contribute to a reduction in DIN. This will improve the water quality of the waterbody. The magnitude of impact is classified as 'small' beneficial. It is considered unlikely to have any greater impact ('medium' magnitude being defined as a moderate improvement of attribute quality leading to an improvement of the Swansea Bay WFD classification) due to the significant dilution effect of tidal volumes in Swansea Bay and the scale of historic and current industrial pollution.
- 9.7.27 Operations on site can result in a risk of uncontrolled discharge of hydrocarbon and hazardous pollutants that could impact the water quality and ecology of the onsite ordinary watercourses, onsite lagoon, downstream receiving waterbody (Swansea Bay) and the Swansea Carboniferous Coal Measures WFD groundwater body. The main source of pollution risk is accidental spillages of hazardous substances from process plant operation, deliveries and transport activities. The risk of these pollution events are managed via the requirements for EMS and pollution prevention and control outlined in the Environmental Permit. Under the EAF operation, the risk of pollution to water quality receptors is lower than under the established baseline due to the closure of older plant/facilities, the use of modern processes and an increase in hardstanding across the Site.
- 9.7.28 Furthermore, the implementation of SuDS will improve the water quality of onsite watercourses (and outgoing surface water discharged to Swansea Bay) compared to operations under the established baseline. Use of above ground SuDS features such as channel drains, gravel based rain gardens and filter strips in a SuDS treatment train will provide contamination removal efficiency not currently present on site.

- 9.7.29 The proposed National Grid power cable within the Site is not expected to have any significant impacts on the watercourses during the operational phase as all watercourses will be reinstated to their previous condition. As such, the potential for likely significant effects on water quality receptors during the operational phase has been discounted.
- 9.7.30 The magnitude of effect of the water quality benefits is classified as 'small' beneficial as it will result in some beneficial effect on attribute quality and a reduced risk of negative effect occurring..

#### Water resources

- 9.7.31 The EAF facility will require less process water and abstraction than the established baseline. The estimated volumes are given in **Table 9-13** below and compared to the established baseline. The proposed water use represents a 71% reduction from baseline levels. The Applicant propose to surrender the licence for two abstractions at Port Talbot Dock and the Ffrwd Wyllt, and abstractions from the Afan would reduce by 33%.

**Table 9-13 Licensed water abstraction under EAF operations**

| Source                                 | Licence volume (m <sup>3</sup> /hr) | Use under established baseline | Use EAF operation |
|----------------------------------------|-------------------------------------|--------------------------------|-------------------|
| Afan (21/58/61/0009)                   | 1704.75                             | 1441                           | 968               |
| Ffrwyd (21/58/61/0024)                 | 259.5                               | 218                            | 0 (surrendered)   |
| Dock (21/58/61/0012)                   | 4909.8                              | 2817.5                         | 0 (surrendered)   |
| Mother's Ditch (21/58/34/0002)         | 140.12                              | 1650                           | 1650*             |
| Kenfig (21/58/51/004)                  | 1349.27                             | 311                            | 311               |
| Eglwys Nunydd Reservoir (21/58/51/004) | 1349.27                             | 845                            | 845               |

\* Abstraction above limit approved by NRW for Margam Moors flood management

- 9.7.32 The magnitude of effect associated with the proposed water abstractions is classified as 'small' beneficial.
- 9.7.33 Abstractions at the Ffrwd occur upstream of the entry into the Port Talbot docks (Afan Estuary including Docks WFD transitional waterbody). While the abstraction has limited impact on the Ffrwd itself, abstraction at this location does influence the freshwater input to the Port Talbot Docks. The aquatic ecosystem of the docks is freshwater, during summer months the docks are known to suffer from lower water levels. Under very low water levels, tidal saltwater is pumped into the docks to maintain minimum levels. This can cause negative effects on the freshwater ecosystem. Consequently, removing the abstraction of freshwater entering the Port Talbot Docks under the Proposed Development will have a small benefit to ecological water quality by helping to maintain fresh water levels. The abstraction from the Afon Afan is immediately upstream of Green Park Weir and the associated fish pass. Maintaining a minimum water level at the fish pass is important for its successful functioning. While this is generally managed by 'hands off' flow limits specified under the abstraction licence agreements, there would be some ecological benefit to the anticipated reduction in abstraction volumes under all low flow conditions at this location. However, when assessing the scale of beneficial impacts to the Afan, it is important to note that the abstraction licence will not be amended, and the

Applicant will retain the option to abstract water to the fully licenced volumes in the future if required. Therefore, the impact on the Afan is considered temporary and negligible.

#### Flood risk

- 9.7.34 The Proposed Development will have no impact on flood risk from rivers, sea, groundwater and sewers due to the Site being at low risk from these sources. The only area of the Site with a higher flood risk from rivers (located in the south of the Site) will continue to be undeveloped except for the newly proposed National Grid cable. As the cable will be underground and all land re-instated following laying, it will have no impact on flood risk.
- 9.7.35 The Proposed Development will include additional areas of impermeable surface, which will generate increased volumes of surface water runoff to the receiving site drainage network compared to the established baseline. This higher runoff rate and volume would result in some increased surface water flood risk on-site. However, the Site drainage strategy includes the implementation of SuDS as embedded mitigation for surface water flood risk. The SuDS will meet the requirements set out in Welsh Government Statutory Standards for Sustainable Drainage Systems and SAB Approval. Surface water will be conveyed within SuDS features. As a brownfield site, there shall be a requirement to provide a 30% drainage betterment when compared to the existing land use to consider the impact of climate change, with an aim to manage the 1 in 100 year rainfall event, with a 40% allowance for climate change, where possible. This will represent an improvement to the surface water flood risk on the Site when compared to the established baseline and a 'Small' beneficial impact.
- 9.7.36 As mentioned in **Section 9.5**, the Site is located within an area at risk of flooding from reservoir failure. However, reservoir flooding is extremely unlikely in the UK as a result of the regulatory requirements for reservoir safety set out in the Reservoirs Act 1975. All large reservoirs must be inspected and supervised by reservoir panel engineers. As the enforcement authority for the Reservoirs Act 1975 in Wales, NRW ensure that reservoirs are inspected regularly, and essential safety work is carried out.
- 9.7.37 Nonetheless, a high-level assessment of the risk of flooding from reservoirs to the Proposed Development was undertaken to inform the FCA. The flood level from the reservoir was estimated to be approximately 6.1mAOD. Proposed ground levels vary across the Site with some areas being flood free under a reservoir failure event, most areas that are within the flood extent experience depths under 600mm and a maximum flood depth of 1100mm is experienced at the scanning and weighbridge facility. TAN-15 recommends that the tolerable limits of flooding from fluvial and tidal sources to industrial development is a flood depth of 1000mm. Therefore, the predicted consequences of reservoir flooding to the Site are largely within the recommended limits of acceptability for flooding (noting that these only apply to fluvial and tidal sources of risk and not specifically reservoir failure).
- 9.7.38 It is a legal requirement for all undertakers (owners and operators) to prepare an on-site emergency flood plan for all large, raised reservoirs in England and Wales. The flood plan outlines what areas could flood and the actions needed to prevent, control and mitigate an uncontrolled release of water that could cause flooding from a reservoir. The plan should, amongst other things, ensure that the right people can prevent, control and mitigate a flood from the reservoir that could endanger life or property.

- 9.7.39 Reservoir volumes are expected to flow through the Site and be received and stored by Margam Moors to the south (typical levels of 4.1mAOD). The Moors provide a significant low risk area for the reservoir to drain to relatively safely, with the minimum consequence for the proposed development area. Even in a combined probability event of high fluvial levels in Margam Moors and a reservoir failure, the large area of the moors (1.3km<sup>2</sup>) and relatively low elevation provides a very significant volume of storage.

*Proposed additional mitigation*

- 9.7.40 During the operational phase, the impacts on water quality and water resource receptors have been assessed as small beneficial due to the improvement to environmental management when compared to the established baseline. The impacts on flood risk are also classified as small beneficial. As these are positive impacts, there is no requirement for additional mitigation measures.

*Residual operational effects*

- 9.7.41 **Table 9-14** below provides a summary of the residual effects from impacts on water environment receptors during the operational phase. The operational phase impacts have been assessed to cause one moderate beneficial (significant) effect on water environment receptors; all other effects are classified as negligible or minor (not significant).

**Table 9-14 Significance of potential effects from operational phase**

| Receptor type         | Receptor                                                                         | Importance/sensitivity | Impact magnitude | Significance of effect            |
|-----------------------|----------------------------------------------------------------------------------|------------------------|------------------|-----------------------------------|
| Surface water quality | Swansea Bay WFD Waterbody.                                                       | High                   | Small beneficial | Moderate beneficial (significant) |
|                       | NRW Main Rivers - Nantffrwdwyllt, Afon Cynffig (Kenfig), Afon Afan, Tu Du Brook. | Medium                 | Negligible       | Negligible (not significant)      |
|                       | Ordinary watercourses on site (non-WFD classified or designated)                 | Medium                 | Small beneficial | Minor (not significant)           |
| Groundwater quality   | WFD Groundwater Body Swansea Carboniferous Coal Measures                         | Low                    | Small beneficial | Negligible (not significant)      |
| Water resources       | Nantffrwdwyllt                                                                   | Medium                 | Small beneficial | Minor (not significant)           |
|                       | Afon Cynffig (Kenfig)                                                            | Medium                 | Negligible       | Negligible (not significant)      |
|                       | Port Talbot docks                                                                | Medium                 | Small beneficial | Minor (not significant)           |
|                       | Afon Afan                                                                        | Medium                 | Small beneficial | Negligible (not significant)      |

| Receptor type | Receptor                                                      | Importance/sensitivity | Impact magnitude | Significance of effect       |
|---------------|---------------------------------------------------------------|------------------------|------------------|------------------------------|
|               | Mothers Ditch                                                 | Medium                 | Negligible       | Negligible (not significant) |
|               | Eglwys Nunydd Reservoir                                       | Medium                 | Negligible       | Negligible (not significant) |
|               | Nantffrwdwyllt                                                | Medium                 | Negligible       | Negligible (not significant) |
| Flood risk    | Less vulnerable development (on-site industrial development). | Low                    | Small beneficial | Negligible (not significant) |

## 9.8 Further survey and monitoring requirements

9.8.1 A number of legislative requirements are referenced in this chapter as embedded mitigation. Monitoring requirements with regards to these mitigation measures are specified by the relevant authorising body and set out in legislative documents. Compliance with monitoring requirements is assessed by these bodies. This includes but is not limited to:

- Confirmation of As Built design with regards to ground levels, drainage strategy and storage of chemical/substances (by relevant authorising body – SAB, NRW).
- Water quality monitoring at emissions to water locations. Water quality monitoring will be completed throughout the construction and operation phase and monitoring records submitted to NRW.
- Water abstractions from surface water receptors throughout construction and operational phase. Monitoring recorded as required under licence agreement.

9.8.2 Further to the legislative requirements, the following additional forms of monitoring will be completed:

- Planning conditions include a requirement for adherence to the CEMP. The Environmental Clerk of Works will monitor construction procedures against the requirements set out in the CEMP and take appropriate action as per procedure where monitoring thresholds are exceeded.
- The Applicant's facility operates under an accredited EMS, which is also a requirement of the Environmental Permitting Regulations 2016). The EMS incorporates measures to monitor and respond to risks and opportunities relating to the significant environmental aspects of the operations. Environmental aspects will include those related to the water environment as listed in this chapter.

9.8.3 No additional survey or monitoring requirements are required as a result of the assessment detailed in this ES chapter.

## 9.9 Opportunities for enhancement

9.9.1 The Proposed Development includes plans for environmental enhancement to the reed network and coastal floodplain grassland within the southern portion of the Site. The primary objective is to create and/or enhance the wetland habitat to provide long-term feeding sites for overwintering birds and breeding grounds for regionally significant

species such as Lapwing. Enhancement of the floodplain grassland area will enable categorisation as a SINC in connection to the SINC areas of Margam Moors to the south.

- 9.9.2 This will involve the creation of a new drainage channels, scrapes and bunding within the Site to create appropriate habitat conditions. These enhancements will provide sustainable water level management and improve the overall water quality of the watercourses by enhancing ecological function and species diversity.

## 9.10 Cumulative effects

- 9.10.1 The cumulative impacts of the Proposed Development with other planned developments within the relevant Zone of influence (Zoi) has been identified as part of a thorough cumulative effects assessment. The cumulative effects assessment methodology for establishing the Zoi and the final short list of approved (committed) developments for consideration in the cumulative effects assessment has been discussed in **Chapter 15 Cumulative Effects**.
- 9.10.2 The Zoi for committed developments with specific regards to surface water, flood risk and drainage is specified in **Table 9-15**.

**Table 9-15 Zone of Influence of water related environmental aspects for cumulative effects assessment**

| Environmental aspect   | Zone of influence                                                                                                                                                             |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water resources        | 5 km radius                                                                                                                                                                   |
| Flood risk             | The hydrological catchment of the Site – i.e. Afon Cynffig, including Margam Moors and the Ty Du Brook.                                                                       |
| Surface water drainage | Any areas with surface water drainage features (watercourses, drains, culverts) draining to the development site, Margam Moors or the Applicant's wastewater treatment works. |
| Foul drainage          | Area draining to the DCWW Port Talbot wastewater treatment works.                                                                                                             |

- 9.10.3 Sites within the approved (committed) development list and Zoi for water related aspects are listed below in **Table 9-16**.

**Table 9-16 Approved (committed) developments within water Zol**

| Planning Ref and status                                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Distance from EAF                   |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| P2021/1255<br>Approved<br>13.01.2023                   | <u>Land off J38 of the M4, Margam</u><br><br>Full planning application by Sandvik Osprey Ltd for a metal processing facility totalling 28,500sq.m of floorspace comprising a powder processing plant, warehouse and store, office building, amenity building, laboratory, services building, substation, phase 2, CCTV, storage tanks and plant, parking, servicing and roads and associated works.                                                                                                                                                                                                                                                                                                                                                             | 850 m north                         |
| P2023/0858<br>Awaiting decision (validated 13.11.2023) | <u>Crown Wharf Port Talbot Docks Port Talbot SA13 1RA (Project Dragon)</u><br><br>LanzaTech Ltd has submitted an application for the demolition of existing structures and erection of a Sustainable Aviation Fuel (SAF) production facility, including the production of green hydrogen and sustainable diesel, enclosed ground flare, storage tanks, installation of pipework and electrical, processing and utility equipment, administration, warehouse and laboratory buildings, new access, car parking and transport infrastructure including a truck loading area and associated works, hard and soft landscaping, areas for temporary construction laydown, and associated development on land at Crown Wharf Port Talbot Docks Port Talbot SA13 1RA8. | 1.3 km north-west                   |
| N/A                                                    | <u>National Grid Margam substation extension and cable connection</u><br><br>National Grid are planning an upgrade to the existing Margam substation in combination with the proposed EAF facility. This will entail laying high voltage cable from the sub-station through Margam Moors into the south of the Site.                                                                                                                                                                                                                                                                                                                                                                                                                                            | On the southern part of Site.       |
| N/A                                                    | <u>P Fields, Port Talbot Steelworks.</u><br><br>The development entails construction of a concrete slab in the central area of the Land at Port Talbot steelworks site. To be used as lay down and site compound to support essential industrial uses associated with the operation of the steelworks.                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Within the central area of the Site |

- 9.10.4 The proposed development at Land off J38 of the M4, Margam has the potential to impact the same receptors as the Proposed Development at Port Talbot Steelworks. The J38 Margam site is currently greenfield land proposed to be developed for metal processing, new drainage arrangements for the Site will discharge into the SINC ditches of Margam Moors, which ultimately drain into Lower Mother Ditch and through Port Talbot Steelworks into Swansea Bay via the Site outfall. The discharge of surface water from the J38 site has the potential for pollutants if not mitigated. SuDS and Environmental Permitting controls on pollution prevention can be assumed to adequately manage the impact to a Negligible level. Consequently, it is considered unlikely that the cumulative impacts of the

two sites will result in a change to the magnitude of the water quality impacts assessed in this ES chapter.

- 9.10.5 The significant impermeable area of the J38 Margam development has the potential to increase surface water flows and flood risk to downstream receptors (Margam Moors). However, proposals for the Site incorporate SuDS as required under legislation, which will mitigate the risk of increased surface water flows and associated impacts are negligible.
- 9.10.6 The J38 Margam site does not propose to discharge effluent water to or abstract from any water receptors listed within this chapter. All foul/effluent is to be processed by DCWW assets and water supplied by DCWW.
- 9.10.7 The Crown Wharf Project Dragon SAF proposals include discharge of surface water to Port Talbot Docks as part of the surface water drainage strategy. The proposals for the Site also incorporate SuDS and Environmental Permitting controls, which mitigate the risk of surface water pollution. 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. Effluent from the wastewater treatment works will be discharged into the docks. The effluent discharge will be required to meet the BAT limits set in the Environmental Permit. The waterbody receptor to these water quality impacts differs from the receptor to effluent discharge for the Proposed Development. While the two waterbodies are linked and discharges from Port Talbot Docks enter Swansea Bay waters, the significant dilution potential of Swansea Bay means the cumulative effects of the two discharges is considered negligible.
- 9.10.8 The Crown Wharf Project Dragon SAF site will require abstraction of water for processing, from Port Talbot Docks. The abstraction volumes are relatively small, and the water is cycled back into the docks. The abstraction of additional water from the Docks has the potential to mitigate some of the beneficial impacts of the reduction of abstraction and surrender of abstraction licences for the EAF facility at Land at Port Talbot Steelworks. However, as this beneficial impact was classified as 'small' and the environmental effect was 'negligible', the cumulative effects of the abstraction requirements of the two sites remains negligible.
- 9.10.9 The laying of National Grid cables in the southern area of the Proposed Development has already been assessed as part of this ES. The National Grid Margam Substation project also involves the laying of cables outside of the Site through Margam Moors. As per the assessment carried out in this chapter, the laying of cables has a risk of negative environmental impacts to the watercourses during construction. This will need to be adequately mitigated by National Grid through embedded mitigation to ensure environmental effects from the works outside of the Site are negligible (CEMP, Ordinary Watercourse Consent). There is a potential for cumulative impacts on the ordinary watercourses if construction, habitat destruction and habitat remediation for the watercourses is not synchronised appropriately. However, as both areas of cable laying (within and outside of the Site) will be managed by National Grid, it can be assumed that the project will be managed holistically and coordinate the works in both sites suitably. This approach is anticipated to result in negligible effects to the water quality receptors.

- 9.10.10 The P Fields development within the central area of Port Talbot Steelworks will involve construction of increased hardstanding. This has the potential to increase surface water runoff and on-site flood risk to the wider steelworks site. However, given the overall low risk of surface water flooding, the potential impact would be categorised as small without mitigation in place. Furthermore, the P Fields development includes a statutory SuDS drainage strategy to manage surface water and associated water quality. The implementation of the SuDS drainage strategy will adequately manage the surface water impacts from the P Fields development and is likely to provide a minor improvement when compared to the baseline scenario. The cumulative impacts with the Land at Port Talbot Steelworks are therefore assessed to be negligible.
- 9.10.11 No inter-project cumulative effects are anticipated with regards to the impacts of climate change on surface water, flood risk and drainage on the basis of the following considerations:
- The impacts of climate change on rainfall intensity, and therefore the potential for surface water flooding, is accounted for within the design of the SuDS drainage strategy for all of the sites within the development list above, as required under the Welsh Government Statutory Standards for SuDS and SAB approval. The effects of climate change are therefore not anticipated to impact neighbouring developments.
  - The impact of climate change on water resource management with regards to foul effluent treatment and potable water supply is assessed at a strategic level by DCWW in their 5-year plan (2020-2025 and 2025-2030) and 2050 strategy. DCWW provide approval and specify mitigation for connection to these services in line with their 'strategic responses' and asset strategy, which includes an assessment of asset vulnerability to climate change impacts. The effects of climate change on water resources as a result of the cumulative impacts from all sites in the development list is therefore accounted for elsewhere and not addressed further within this chapter.

## 9.11 Summary of effects

- 9.11.1 The environmental effects of the Proposed Development with regards to surface water, flood risk and drainage are assessed to be mostly **negligible or minor (not significant)** as a result of mitigation measures embedded in the scheme design. A requirement for additional mitigation measures through the assessment carried out in this ES chapter has not been identified.
- 9.11.2 One **moderate** (significant) beneficial environmental effect is identified for water quality to Swansea Bay WFD Waterbody. The moderate beneficial effect results from the reduction in contaminant concentrations and discharge volumes from process effluent due to changing site operations from 'heavy end' steel manufacturing to modern EAF operations applying BAT.
- 9.11.3 There is also a potential for some **minor** (not significant) positive effects to water quality receptors during the operational phase. These result from both the reduction of water abstraction volumes and reduced risk of pollution and/or sedimentation to waterbodies. A risk of negligible (not significant) negative effects is also identified, with particular regards to potential pollution and water quality impacts during the construction phase.
- 9.11.4 No likely significant effects have been identified as a result of cumulative impacts.

9.11.5 **Table 9-17** below summarises the potential impacts, their environmental effects, mitigation measures to be implemented and residual effects. In accordance with the methodology set out in **Section 9.4**, an environmental effect is only considered to be significant if the significance matrix defines the effect as moderate or major. Consequently, there is one operational phase **likely significant effect** on the water environment as a result of the Proposed Development. The likely significant effect represents a beneficial effect on the water quality of Swansea Bay WFD Waterbody.

**Table 9-17 Summary of residual effects**

| Environmental factor      | Receptor                                                                                          | Impact                                                            | Potential effect         | Additional mitigation proposed       | Residual effect                            |
|---------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------|--------------------------------------|--------------------------------------------|
| <b>Construction phase</b> |                                                                                                   |                                                                   |                          |                                      |                                            |
| Surface water quality     | Swansea Bay WFD Waterbody.                                                                        | Direct, temporary, short-term impacts on surface water quality    | Negligible/minor adverse | No additional mitigation is proposed | Negligible/minor adverse (not significant) |
|                           | Ordinary watercourses Margam Moors SSSI                                                           | Direct, temporary, short-term impacts on surface water quality    | Negligible/minor adverse | No additional mitigation is proposed | Negligible/minor adverse (not significant) |
|                           | NRW Main Rivers - Nantffrwdwyllt, Afon Cynffig (Kenfig), Afon Afan, Port Talbot Docks.            | In-direct, temporary, short-term impacts on surface water quality | Negligible adverse       | No additional mitigation is proposed | Negligible adverse (not significant)       |
|                           | Ordinary watercourses on site                                                                     | Direct, temporary, short-term impacts on surface water quality    | Negligible adverse       | No additional mitigation is proposed | Negligible adverse (not significant)       |
| Groundwater quality       | WFD Groundwater Body Swansea Carboniferous Coal Measures                                          | In-direct, temporary, short-term impacts on groundwater quality   | Negligible adverse       | No additional mitigation is proposed | Negligible adverse (not significant)       |
| Water resources           | Nantffrwdwyllt, Afon Cynffig (Kenfig), Port Talbot docks, Afon Afan, Mothers Ditch, Eglwys Nunydd | Direct, temporary, short-term impacts on water resources          | Negligible adverse       | No additional mitigation is proposed | Negligible adverse (not significant)       |

| Environmental factor     | Receptor                                                                                | Impact                                                         | Potential effect    | Additional mitigation proposed       | Residual effect                          |
|--------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------|--------------------------------------|------------------------------------------|
|                          | Reservoir, Nantffrwdwyllt                                                               |                                                                |                     |                                      |                                          |
| Flood risk               | Less vulnerable development (on-site industrial development)                            | Direct, temporary, short-term impacts on flood risk            | Negligible adverse  | No additional mitigation is proposed | Negligible adverse (not significant)     |
| <b>Operational phase</b> |                                                                                         |                                                                |                     |                                      |                                          |
| Surface water quality    | Swansea Bay WFD Waterbody.                                                              | Direct, permanent, long-term impacts on surface water quality  | Moderate beneficial | No additional mitigation is proposed | <b>Moderate beneficial (significant)</b> |
|                          | NRW Main Rivers - Nantffrwdwyllt, Afon Cynffig (Kenfig), Afon Afan, Port Talbot Docks.  | Direct, permanent, long-term impacts on surface water quality  | Negligible          | No additional mitigation is proposed | Negligible adverse (not significant)     |
|                          | Ordinary watercourses on site                                                           | Direct, permanent, long-term impacts on surface water quality  | Minor beneficial    | No additional mitigation is proposed | Minor beneficial (not significant)       |
| Groundwater quality      | WFD Groundwater Body Swansea Carboniferous Coal Measures                                | In-direct, permanent, long-term impacts on groundwater quality | Negligible          | No additional mitigation is proposed | Negligible (not significant)             |
| Water resources          | Afon Cynffig (Kenfig), Mothers Ditch, Eglwys Nunydd Reservoir, Nantffrwdwyllt Afon Afan | Direct, permanent, long-term impacts on water resources        | Negligible          | No additional mitigation is proposed | Negligible (not significant)             |
|                          | Nantffrwdwyllt, Port Talbot docks,                                                      | Direct, permanent, long-term impacts on water resources        | Minor               | No additional mitigation is proposed | Minor (not significant)                  |
| Flood risk               | Less vulnerable development (on-site industrial development).                           | Direct, permanent, long-term impacts on flood risk             | Negligible          | No additional mitigation is proposed | Negligible (not significant)             |

## 9.12 References

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