6 AIR QUALITY

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6.1 Introduction

6.1.1 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]… air…'.

6.1.2 This chapter assesses the likely significant effects of the Proposed Development on air quality. A supporting appendix is provided in **ES Appendix 6.1** to **6.7**.

6.1 Statutory and planning context

6.1.1 The air quality assessment has been undertaken within the context of relevant planning policies, guidance documents and legislative instruments. These are summarised in **Table 6.1** below.

Table 6.1 Legislation and guidance relevant to air quality

Document	Summary
Legislation	
Environmental Protection Act 1990 (H.M. Government, 1990)	Imposes duties on local authorities to deal with 'statutory nuisances', including smoke emitted from premises that is prejudicial to health or a nuisance; fumes or gases emitted from premises that is prejudicial to health or a nuisance or any dust, steam, smell or other effluvia arising on industrial, trade or business premises that is prejudicial to health or a nuisance. This requirement to regulate potential impacts on amenity underpins the requirement to assess dust and odour generated by the Proposed Development.
Environment Act 1995 (H.M. Government, 1995)	Requires all local authorities to carry out periodic reviews of air quality within their administrative areas. Where air quality is known or expected to exceed one or more of the Air Quality Objectives (AQOs), they must declare an air quality management area (AQMA) and implement an air quality action plan (AQAP) to work toward meeting the AQOs.
Air Quality (Wales) Regulations 2000 (H.M. Government, 2000) Air Quality (Amendment) (Wales) Regulations 2002 (H.M. Government, 2002)	These collectively establish the AQOs which are used by local authorities in reviewing air quality within their jurisdiction and declaring AQMAs in accordance with the Environment Act 1995. AQOs are established for benzene, 1-3-Butadiene, carbon monoxide (CO), nitrogen dioxide (NO_2), lead (Pb), fine particulate matter with a diameter of less than 10 micrometres (PM_{10}) and sulphur dioxide (SO_2).
EU Directive 2008/50/EC Air Quality Standards (Wales) Regulations 2010 (H.M. Government, 2010)	The European Union (EU) Directive 2008/50/EC prescribed air quality limit values for a number of pollutants (designed to protect human health and critical levels to protect vegetation). These were transposed into Welsh Law via the Air Quality

Document	Summary
	Standards (Wales) Regulations, therefore prescribing Air Quality Standards (AQSs).
Environment (Air Quality and Soundscapes) (Wales) Act 2024 (H.M. Government, 2024)	The Act requires Welsh Ministers to pass Regulations establishing a target governing annual mean $PM_{2.5}$ concentrations. The target should have regard for guidelines published by the World Health Organisation in its most recent air quality guidelines. Regulations under this legislation have not yet been adopted. However, a target of 10µg/m^3 (annual mean target by 2040) has been adopted in England. This assessment has assumed the same target will be adopted in Wales.
Development Plan Policy (incl. Future Wales 2040 and the NPT LDP 2011-2026)	
Planning Policy Wales (Welsh Assembly Government, 2024)	The Planning Policy Wales requires developments to: *“address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;* *not create areas of poor air quality; and* *seek to incorporate measures which reduce overall exposure to air and noise pollution.”* Development applicants should also consider whether the location and design of proposed development is acceptable, where air pollution is likely to affect a protected species or is proposed in an area likely to affect a statutorily designated site. Development may be refused where impacts are unacceptable, for example where adequate mitigation is unlikely to safeguard local air quality.
Future Wales: The National Plan 2040 (Welsh Assembly Government, 2021)	The need to consider air quality in planning decisions is also supported in Future Wales: The National Plan 2040, which is the national development framework setting the direction for development in Wales to 2040.
Neath Port Talbot Local Development Plan 2011 – 2026 (Neath Port Talbot Council, 2016a)	Policy SP16: Environmental Protection states that: *“Air, water and ground quality and the environment generally will be protected and where feasible improved through… ensuring that proposals have no significant adverse effects on water, ground or air quality and do not significantly increase pollution levels [and] ensuring that developments do not increase the number of people exposed to significant levels of pollution.”* Policy EN8: Pollution and Land Stability states that *"proposals which would be likely to have an unacceptable adverse effect on health, biodiversity and / or local amenity or would expose people to unacceptable risk due to [air pollution] will not be permitted”* and *“Proposals which would create new problems or exacerbate existing problems detailed above will not be acceptable unless mitigation*

Document	Summary
	measures are included to reduce the risk of harm to public health, biodiversity and/or local amenity to an acceptable level."
Material Considerations (incl. PPW or TAN guidance)	
Technical Advice Note 5 (TAN 5): Nature Conservation (Welsh Assembly Government, 2009)	TAN 5 confirms the importance of preventing impacts on designated ecological sites.
Neath Port Talbot Pollution Supplementary Planning Guidance (SPG) (Neath Port Talbot Council, 2016b)	The Neath Port Talbot Pollution SPG was adopted in October 2016 and sets out information about pollution issues in Neath Port Talbot and provides details on relevant matters that should be taken into consideration when assessing proposed developments within the borough. In relation to air quality the SPG sets out details on how to assess air quality impacts associated with development plans and to meet the relevant planning policies set out within the Local Development Plan.
Clean Air Plan for Wales (2020) (Welsh Government, 2020)	The objective of the Clean Air Plan for Wales is to improve air quality and reduce the impacts of air pollution on human health, biodiversity, the natural environment and the economy. The Plan sets out a 10-year pathway to achieving cleaner air and is based upon four main areas: People – protecting the health and well-being of current and future generations; Environment – taking action to support the natural environment, ecosystems and biodiversity; Prosperity – working with industry to reduce emission, supporting a cleaner and more prosperous Wales; and Place – creating sustainable places through better planning, infrastructure and transport.
Local Air Quality Management Technical Guidance (Defra and the devolved administrations, 2022) ('TG22')	Provides guidance for local authorities to assess and, where required, deliver improvements in air quality within their jurisdiction, as well as technical guidance for undertaking detailed dispersion modelling assessment, including recommendations of where the AQOs should be applied.
Guidance on Land-Use Planning and Development Control: Planning for Air quality Version 1.2 (Environmental Protection UK (EPUK) and the IAQM, 2017) ('the EPUK-IAQM guidance') (EPUK and IAQM, 2017)	Provides the method used to determine the magnitude of impacts, receptor sensitivity and significance of effects in relation to the assessment of industrial and vehicle emissions. It also identifies mitigation measures which can be implemented to reduce air quality effects attributable to a development project.
Guidance on the Assessment of Dust from Demolition and Construction Version 2.2 (Institute of Air Quality Management, IAQM, 2024) ('the IAQM 2024 guidance')	The assessment of fugitive dust generated by construction related activities has been informed by the method outlined in this guidance. Mitigation measures from this guidance have also been assigned, relative to the level of risk identified from this assessment.

Document	Summary
Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites 2020 (EPUK and IAQM, 2020) ('the IAQM 2020 guidance')	Establishes the method which has been used to assess air quality effects on designated ecological sites.
Air emissions risk assessment for your environmental permit (Defra and Environment Agency, 2023)*	This describes the Environmental Assessment Levels and critical loads against which projects requiring an Environmental Permit application can be assessed. It also outlines the method which can be used to screen emissions to air at human and ecological receptors, to determine whether further assessment (detailed dispersion modelling) is required.
Technical guidance on detailed modelling approach for an appropriate assessment for emissions to air (Environment Agency, 2014)*	Has been used to calculate the amount of nitrogen, sulphur and NH_3 deposited in relation to its effects on ecosystem eutrophication and acidification.

* As there is no equivalent guidance applicable to Wales, this guidance has been used instead and is considered appropriate for this assessment.

6.2 Consultation undertaken

6.2.1 This chapter has been prepared following the methodology outlined in informal air quality EIA scoping consultation note provided in **ES Appendix 4.1**. to agree the assessment method during April and May 2024. Feedback was received from local planning authority, Neath Port Talbot Council (NPTC) at a meeting on 20th June 2024, as well as feedback from Natural Resources Wales (NRW, which regulates the Site's Environmental Permit) on 9th May 2024 and 20th June during the meeting. The feedback has reflected in the assessment reported herein. **Table 6.2** summarises the feedback received and either provides or signposts responses.

Table 6.2 Feedback received on Scoping Technical Note, issued to NPTC and NRW

Consultee	Summary of Comment	Project Response or cross-reference
NPTC	The ES chapter should quantitatively assess the EAF versus both the Established and Interim Baselines.	The ES chapter has determined the potential for significant effects against the established baseline and has also quantified the impacts against the IB.
NPTC	A Welsh $PM_{2.5}$ new standard is emerging. It is likely to match or better the long-term target for England (10µg/m³) and account for the 2021 World Health Organisation Guideline of 5µg/m³.	The assessment has considered assessment against both of these thresholds to provide context. It is noted that information from Welsh Government indicates that work to develop the new $PM_{2.5}$ standard is in progress but it is not expected that a value will be available for consultation until autumn 2025. In the absence of the new Welsh standard, the long-term target for

Consultee	Summary of Comment	Project Response or cross-reference
		England has been used to provide context.
NPTC	$PM_{2.5}$ data from the council should be presented; they have measures for 18 month on $PM_{2.5}$	See **Section 6.4**.
NPTC	The closest monitor to the Site may not represent background pollutant concentrations. Consideration should be given to their other monitoring Sites.	Full consideration has been given to the monitoring sites available within the area, within the baseline assessment and assessment of industrial and vehicle emissions.
NPTC	A receptor should be added at Lower West End, due to its proximity to the main entrance of the steelworks.	A receptor has been added on the façade of a representative residence on this road.
NPTC	Shipping and rail emissions should be screened	Shipping and rail movements have been screened in **Paragraph 6.3.23** to **Paragraph 6.3.27** below.
NPTC	Use meteorological data from the Port Talbot Margam air quality monitoring station to sensitivity test the effect of the meteorological conditions captured within the assessment on air quality.	See **Appendix 6.2**.
NPTC	Emissions from industrial sources within 10 km of the Site should be considered cumulatively, as should traffic along the roads most expected to be affected by the EAF.	This is described in **Section 6.10**.
NRW	The scoping technical note stated that "*key air pollutants of concern for human health*" and sensitive features will be assessed. However, other air pollutants should also be considered in a proper air quality impact assessment.	The assessment of construction dust, and dust generated from operational activities, focussed on dust and particulate matter (explicitly PM_{10} and implicitly $PM_{2.5}$). The pollutants which have been assessed in the assessment of industrial and vehicle emissions are outlined in **Table 6.3**. Emissions factors are provided for the key pollutants which generate emissions to air, including oxides of nitrogen (NOx), PM_{10}, $PM_{2.5}$, nitrogen dioxide (NO_2) and ammonia (NH_3). Other pollutants are not emitted in significant quantities as to have an effect on air quality. The pollutants modelled for industrial sources include those for which reasonably reliable emissions data are available for the EAF. These pollutants include those with a Best Available Techniques- Associated

Consultee	Summary of Comment	Project Response or cross-reference
		Emissions Level (BAT-AEL) (dust and dioxins), those where the Emissions Limit Value has been discussed with regulators (NOx, carbon monoxide (CO) and sulphur dioxide (SO_2)) and species where there are data from the original equipment manufacturer (Chromium, Cr; mercury, Hg; and Lead, Pb). An emission factor for benzo(a)pyrene has been taken from the National Atmospheric Emissions Inventory (NAEI). Whilst there are emissions data for Nickel in the NAEI, the data from which it is derived may apply to making high-alloy grades of steel. Three of the four existing UK EAFs are likely to have a higher nickel content and as such the NAEI figures are not considered representative for the EAF to be installed in Port Talbot.
NRW	The assessment of dust generated from operational activities should not only consider the presence of best available techniques (BAT) to determine whether a more detailed qualitative assessment is required.	The assessment has detailed mitigation measures more generally which are used to control dust from operational related activities (**Section 6.7**). For these reasons, further assessment has been screened out.
NRW	The scoping technical note proposed to use numerical weather prediction (NWP) data for air quality modelling impact assessment. However, no detailed NWP data information was provided, for example, NWP model type and its resolution etc. Also, sensitivity analysis for the met data used will also be a common practice.	This is discussed in **Appendix 6.2**.
NRW	Coastline may have an impact on air dispersion so its impact on local air quality needs to be considered. The reasons provided in the Temple scoping technical note for not undertaking a coastline impact assessment may not be justified. ADMS may be run with sensitivity analysis and professional judgment in considering the potential coastline effect.	This is discussed in **Appendix 6.2**.
NRW	For combustion emissions, type of fuels is also needed to be considered for the screening assessment distance. Natural Resources Wales / What to do	Based on the guidance provided at the location provided, the maximum screening distance cited has been used (**Paragraph 6.3.26**).

Consultee	Summary of Comment	Project Response or cross-reference
	before you apply for a standalone Medium Combustion Plant (MCP) less than 50 MW thermal input that is also a Specified Generator (SG) or Part B activity.	
NRW	At this stage, we do not make comments on the suitability of selected ecological receptors and human receptors. However, it will be visually helpful to mark these receptors in a map.	Figures presenting the sources and receptors included are presented in **Appendix 6.2**.
NRW	One-year meteorological data may not be able to address the yearly variation of meteorological conditions.`	Five years of meteorological data have been used in all scenarios where point and road source modelling was undertaken. The approach adopted for model verification complies with TG22.

6.2.2 Neither NPTC nor NRW commented on the justification proposed to screen out the assessment of odour from the assessment provided in the informal scoping technical note. Significant emissions of odour are considered unlikely to be generated by the EAF, because the Site will be regulated by an Environmental Permit and BAT implemented. Odour assessment therefore is not required.

6.3 Approach to the assessment

Outline assessment approach

6.3.1 The approach taken for assessing the potential air quality impacts of the Proposed Development is as follows:

- Established baseline characterisation of local air quality;
- Qualitative assessment of fugitive dust and emissions from construction related activities;
- Qualitative assessment of fugitive dust and emissions once the Proposed Development is operational;
- Assessment of changes in road and non-road transport emissions; and industrial emissions; attributable to the Proposed Development whilst it undergoes construction and once operational;
- Screening and assessment of cumulative effects;
- Recommendation of mitigation measures, where appropriate, to ensure any adverse effects on air quality are minimised; and
- Identification of residual impacts resulting from the Proposed Development.

6.3.2 Further information is provided in the forthcoming subsections.

Existing air quality characterisation

6.3.3 ‘Existing’ air quality refers to the concentrations of relevant substances that are already present in ambient air, including from road traffic and industrial sources. Dust, generated from construction related activities and operational emissions, may also affect amenity and contribute to ambient PM_{10} and $PM_{2.5}$ concentrations.

6.3.4 There is no existing network of monitoring undertaken to monitor dust (particles that give rise to soiling, and to human health and ecological effects) levels across the United Kingdom, nor is the assessment of dust generated by activities dependent on baseline pollutant concentrations, therefore this has not been assessed.

6.3.5 As mentioned, the primary pollutants of interest for this assessment are NOx, both the total and the nitrogen dioxide (NO_2) fraction in ambient air, SO_2, Chromium (Cr), lead (Pb), mercury (Hg), ammonia (NH_3), CO, dioxins & furans, benzo[a]pyrene, PM_{10} and $PM_{2.5}$, as well as dust generated from construction related activities. For the industrial point source modelling, all pollutants listed above were modelled, with the exception of NH_3, which was not considered relevant due to the expected (based on an understanding of the process) lack of industrial NH_3 sources of emissions at the Site once the EAF is operational. For the purposes of this assessment, the pollutants considered in the detailed dispersion modelling of road traffic emissions are NOx, NO_2, PM_{10}, $PM_{2.5}$ and NH_3.

6.3.6 To support the assessment of effects from travel and industrial emissions, a study has been undertaken using data obtained from continuous and diffusion tube monitoring stations maintained by NPTC and as part of the automatic urban and rural network (AURN) maintained for the Department for Environment, Food and Rural Affairs (Defra); and estimated background concentrations from Defra's United Kingdom Air Information Resource (UK-AIR) website.

6.3.7 As this section characterises air quality monitoring or modelled data using information from existing sources, sometimes collected some time ago, the existing and future trends either directly monitor the established baseline, or project how the established baseline was then expected to evolve. The IB will therefore not be characterised by reference to monitoring data. However, the dispersion modelling results are set out in **Appendix 6**.

6.3.8 The assessment has contextualised pollutant concentrations against air quality thresholds (AQTs), to infer whether it is acceptable. These thresholds comprise:

- The Air Quality Standards (AQSs);
- The Air Quality Objectives (AQOs);
- Critical loads and critical levels for the protection of ecosystems; and
- The English and emerging Welsh legally binding target (LBT) for $PM_{2.5}$.

6.3.9 The AQTs are shown in **Table 6.3** below. Whilst there is a difference in the locations where the thresholds should be applied, depending on whether assessment is undertaken against an AQO or AQS, it is customary to apply the human thresholds at the types of receptor defined, which match receptors where exposure is considered relevant in TG22.

Table 6.3 Air quality thresholds relevant to the assessment

Pollutant	Limit value	Measured as	Receptors to which threshold will be applied	Origin of AQT
NO_x	30µg/m^3	Annual mean	Ecological receptors	AQS
	200µg/m^3, because data from the PT2 site show that O_3 is below the AOT40 critical level and SO_2 is below the lower critical level of 10µg/m^3	Daily mean	Ecological receptors	Guideline Critical Level[1]
NO_2	200 µg/m^3, not to be exceeded more than 18 times per year	One-hour mean	Anywhere where a member of the public may spend one hour or longer	AQO and AQS
	40 µg/m^3	Annual mean	Human residences, schools and hospitals	AQO and AQS
PM_{10}	50 µg/m^3, not to be exceeded more than 35 times per year	24-hour mean	Human residences, schools and hospitals and private gardens	AQO and AQS
	40 µg/m^3	Annual mean	Human residences, schools and hospitals	AQO and AQS
$PM_{2.5}$	20 µg/m^3 It is noted that AQS in Wales is 25 µg/m^3 and as such	Annual mean	Human residences, schools and hospitals	AQO and AQS

[1] The IAQM 2020 guidance cites this critical level as being based on evidence from the World Health Organization. *"The WHO guidelines include a short term (24-hour average) NOx critical level of 75 µg/m3. Originally set at 200 µg/m3 as a four-hour mean, the more detailed CD-ROM version of the 2000 WHO guidelines91 comments: "Experimental evidence exists that the CLE decreases from around 200 µg/m3 to 75 µg/m3 when in-combination with O3 or SO2 at or above their critical levels. In the knowledge that short-term episodes of elevated NOx concentrations are generally combined with elevated concentrations of O3 or SO2 , 75 µg/m3 is proposed for the 24 h mean." Ozone and SO2 concentrations are typically low in the UK compared to many other countries. If a regulator does require the use of the short term NOx critical level, given the low UK SO2 concentrations IAQM consider it is most appropriate to use 200 µg/m3 as the short term critical load."*

Pollutant	Limit value	Measured as	Receptors to which threshold will be applied	Origin of AQT
	the more stringent target of 20 µg/m³ is used.			
	10 µg/m³	Annual mean	Human residences, schools and hospitals	Potential legally binding target
SO_2	266 µg/m³ not to be exceeded more than 35 times a year	15-minute mean	Anywhere where a member of the public may spend 15 minutes or longer	AQS Target Value and AQO
	350 µg/m³ not to be exceeded more than 24 times a year	1-hour mean	Anywhere where a member of the public may spend one hour or longer	AQO and AQS
	125 µg/m³ not to be exceeded more than 3 times a year	24-hour mean	Human residences, schools, hospitals and private gardens	AQO and AQS
	10 µg/m³ where lichens or bryophytes are present, 20 µg/m³ where they're not present	Annual mean	Ecological receptors	Critical level
NH_3	1 µg/m³ where lichens and bryophytes are present, 3 µg/m³ where they're not present.	Annual mean	Ecological receptors	Critical level
CO	10 mg/m³	Maximum eight-hour running mean in any day period	Human residences, schools and hospitals and private gardens	AQO and AQS
	30 mg/m³	1-hour mean	Anywhere	Environmental

Pollutant	Limit value	Measured as	Receptors to which threshold will be applied	Origin of AQT
			where a member of the public may spend one hour or longer	Assessment Level (EAL)
Polyaromatic hydrocarbons (benzo(a) pyrene, or B[a]P)	1 ng/m^3	Annual mean	Human residences, schools and hospitals	AQS Target Value
	0.25 ng/m^3	Annual mean	Human residences, schools and hospitals	AQS Target Value
Lead (Pb)	0.5 µg/m^3	Annual mean	Human residences, schools and hospitals	AQS
	250 ng/m^3	Annual mean	Human residences, schools and hospitals	AQS Target Value
Mercury (Hg)	600 ng/m^3	1-hour mean	Anywhere where a member of the public may spend one hour or longer	EAL
	60 ng/m^3	24-hour mean	Human residences, schools and hospitals and private gardens	EAL
Chromium (Cr) (assuming all expressed as Cr III)	2 µg/m^3	24-hour mean	Human residences, schools and hospitals and private gardens	EAL

Assessment of construction dust emissions

Assessment method

6.3.10 Emissions to air from demolition and construction activities, particularly in the form of dust, have the potential to cause a loss of amenity (due to dust soiling) or to affect (vascular) plant species sensitive to dust. The finer fraction of dust, in the form of PM_{10} and PM of finer fractions, also has the potential to affect human health. Given the variability of demolition and construction sites and the range of activities undertaken, a quantitative assessment of the dust and air pollutants generated is rarely feasible or practicable. Instead, a qualitative assessment has been undertaken to identify best practicable means for mitigating potential emissions.

6.3.11 The construction dust assessment study area has considered the potential for impact within 250 metres of the Site or 50 metres of routes used by construction vehicles on the public highway, up to 250 metres from the Site entrance. These represent the criteria which can be used to screen the need for a construction dust assessment, as outlined in the IAQM 2024 guidance (IAQM, 2024). Beyond this distance, impacts are not expected from construction dust. This distance is cited in the IAQM guidance as taking into account the exponential decline in both airborne concentrations and the rate of deposition with distance.

6.3.12 The IAQM 2024 guidance has been used to undertake the risk assessment and identify appropriate mitigation measures. The method involves assessment of the:

- **Dust emissions magnitude:** the dust emissions magnitude will be assessed as ‘negligible’, ‘low’, ‘medium’ or ‘high’ for each type of construction-related activity (demolition, earthworks, construction and trackout);
- **Receptor sensitivity:** the ‘area’ sensitivity will be assessed as ‘negligible’, ‘low’, ‘medium’ or ‘high’ for each type of construction-related activity and each type of impact (amenity, human health and ecological) based on individual receptor sensitivity and proximity; and
- **Assessment of dust risk:** The dust risk (or impact) at each individual receptor is assessed as ‘negligible’, ‘low’, ‘medium’ or ‘high’ based on the impact magnitude and receptor sensitivity.

6.3.13 The method is outlined in more detail in **Appendix 6.1**.

6.3.14 Impacts associated with construction dust will primarily arise for as long as construction-related activities take place (over a two-year period). Therefore, any impacts will be temporary.

Significance criteria

6.3.15 The significance of the potential for dust to affect sensitive receptors before mitigation has been assessed using professional judgement but based on the risk of dust impacts. The risk of dust impacts before mitigation does not typically require the significance to be determined, as the mitigation is embedded.

6.3.16 The significance of effects following the implementation of mitigation has then been reassessed. In this regard, the IAQM 2024 guidance indicates that *“For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be ‘not significant.”*

Assessment of operational dust missions

6.3.17 Many activities on Site will be regulated under the Environmental Permitting Regulations, for which an amended Environmental Permit will be required and BAT will be implemented.

6.3.18 To determine the potential sources of dust emissions, a review of the development proposals and proposed mitigation has been undertaken.

Assessment of emissions during construction and once operational

Screening and dispersion modelling: Introduction

6.3.19 Both during construction and operation, emissions will be generated by the on-site industrial processes, vehicles, and other forms of transport (such as railways and ships used to transport goods to and from Site). During the construction phase, construction plant such as excavators will also be used.

6.3.20 TG22 (Defra, 2022) indicates that *"with suitable controls and site management, [construction plant] are unlikely to make a significant impact on local air quality. In the vast majority of cases they will not need to be quantitatively assessed – qualitative consideration to the above points will likely provide sufficient screening."* Based on construction information provided by the Applicant, it is understood that up to 60 plant will be used on an average day during construction; however, the following measures in TG22 will be implemented to control emissions, such that further assessment has been screened out:

- *"Ensure all equipment complies with the appropriate Non-Road Mobile Machinery (NRMM) standards;*
- *Where feasible, ensure further abatement plant is installed on NRMM equipment, e.g. Diesel Particulate Filters (DPFs);*
- Ensure *all vehicles switch off engines when stationary – no idling vehicles;*
- *Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where possible; and*
- *Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)."*

6.3.21 In relation to shipping movements, within the established baseline there have been regular deliveries of iron ore, coal and coke by ship, amounting to 97 vessel movements during 2023 at Port Talbot Old Town Dock, amounting to millions of tonnes per year. Whilst the Site undergoes construction, the Applicant has confirmed that there may be an occasional abnormal load unloaded into the dock whilst construction is underway. Once the Site is operational, around 90 "smaller" vessels per annum may load and unload at existing docks in Newport (55 km east of the Site), before being transported by rail. It is understood that around 500 vessels dock within Newport per annum (Newport City Council, 2016).

6.3.22 TG22 presents criteria which can be used to screen the potential for shipping vessels to generate movements to and from the Site. It advises that further assessment of air quality may be required at ports where there are more than 5,000 large ship movements per year with 'relevant exposure' within 250 metres of berths and the main areas of manoeuvring. Assuming no very significant growth in vessel movements since 2015, the additional 90 vessel movements at Newport Dock are not anticipated to lead to this criterion being breached. Shipping vessel movements have therefore been screened out of further assessment.

6.3.23 Regarding rail movements, the Applicant has stated that up to 88 train movements may arise in addition to the existing 152 weekly movements to and from Site (~13 additional movements per day)[2], which will be fuelled by fossil fuels (either diesel or hydrogenated vegetable oils). Many of the additional future train journeys will relate to the use of the scrapyard. Offloading activities in this area will not take place within 15 metres of sensitive receptors.

6.3.24 TG22 indicates that the impact of additional moving trains can be screened out in areas where background annual mean NO_2 concentrations are <25µg/m^3 during 2027, the year when the EAF will open. Based on the Defra background maps, this background concentration was not anticipated to be breached in Wales[3]. Therefore, rail movements have been screened out of further assessment.

6.3.25 With non-road transport screened out, the assessment of emissions has focused on changes in road traffic and industrial source contributions, which have been quantified.

6.3.26 All stationary sources at the Tata Steel site and all roads for which traffic data were provided (within the traffic study area) have been assessed. Representative human receptors, as well as designated ecological Sites up to 10 km from the Site, have been considered. In relation to ecological receptors and based on Natural Resources Wales (n.d.) guidance (which applies to industrial emission sources), the maximum distance required to be considered between the source and receptors is 2 km for SSSIs or Marine Conservation Zones, or 10 km for Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Ramsar Sites.

6.3.27 The assessment of additional road traffic emissions attributable to both the construction and operational phases of the Proposed Development has been undertaken using the ADMS-Roads software, supplied by Cambridge Environmental Research Consultants (CERC).

6.3.28 The assessment of point source dispersion has been undertaken for the industrial emissions generated by the Site using the ADMS software (version 6.0.0, March 2023), (CERC, 2024) supplied by CERC. ADMS is a short-range, new generation, Gaussian plume air dispersion model. The model enables the characterisation of the atmospheric boundary layer properties by the boundary layer depth and the Monin-Obukhov length. Dispersion under convective meteorological conditions uses a skewed Gaussian concentration distribution (shown by validation studies to be a better representation than a symmetrical Gaussian distribution).

[2] In addition, during the period when de-rolling takes place, there may be additional movement of scrap off site by rail and movement of by-products such as BETSI/BOS Fines. The number of additional movements this will generate is presently unknown.

[3] The Applicant has assumed that most rail journeys will be made via the South West Main Line, passing through much of south Wales. The whole of Wales was used as the criteria here, as the rail movements will utilise routes across the country. This therefore includes consideration of the area surrounding the Site and Port Talbot specifically.

6.3.29 ADMS has been used in previous studies to model the air quality impact of existing and proposed industrial installations, both in the UK and abroad, and is considered fit for the purposes of this assessment. The model has been extensively validated and a list of references is available on the supplier's website.

6.3.30 Predicted pollutant concentrations for various scenarios have been compared to each other. The modelling has considered background conditions, industrial emissions contributions, and road traffic emissions, based on the year being assessed.

Assessment scenarios

6.3.31 As mentioned in **Section 6.1**, the established baseline (EB) represents the steelworks with 'heavy end' infrastructure in place as operating in 2023 and early 2024 and for the majority of the preceding 50+ years. 2023 emissions were the most representative of industrial EB emissions (Appendix 6.2, Section 6.1.19).

6.3.32 The interim baseline (IB) represents the period following closure of heavy end infrastructure, before the EAF becomes operational.

6.3.33 The EB remains a relevant reference point to the ES (against which impacts have been compared and the resulting significance of effects will be reported) because:

- It is the situation that has occurred in Port Talbot for the majority of the past 50+ years; and
- It is the position reflected in the Environmental Permit issued by NRW, under which the site currently operates. It is not intended to vary the permit prior to the planning application.

6.3.34 Impacts are also compared to the IB because the closure of the 'heavy end' infrastructure will happen regardless of whether the EAF is approved and constructed, and will pre-date the EAF commencing operations. However, these impacts are reported for context to indicate what may be expected to occur through the current transitional period, therefore the significance of these impacts are not reported in this ES chapter.

6.3.35 Construction is expected to commence during 2025. The Proposed Development will initially open during 2027. However, the EB represents the situation during 2023; and the IB during 2024.

6.3.36 Since background concentrations of air pollutants, vehicle emissions, traffic volumes using the local road network and emissions from cumulative developments differ during different calendar years, it has been necessary to create a bespoke EB and IB, enabling like-for-like comparison with the Proposed Development.

6.3.37 As part of the modelling assessment, in order to undertake model verification for additional scenarios, the following scenarios have been modelled :

Model verification scenario

- Scenario 1 (S1) – EB, used for model verification:
    - *Industrial emissions (2023) and traffic present (2022). The road traffic element of the predictions in this scenario were used to 'verify' the roads dispersion model (see* ***Appendix 6.3****); and*
    - *This scenario formed the basis of all additional scenarios outlined below, including the affected road network, model input parameters, meteorological settings and pollutant outputs.*

6.3.38 The Proposed Development has been compared to the EB, within the following construction, operational and interim scenarios:

Construction scenarios

- Scenario 2 (S2) – Future construction without development (2025):
    - *Industrial Emissions*: EB + emissions from the Sustainable Aviation Fuel (SAF) / Project Lanzatech Site and the Sandvik Osprey metal processing facility (both due to open during 2026), hereafter collectively described as 'cumulative emissions', identified in the air quality study area; and
    - *Road transport emissions*: EB + traffic generated from the SAF whilst it undergoes construction[4];
- Scenario 3 (S3) – Future construction with development (2025):
    - *Industrial Emissions*: IB + cumulative emissions; and
    - *Road transport emissions*: IB traffic + traffic generated from the SAF facility whilst it undergoes construction + EAF construction traffic;

6.3.39 Scenarios 2 and 3 above represent the industrial and traffic emissions during the year when construction is expected to commence (2025). For the 'without development' scenario (Scenario 2, S2), the industrial and traffic models both include the EB emissions and cumulative emissions from the SAF whilst it undergoes construction. The industrial model also includes additional cumulative sources (Project Lanzatech Site and the Sandvik Osprey metal processing facility). For the 'with development' scenario (Scenario 3, S3), the industrial and traffic models both include the IB emissions (see the Interim Construction Scenario section below) and cumulative emissions from the SAF facility, with the industrial model also including the previously mentioned additional cumulative sources. The traffic model also includes construction traffic from EAF.

Interim construction scenario

- Scenario 2a (S2a) – Bespoke IB for construction (2025):
    - *Industrial Emissions:* IB + cumulative emissions;
    - *Road transport emissions:* IB traffic + traffic generated from the SAF facility whilst it undergoes construction; and
    - *This is compared to S3 (as detailed above).*

6.3.40 Scenario 2a (S2a) above represents the industrial and traffic emissions during the year when construction is expected to commence (2025) but differs from Scenario 2 as it utilises the IB rather than the EB. The IB is outlined in **Paragraph 6.3.32** and represents the period following closure of heavy end infrastructure, before the EAF becomes operational. This means that the industrial and traffic emissions differ between Scenario 2 (utilising the EB) and Scenario 2a (utilising the IB). This scenario is therefore compared against Scenario 3, in order to offer a comparison between the pollutant concentrations during the EB and IB.

[4] The SAF will open during 2026, so will undergo construction during 2025, the year for which construction emissions have been assessed. Assessing its construction traffic with operational industrial emissions is therefore conservative, acknowledging that the SAF facility will become operational and generate industrial emissions before EAF would open.

Operational scenarios

- Scenario 4 (S4) – Future operational scenario without development (2027):
  - *Industrial Emissions*: EB + cumulative emissions;
  - *Road transport emissions*: EB + traffic generated from the SAF facility once operational;
- Scenario 5 (S5) – Future operational scenario with development (2027):
  - *Industrial emissions*: The sources which will be present once the Proposed Development is operational + cumulative emissions; and
  - *Road transport emissions:* EAF traffic (which does not increase from S4a, see below) + cumulative traffic.

6.3.41 Scenarios 4 and 5 above represent the industrial and traffic emissions during the year when EAF is expected to become operational (2027). For the 'without development' scenario (Scenario 4, S4), the industrial and traffic models both include the EB emissions and cumulative emissions from the SAF once it is operational. The industrial model also includes additional cumulative sources (Project Lanzatech Site and the Sandvik Osprey metal processing facility). For the 'with development' scenario (Scenario 5, S5), the industrial sources include all those that will be present once the Proposed Development is operational, including EAF and cumulative sources. The traffic sources includes the IB traffic (see the Interim Operational Scenario section below), cumulative traffic sources that will be present once the Proposed Development is operational, and also the operational traffic from the EAF.

Interim operational scenario

- Scenario 4a (S4a) – Bespoke IB for operation (2027):
  - *Industrial Emissions:* IB + the emissions from cumulative developments;
  - *Road transport emissions:* IB traffic + traffic generated from the SAF facility once operational;
  - *This is compared to S5 (as detailed above)*

6.3.42 Scenario 4a (S4a) above represents the industrial and traffic emissions during the year when EAF is expected to become operational (2027) but differs from Scenario 4 as it utilises the IB rather than the EB. The IB represents the period following closure of heavy end infrastructure, before the EAF becomes operational. This means that the industrial and traffic emissions differ between Scenario 4 (utilising the EB) and Scenario 4a (utilising the IB). This scenario is therefore compared against Scenario 5, in order to offer a comparison between the pollutant concentrations during the EB and IB.

6.3.43 As part of the sensitivity tests for this assessment, an additional scenario was considered:

- Scenario 4b (S4b): Bespoke IB for operation without cumulative development (2027):
  - *EB traffic, but using 2027 'emissions factors'; as well as Industrial Sources present in the IB.*

6.3.44 This sensitivity test was undertaken using one year of meteorological monitoring data to allow for 'in-combination' effects to be accounted for in relation to the assessment at ecological receptors (**Section 10.8**).

6.3.45 The sources modelled in each scenario are summarised in **Table 6.4** below.

Table 6.4 Summary of Sources included in each modelled scenario

Feature considered within the assessment	Scenario Reference							
	S1	S2	S2a	S3	S4	S4a	S4b	S5
Road Traffic Data (√ if included)								
2022 EB	√						√	
2025 Bespoke EB (2022 EB + cumulative)		√						
2027 Bespoke EB (2022 EB + cumulative)					√			
2025 Bespoke IB (2022 IB + cumulative)			√	√				
2027 Bespoke IB (2022 IB + cumulative)						√		√
Site construction traffic				√				
Tata Industrial Emissions Sources (√ if included)								
EB (2023)	√	√			√			
IB (2025)		√	√	√		√	√	
EAF Operational (2027)								√
Cumulative Industrial Emissions Sources (√ if included)								
SAF Facility[1]		√	√	√	√	√		√
Sandvik Osprey Facility		√	√	√	√	√		√
Note: [1] Operating under normal conditions; excluding emissions from generators in emergency conditions.								

6.3.46 S3 and S5 have respectively been compared to those predicted in S2 and S4. Results in S3 and S5 have also been compared to S2a and S4a, respectively. Emissions from cumulative sources are included in all four scenarios[5]. Finally, the results of S5 have been compared to S4b at Ecological Receptors (within **Appendix 6.1**), to enable a discussion of in-combination effects with the Interim Scenario. Further explanation regarding the approach adopted to account for cumulative emissions is provided in **Section 6.10**.

6.3.47 The traffic data provided for the EB was for 2022. This also matched the latest year for which NO_2 diffusion tube monitoring data were made available by NPTC, to enable model 'verification' (see **Appendix 6.3**). Consequently, 2022 background pollutant concentrations, vehicle emissions factors and traffic data were used to verify the dispersion model. Traffic growth between 2022 and 2023 is not expected to materially differ and was thus used as provided.

[5] Cumulative industrial emissions for predictions against the short-term AQTs are not included in S2 and S4, so the assessment against S3 and S5 has reported in-combination emissions. This approach is conservative.

6.3.48 In S2, S2a and S3, vehicle emissions and background pollutant concentrations for 2025 were used, noting that the EAF would commence construction during 2025.

6.3.49 In S4, S4a, S4b and S5, vehicle emissions and background pollutant concentrations for 2027 were used.

6.3.50 Further explanation is provided in relation to the source of the emissions factors, the background concentrations applied and the modelling assessment approach more generally throughout **Appendix 6.2** and **Appendix 6.3**. This includes the receptors which have been assessed.

Assessing impacts and effects

6.3.51 Impact magnitude descriptors were considered, alongside receptor sensitivity, to determine air quality effect descriptors for specific receptors considered in this assessment, in relation to effects from the Proposed Development against the bespoke EB.

6.3.52 The assessment has reported pollutant impacts at receptor locations where the ambient AQOs are recommended to be applied (in the case of human receptors), or at designated ecological sites. Consequently, all reported receptors should be considered as being of a 'high' sensitivity.

Impact magnitude at human receptor locations

6.3.53 The potential impacts were assessed by comparing estimated pollutant concentrations with the AQOs presented in **Table 6.5**, with and without the Proposed Development in place. The EPUK-IAQM guidance descriptors for magnitude of impact were used to assess the annual mean changes in pollutant concentrations, primarily because the mechanism considers the effects in terms of the magnitude of change from predicted concentrations and relative to the AQOs.

6.3.54 **Table 6.5** shows the EPUK-IAQM guidance impact descriptors that take account of the percentage change in concentration relative to the air quality assessment level (AQAL), i.e. the annual mean objectives, and the annual mean concentration at the receptor during the assessment year.

Table 6.5 Air quality impact descriptors for changes to annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations

Annual mean concentration at receptor in assessment year	% Change in concentration relative to AQAL			
	1	2 – 5	6 – 10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 – 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 – 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 – 109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

6.3.55 Changes in concentrations of pollutants requiring assessment against ‘short term’ AQTs, such as those with 1-hour or 15-minute averaging times, should not be assessed using these criteria. The following criteria are instead cited in the EPUK-IAQM guidance (EPUK and IAQM, 2017):

- <10% of the AQAL: the impact is considered negligible;
- 11-20% of the AQAL: small;
- 21-50% of the AQAL: medium; and
- >51%: the impact is considered large.

6.3.56 The EPUK-IAQM guidance does not offer impact magnitude descriptors for pollutants which should be assessed against 8-hour or 24-hour averaging times (other than for 24-hour mean PM_{10} concentrations).

6.3.57 In establishing a process to enable insignificant impacts to be screened from further assessment, the Defra and Environment Agency (2024) guidance (Defra and Environment Agency, 2024) establishes a method to determine how to screen out impacts from further assessment, the first of which is to assess whether the process contribution (PC) exceeds 10% of the AQAL. Consequently, the EPUK-IAQM guidance criteria have also been applied to other pollutants impacting human health with short-term impacts.

Significance of effects at human receptor locations

6.3.58 Since all the receptors considered have the same sensitivity, there is a direct relationship between impact descriptors and the significance of an effect at a specific receptor, as shown in **Table 6.6**. Moderate or major effects are considered potentially significant, and minor and negligible effects are considered not significant.

Table 6.6 Air quality effect descriptors for receptors considered

Impact Descriptor	Effects Descriptor
Negligible	Negligible
Slight	Minor
Moderate	Moderate
Substantial	Major

6.3.59 As per the EPUK-IAQM guidance, the overall significance of predicted changes in local air quality, including background pollutant concentrations, has been established through the consideration of the following factors:

- the existing and future air quality in the absence of the development;
- duration (temporary or long term);
- reversibility (reversible or permanent);
- the extent of current and future population exposure to the impacts; and
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts.

6.3.60 Where potentially significant adverse effects are identified, reappraisal has been undertaken following the implementation of additional mitigation.

Assessing impacts at ecological receptor locations

6.3.61 The magnitude of impact was principally determined based on whether the process contribution (i.e. the difference between the scenarios) was greater than the following criteria, as recommended in the IAQM 2020 guidance (IAQM, 2020):

- 1% of 'long-term' critical loads or levels; or
- 10% of 'short-term' critical levels (there are no 'short-term' critical loads).

6.3.62 The 'long-term' critical levels relate to those against which annual mean pollutant concentrations should be compared. 'Short-term' critical levels refer to those assessed over a shorter averaging timescale.

6.3.63 Where these criteria were breached, a secondary screen has been applied for local nature sites, based on the Defra & Environment Agency (2024) guidance. This guidance indicates that an impact cannot be screened out as insignificant where the PC exceeds 100% of 'long-term' critical levels or 100% of 'short-term' critical levels. For results exceeding these thresholds, the results have been passed onto the project ecologists for further determination as significant or insignificant.

Limitations of the assessment

6.3.64 Aside from the limitations and assumptions detailed throughout this chapter and **Appendix 6**, regarding the dispersion modelling:

- It is noted that an AQT is available for Chromium (VI); however, data speciating Chromium into types are not available. The Applicant has explained that *"except for some specific processes almost all the chromium in air emissions is present as CrIII and little or none as CrVI. With that in mind it would be very unrealistic to compare the PC for total chromium with the EAL for hexavalent chromium",* Further comparison to this threshold has thus not been undertaken;
- There will be uncertainties introduced as the model uses a series of algorithms to simplify real world dispersion processes. It has also been assumed that dispersion will conform to a Gaussian distribution, thereby simplifying dispersion conditions;
- Much of the data imported into the model is based on reasonable estimates. For example, it is assumed that the AADT flow would represent conditions over a year, emissions generated from the Emissions Factor and Calculator for Road Emissions of Ammonia CREAM (V1A) represent the average of vehicles from the fleet and modelled background pollutant concentrations are representative of conditions at the Site. It is also assumed that the meteorological data, surface roughness and Monin-Obukhov length would represent dispersion conditions across the modelled domain; and
- Where citations were not available, assumptions were made in relation to habitat types (and thus critical loads and background nitrogen and acid deposition concentrations) with reference to the Air Pollution Information System (APIS) website. The habitat type and nutrient nitrogen critical loads were provided by the Project Ecologists, to inform the assessment.

Design basis and assumptions

6.3.65 Traffic data were provided by the appointed Transport and Access Team for the project (see **ES Chapter 12 Transport and Access** for full details).

6.3.66 The assessment of the dust emissions magnitude was made with reference to information provided on construction related activities and the Red Line Boundary from the Applicant and was supplemented by assumptions made using professional judgement.

6.3.67 Information relating to the operation of the Scrap Metal Facility, and the number of rail and ship movements were provided by the Applicant.

6.4 Established, interim and future environmental baseline

Air quality management areas (AQMA)

6.4.1 Many of the closest residences are located to the east of the Site, within the AQMA located approximately 550 m east of the Red Line Boundary. The AQMA is situated west of the M4 Motorway and was designated in June 2000 due to the risk of exceeding the 24-hour mean for PM_{10} in relation to industrial emissions. The extent of the AQMA is shown in **Figure 6.5**.

Local air quality monitoring

6.4.2 According to the NPTCs most recent Air Quality Annual Status Report (2023 Air Quality Annual Status Report, containing 2022 monitoring data) (Neath Port Talbot Council, 2023), there were four automatic air quality monitoring stations operated by NPTC during 2022 (a fifth, the Twll-yn-y-Wal Park monitor, ceased operating in 2022). The nearest monitoring station to the Site is located 0.85 km from its boundary (PS2 - Prince Street). There were no NO_2 diffusion tubes in immediate proximity to the Site during 2022, although some further afield.

6.4.3 Of the five stations, only the one at the Margam (Fire Station) AURN monitors NO_2. The data from this station is summarised in **Table 6.7** below. No breach of the AQO was identified.

Table 6.7 Annual mean NO_2 concentrations monitored by NPTC at locations within 2 km of the Proposed Development site

Site ID	Site Name	Site Type	Distance from Proposed Devt. site (km)	Annual mean NO_2 concentration (µg/m^3)				
				2019	2020	2021	2022	2023
PT2	Margam (Fire Station) AURN	Industrial	1.32	15	12	13	12	11
Objective				**40**				

6.4.4 Annual mean PM_{10} concentrations monitored by NPTC from 2018 to 2023 are also outlined in **Table 6.8** below. No breach of the AQO was identified.

6.4.5 Breaches of the 24-hour mean PM_{10} AQO were not identified at any of the monitoring locations during 2018 to 2022. However, during 2023, the 24-hour mean PM_{10} AQO was breached at PS2, where 48 days exceeding the 50µg/m³ AQO were identified, 13 more days than is permissible during each calendar year.

Table 6.8 Annual mean PM_{10} concentrations monitored by NPTC at locations within 2km of the Proposed Development site

Site ID	Site Name	Site Type [1]	Distance from Proposed Devt. site (km)	Annual mean PM_{10} concentration (µg/m³)					
				2018	2019	2020	2021	2022	2023
PS2	Prince Street	Industrial	0.85	23	20	24	20	27	29
TW1	Twll-yn-y Wal Park	Industrial	0.89	21	21	20	-	-	-
DS1	Dyffryn School	Industrial	1.19	-	22	23	25	17	19
PT2	Port Talbot Margam (Fire Station) AURN	Industrial	1.32	23	21	21	25	26	26
LW1	Talbot Little Warren	Industrial	1.76	21	20	21	18	19	21
[1] As defined in the Neath Port Talbot Air Quality Annual Status Report (2023).									

6.4.6 $PM_{2.5}$ was also monitored at locations PT2, DS1, LW1 and PS2 between 2018 and 2023, and is included in **Table 6.9** below. The annual mean $PM_{2.5}$ concentrations were well below the current AQO for all years of available monitoring data at these locations.

Table 6.9 Annual mean $PM_{2.5}$ concentrations monitored by NPTC at locations within 2 km of the Proposed Development site

Site ID	Site Name	Site Type	Distance from Proposed Devt. site (km)	Annual mean $PM_{2.5}$ concentration (µg/m³)					
				2018	2019	2020	2021	2022	2023
PS2	Prince Street	Industrial	0.85	10	9	9	9	10	10
TW1	Twll-yn-y Wal Park	Industrial	0.89	-	-	-	#	-	--
DS1	Dyffryn School	Industrial	1.19	-	-	-	-	6	8

Site ID	Site Name	Site Type	Distance from Proposed Devt. site (km)	Annual mean $PM_{2.5}$ concentration (µg/m^3)					
				2018	2019	2020	2021	2022	2023
PT2	Port Talbot Margam (Fire Station) AURN	Industrial	1.32	10	11	11	9	8	8
LW1	Little Warren	Industrial	1.76	-	-	-	-	7	7
# Monitoring undertaken until March 2021 only. Data before this time not publicly available.									

6.4.7 Monitoring station PT2 (Port Talbot Margam (Fire Station) AURN) also monitors the air pollutants sulphur dioxide (SO_2) ozone (O3) and carbon monoxide (CO). During 2022, there were no exceedances of the 8-hour maximum daily running average of 10 mg/m^3 for CO, nor were there any exceedances of the 15-minute, 1-hour, or 24-hour maximum means for SO_2.

Background pollutant concentrations

6.4.8 Background concentrations of NO_2, PM_{10} and $PM_{2.5}$ were obtained from maps downloaded from the UK-AIR website (Defra, 2024a) maintained by Defra, which includes Welsh data and works closely with the devolved administrations in Wales. As such, it was deemed acceptable to use for this assessment. The maps present annual mean pollutant concentrations on a 1 km^2 basis for the years 2018 (the base mapping year) to 2030. The concentrations for the 1 km x 1 km grid square centred on OS coordinates 277277, 187009, corresponding to the location of the Site, for 2022, 2025 (the year in which construction activities are expected to commence) and 2027 (the year the Proposed Development is expected to be operational) are shown in **Table 6.10**. The data show that annual mean background pollutant concentrations are not expected to exceed the annual mean NO_2, PM_{10} or $PM_{2.5}$ AQOs in any of the presented years.

Table 6.10 Background pollutant concentrations at the Proposed Development from the UK-AIR website

Pollutant	2022 (µg/m^3)	2025 (µg/m^3)	2027 (µg/m^3)	Objective
NO_2	8.58	7.93	7.67	40
PM_{10}	12.98	12.64	12.63	40
$PM_{2.5}$	7.43	7.14	7.14	20

Summary of existing baseline at site

6.4.9 Other than in relation to the 24-hour mean PM_{10} AQO, all other AQOs and AQSs have been met in recent years, according to monitoring and mapped data.

6.5 Project characteristics and embedded mitigation

6.5.1 Any non-road mobile machinery used on-site which were purchased since the Non-Road Mobile Machinery Directive (97/68/EC) (H.M. Government, 1997), including subsequent amendments, will comply with the emissions requirements specified in the relevant legislation.

6.5.2 Demolition and construction effects will be mitigated through the implementation of a Construction Logistics Plan (CLP) and Construction Environmental Management Plan (CEMP), where practicable (and for the purposes of best practice) including measures to encourage active travel. This can be secured via a suitably worded planning condition.

6.5.3 As per the IAQM 2024 guidance, the dust assessment in **Section 6.6** has been undertaken assuming no mitigation is implemented. However, the measures which are recommended to be included in the CEMP, a Dust Management Plan (DMP) or equivalent (determined in the following construction dust assessment) are listed **Appendix 6.1**.

6.6 Assessment of potential construction phase effects

Qualitative construction dust assessment

6.6.1 As there are human receptors within 250 m of the Proposed Development, a dust risk assessment has been undertaken in accordance with the IAQM 2024 guidance.

Dust emissions magnitude

6.6.2 The dust emission magnitudes for each of the four construction related activities (demolition, earthworks, construction and trackout) are informed by the types of construction related activities expected to take place at the Site.

6.6.3 Potential dust emission magnitudes from each of the construction related activities has been assessed using the IAQM 2024 guidance criteria (**Appendix 6.1**) and are detailed in **Table 6.11**. It should be noted that in accordance with the IAQM 2024 guidance, the assessment has been undertaken assuming no mitigation measures have been secured.

Table 6.11 Dust emission magnitudes

Activity	Description	Dust emissions magnitude
Demolition	12,000-75,000 m^3 building being demolished. Demolition works to take place less than 10 m above ground level.	Medium
Earthworks	>10 earthmoving vehicles at any one time, on a Site with an area >110,000 m^2 and >200,000 m^2 of material generated from site levelling.	Large
Construction	The Proposed Development will involve an upgraded slag processing facility, chemical/material storage and transfer infrastructure and pipework (above and below ground), buildings, fume and dust treatment plant, water	Large

	treatment facility and handling systems. Electrical control rooms and power infrastructure. Reutilised laboratories, offices, and ancillary facilities together with new and amended transport infrastructure, landscaping and green infrastructure, and associated development. Large has been assumed for a conservative assessment.	
Trackout	>100 HGVs will enter and leave Site per day whilst construction activities take place, according to information provided showing the maximum number of wagons required for activities including excavation, etc. Large has been assumed for a conservative assessment.	Large

Receptor sensitivity

6.6.4 **Table 6.12** outlines the sensitivity of the surrounding area, including receptors connected with committed and consented developments, determined in accordance with the IAQM 2024 guidance method summarised in **Appendix 6.1**.

6.6.5 As the Site was assessed as having a large trackout dust emissions magnitude, trackout was assumed to occur on applicable roads within 250 m of the likely site exit, as per the IAQM 2024 guidance.

Table 6.12 Sensitivity of the surrounding area

Potential Impact at Receptor	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Low: >1 low sensitivity (industrial) receptor within 100 m of the Red Line Boundary.	Low: >1 low sensitivity (industrial) receptor within 100 m of the Red Line Boundary.	Low: >1 low sensitivity (industrial) receptor within 100 m of the Red Line Boundary.	Low: >1 low sensitivity (industrial) receptor within 250 m of routes along which trackout is expected to arise.
Human health impacts	Low: >1 low/ medium sensitivity receptor with annual mean PM_{10} concentration <24µg/m^3.	Low: >1 low/ medium sensitivity receptor with annual mean PM_{10} concentration <24µg/m^3.	Low: >1 low/ medium sensitivity receptor with annual mean PM_{10} concentration <24µg/m^3.	Low: >1 low sensitivity (industrial) receptor within 250 m of routes along which trackout is expected to arise and local annual mean PM_{10} concentrations 24 - 28µg/m^3.

Potential Impact at Receptor	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Ecological	Negligible: There are no designated ecological Sites within 50 metres of the locations where demolition is proposed.	Medium: The Margam Moors Site of Special Scientific Interest is located adjacent to the proposed cable route near the south of the Site.	Negligible: There are no designated ecological Sites within 50 metres of locations where construction is proposed.	Negligible: There are no designated ecological Sites within 50 metres of the Red Line Boundary or routes along which trackout may arise.

Dust impact risk

6.6.6 The construction dust risks shown in **Table 6.13** have been assigned based on the dust emission magnitude associated with each on-site activity and the sensitivity of the surrounding area, using the IAQM 2024 guidance method described in **Appendix 6.1**.

Table 6.13 Summary of the dust risk from site activities

Potential Impact	Risk of Dust Impacts			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Low	Low	Low	Low
Human health impacts	Low	Low	Low	Low
Ecological	Negligible	Medium	Negligible	Negligible

6.6.7 The overall dust risk from the Site is predicted to be medium, due to potential impacts on ecologically sensitive receptors due to potential impacts on the Margam Moors SSSI during the excavation for the cable and the proximity of these works to the SSSI.

6.6.8 The embedded mitigation measures described in **Appendix 6.1** will be effective wherever potentially dusty construction activities take place. With these measures in place, effects on receptors are likely to be negligible, with possible short-term minor adverse effects during adverse weather conditions.

Anticipated effects – vehicle and industrial emissions

6.6.9 The section below details the results of the comparisons between the construction scenarios as described in **Paragraphs 6.3.34** to **6.3.53** and **Table 6.4**. A summary of these scenarios are provided below:

- Scenario 2 (S2) – Future Construction Without Development (2025);
- Scenario 3 (S3) – Future Construction With Development (2025);

Construction (Human receptors)

6.6.10 **Table 6.14** to **Table 6.20** below present the predicted annual mean NO_2, PM_{10}, $PM_{2.5}$, and CO concentrations at each of the human receptor locations to which the annual mean AQTs should be applied for each pollutant in S2 and S3 (for example, parks and gardens have not been assessed for annual mean AQT compliance). They also show the percentage change in pollutant concentrations (with the Proposed Development in place) relative to the AQAL, the S3 pollutant concentration as a percentage of the AQAL, and the assigned EPUK-IAQM guidance impact descriptor. Road and industrial sources were considered cumulatively. The results are apportioned in **Appendix 6.6**.

6.6.11 In each instance, the impacts were assessed as having a negligible or beneficial impact and none of the AQTs were breached, with the exceptions of R10 and R21, which would breach the potentially forthcoming annual mean $PM_{2.5}$ AQT of 10µg/m^3 regardless of whether the Proposed Development proceeds, due to the already high background concentrations, close to exceeding the AQT. However, with the Proposed Development present, concentrations would be lower than compared to the baseline, and so the extent that the $PM_{2.5}$ AQT would be breached would be lower.

6.6.12 Consequently, the Proposed Development is likely to have short- to medium-term, local beneficial (and thus 'not significant') effects on air quality at existing human receptor locations during the construction phase.

Table 6.14 Comparison of annual mean NO_2 concentrations in S2 - Future construction without development (2025) and S3 - Future construction with development (2025)

Receptor ID	Annual mean NO_2 concentration (µg/m^3)		Actual Change (µg/m^3)	% change of AQAL	EPUK-IAQM Impact descriptor
	S2	S3			
R1	14.15	13.16	-0.99	-2.47	Negligible
R2	14.23	12.85	-1.38	-3.46	Negligible
R3	19.99	19.11	-0.88	-2.19	Negligible
R4	18.71	18.02	-0.70	-1.73	Negligible
R5	8.99	8.38	-0.62	-1.53	Negligible
R6	17.93	17.26	-0.67	-1.67	Negligible
R7	19.09	18.63	-0.46	-1.15	Negligible
R8	15.39	14.97	-0.41	-1.04	Negligible
R9	22.66	22.23	-0.43	-1.08	Negligible
R10	29.98	29.32	-0.66	-1.65	Negligible
R11	16.49	15.85	-0.63	-1.58	Negligible
R12	16.64	16.02	-0.61	-1.54	Negligible
R13	14.33	13.62	-0.71	-1.78	Negligible
R14	18.53	17.66	-0.87	-2.18	Negligible
R15	26.10	25.14	-0.96	-2.40	Negligible

Receptor ID	Annual mean NO_2 concentration (µg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S2	S3			
R16	23.30	22.37	-0.93	-2.33	Negligible
R17	20.52	19.86	-0.66	-1.65	Negligible
R18	22.79	22.12	-0.68	-1.69	Negligible
R19	18.76	18.22	-0.54	-1.34	Negligible
R20	26.33	25.92	-0.41	-1.02	Negligible
R21	28.12	27.75	-0.37	-0.92	Negligible
R22	23.50	23.14	-0.35	-0.88	Negligible
R23	18.51	17.83	-0.68	-1.70	Negligible
R24	17.63	16.93	-0.70	-1.75	Negligible

Table 6.15 Comparison of hourly mean (99.8th percentile) NO_2 concentrations in S2 - Future construction without development (2025) and S3 - Future construction with development (2025)

Receptor ID	Hourly mean (99.8th percentile) NO_2 concentration by scenario (µg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S2	S3			
R1	37.92	28.11	-9.81	-4.90	Negligible
R2	36.88	28.52	-8.36	-4.18	Negligible
R3	50.58	40.60	-9.98	-4.99	Negligible
R4	48.33	39.45	-8.88	-4.44	Negligible
R5	24.74	17.73	-7.01	-3.51	Negligible
R6	44.84	36.10	-8.75	-4.37	Negligible
R7	51.34	38.58	-12.76	-6.38	Negligible
R8	41.27	31.36	-9.91	-4.95	Negligible
R9	53.83	45.89	-7.94	-3.97	Negligible
R10	70.16	61.28	-8.88	-4.44	Negligible
R11	43.90	34.76	-9.14	-4.57	Negligible
R12	43.74	36.85	-6.89	-3.44	Negligible
R13	39.68	28.70	-10.98	-5.49	Negligible
R14	46.71	37.46	-9.25	-4.63	Negligible
R15	61.57	52.41	-9.15	-4.58	Negligible
R16	55.87	46.90	-8.97	-4.49	Negligible
R17	50.16	42.66	-7.50	-3.75	Negligible
R18	54.87	47.14	-7.72	-3.86	Negligible
R19	47.20	37.83	-9.37	-4.69	Negligible

Receptor ID	Hourly mean (99.8th percentile) NO_2 concentration by scenario (µg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S2	S3			
R20	64.33	52.99	-11.34	-5.67	Negligible
R21	67.99	57.04	-10.95	-5.47	Negligible
R22	58.26	47.88	-10.38	-5.19	Negligible
R23	47.07	38.57	-8.50	-4.25	Negligible
R24	46.60	36.80	-9.80	-4.90	Negligible
P1	29.64	23.46	-6.18	-3.09	Negligible
P2	40.18	30.07	-10.12	-5.06	Negligible
P3	46.01	36.31	-9.70	-4.85	Negligible
P4	49.16	39.04	-10.13	-5.06	Negligible
P5	47.67	37.63	-10.03	-5.02	Negligible
P6	29.26	20.50	-8.76	-4.38	Negligible
P7	25.29	19.12	-6.17	-3.09	Negligible
P8	42.50	33.34	-9.16	-4.58	Negligible
P9	44.74	35.27	-9.46	-4.73	Negligible
P10	49.49	39.52	-9.96	-4.98	Negligible
P11	50.17	40.19	-9.98	-4.99	Negligible
P12	63.31	54.15	-9.16	-4.58	Negligible

Table 6.16 Comparison of annual mean PM_{10} concentrations in S2 - Future construction without development (2025) and S3 - Future construction with development (2025)

Receptor ID	Annual mean PM_{10} concentration (µg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S2	S3			
R1	14.91	13.23	-1.68	-4.19	Negligible
R2	16.64	13.14	-3.49	-8.74	Slight beneficial
R3	17.76	15.19	-2.57	-6.43	Slight beneficial
R4	16.19	14.51	-1.68	-4.21	Negligible
R5	11.49	10.51	-0.98	-2.46	Negligible
R6	14.55	13.66	-0.89	-2.22	Negligible
R7	15.04	14.20	-0.84	-2.10	Negligible
R8	14.33	13.52	-0.81	-2.03	Negligible
R9	16.10	15.50	-0.60	-1.49	Negligible
R10	18.52	16.94	-1.59	-3.97	Negligible
R11	16.27	14.14	-2.13	-5.32	Negligible
R12	16.85	14.26	-2.59	-6.48	Slight beneficial

R13	14.84	13.40	-1.44	-3.61	Negligible
R14	15.83	14.62	-1.22	-3.04	Negligible
R15	16.69	15.66	-1.03	-2.56	Negligible
R16	15.86	14.84	-1.02	-2.55	Negligible
R17	16.71	15.10	-1.61	-4.02	Negligible
R18	17.17	15.62	-1.56	-3.89	Negligible
R19	15.39	14.81	-0.58	-1.45	Negligible
R20	16.29	15.85	-0.44	-1.10	Negligible
R21	16.82	16.15	-0.67	-1.68	Negligible
R22	15.80	15.17	-0.63	-1.58	Negligible
R23	16.21	14.56	-1.65	-4.13	Negligible
R24	16.11	14.33	-1.78	-4.44	Negligible

Table 6.17 Comparison of 24-hour mean (90.4th percentile) PM_{10} concentrations in S2 - Future construction without development (2025) and S3 - Future construction with development (2025)

Receptor ID	24-hour mean **(90.4th percentile)** PM_{10} concentration (µg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S2	S3			
R1	31.61	26.48	-5.13	-10.26	Negligible
R2	35.40	26.30	-9.10	-18.21	Slight beneficial
R3	36.79	30.40	-6.39	-12.78	Slight beneficial
R4	32.78	29.05	-3.73	-7.45	Negligible
R5	24.72	21.04	-3.68	-7.37	Negligible
R6	30.38	27.34	-3.05	-6.10	Negligible
R7	31.38	28.42	-2.97	-5.93	Negligible
R8	30.00	27.05	-2.95	-5.91	Negligible
R9	33.17	31.02	-2.15	-4.30	Negligible
R10	37.46	33.95	-3.51	-7.03	Negligible
R11	33.10	28.36	-4.74	-9.48	Negligible
R12	34.20	28.57	-5.63	-11.26	Slight beneficial
R13	32.01	26.82	-5.19	-10.38	Negligible
R14	29.92	29.52	-0.40	-0.81	Negligible
R15	33.47	31.49	-1.97	-3.94	Negligible
R16	31.81	29.85	-1.96	-3.93	Negligible
R17	33.99	30.26	-3.73	-7.47	Negligible
R18	34.83	31.29	-3.54	-7.07	Negligible
R19	31.63	29.63	-2.00	-4.01	Negligible

Receptor ID	24-hour mean **(90.4th percentile)** PM_{10} concentration (µg/m³)		**Actual Change (µg/m³)**	**% change of AQAL**	**EPUK-IAQM Impact descriptor**
	S2	**S3**			
R20	33.23	31.71	-1.53	-3.06	Negligible
R21	34.72	32.30	-2.41	-4.83	Negligible
R22	32.64	30.34	-2.30	-4.60	Negligible
R23	33.06	29.17	-3.88	-7.76	Negligible
R24	32.65	28.72	-3.93	-7.86	Negligible
P1	27.17	24.97	-2.20	-4.40	Negligible
P2	30.01	26.75	-3.27	-6.54	Negligible
P3	33.89	28.82	-5.07	-10.15	Negligible
P4	31.17	28.94	-2.23	-4.46	Negligible
P5	35.56	29.34	-6.21	-12.43	Slight beneficial
P6	23.44	21.58	-1.86	-3.72	Negligible
P7	25.31	22.95	-2.37	-4.73	Negligible
P8	32.50	28.25	-4.24	-8.49	Negligible
P9	33.75	28.47	-5.28	-10.56	Slight beneficial
P10	31.04	28.77	-2.27	-4.55	Negligible
P11	36.63	30.26	-6.37	-12.74	Slight beneficial
P12	34.10	32.07	-2.02	-4.05	Negligible

Table 6.18 Comparison of annual mean $PM_{2.5}$ concentrations in S2 - Future construction without development (2025) and S3 - Future construction with development (2025)

Receptor ID	Concentration (µg/m³)		**Actual Change (µg/m³)**	**% change of AQAL**	**EPUK-IAQM Impact descriptor**
	S2	**S3**			
R1	9.62	7.96	-1.66	-8.31	Slight beneficial
R2	11.38	7.91	-3.47	-17.37	Moderate beneficial
R3	11.94	9.39	-2.55	-12.75	Moderate beneficial
R4	10.73	9.06	-1.67	-8.33	Slight beneficial
R5	7.40	6.44	-0.97	-4.83	Negligible
R6	8.92	8.07	-0.85	-4.27	Negligible
R7	9.19	8.36	-0.82	-4.12	Negligible
R8	9.27	8.47	-0.81	-4.03	Negligible
R9	9.63	9.04	-0.58	-2.92	Negligible
R10	11.99	10.42	-1.57	-7.86	Slight beneficial

Receptor ID	Concentration (µg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S2	S3			
R11	10.96	8.85	-2.11	-10.55	Moderate beneficial
R12	11.47	8.90	-2.57	-12.85	Moderate beneficial
R13	9.46	8.04	-1.42	-7.10	Slight beneficial
R14	10.54	9.34	-1.20	-6.02	Slight beneficial
R15	10.49	9.48	-1.01	-5.04	Negligible
R16	10.03	9.03	-1.00	-5.01	Negligible
R17	10.97	9.37	-1.59	-7.97	Slight beneficial
R18	11.20	9.66	-1.54	-7.69	Slight beneficial
R19	9.62	9.07	-0.55	-2.74	Negligible
R20	10.19	9.77	-0.42	-2.10	Negligible
R21	10.68	10.02	-0.66	-3.32	Negligible
R22	10.07	9.44	-0.62	-3.12	Negligible
R23	10.72	9.08	-1.63	-8.17	Slight beneficial
R24	10.71	8.95	-1.76	-8.80	Slight beneficial

Table 6.19 Comparison of 8-hour rolling mean CO concentrations in S2 - Future construction without development (2025) and S3 - Future construction with development (2025)

Receptor ID	Maximum Rolling 8-hour CO concentration (mg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S2	S3			
R1	1.59	0.41	-1.18	-11.82	Small beneficial
R2	1.37	0.41	-0.97	-9.67	Negligible
R3	1.39	0.41	-0.98	-9.82	Negligible
R4	1.33	0.41	-0.92	-9.25	Negligible
R5	0.94	0.41	-0.53	-5.34	Negligible
R6	1.35	0.41	-0.95	-9.47	Negligible
R7	1.59	0.41	-1.18	-11.82	Small beneficial
R8	1.41	0.41	-1.01	-10.08	Negligible
R9	1.20	0.41	-0.79	-7.90	Negligible
R10	1.23	0.41	-0.82	-8.22	Negligible
R11	1.42	0.41	-1.01	-10.13	Negligible
R12	1.49	0.41	-1.09	-10.86	Negligible
R13	1.70	0.41	-1.29	-12.94	Small beneficial
R14	1.17	0.41	-0.77	-7.69	Negligible

Receptor ID	Maximum Rolling 8-hour CO concentration (mg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S2	S3			
R15	1.08	0.41	-0.68	-6.76	Negligible
R16	1.08	0.41	-0.67	-6.75	Negligible
R17	1.23	0.41	-0.82	-8.24	Negligible
R18	1.19	0.41	-0.79	-7.88	Negligible
R19	1.28	0.41	-0.87	-8.74	Negligible
R20	1.20	0.41	-0.80	-7.95	Negligible
R21	1.35	0.41	-0.94	-9.42	Negligible
R22	1.29	0.41	-0.88	-8.82	Negligible
R23	1.16	0.41	-0.76	-7.58	Negligible
R24	1.32	0.41	-0.91	-9.11	Negligible
P1	0.88	0.41	-0.47	-4.69	Negligible
P2	1.42	0.41	-1.01	-10.12	Negligible
P3	1.32	0.41	-0.91	-9.14	Negligible
P4	1.25	0.41	-0.84	-8.44	Negligible
P5	1.35	0.41	-0.94	-9.40	Negligible
P6	0.99	0.41	-0.59	-5.86	Negligible
P7	0.89	0.41	-0.48	-4.84	Negligible
P8	1.52	0.41	-1.12	-11.18	Small beneficial
P9	1.36	0.41	-0.96	-9.57	Negligible
P10	1.26	0.41	-0.85	-8.50	Negligible
P11	1.38	0.41	-0.98	-9.78	Negligible
P12	1.08	0.41	-0.67	-6.70	Negligible

Table 6.20 Comparison of 1-hour rolling mean CO concentrations in S2 - Future construction without development (2025) and S3 - Future construction with development (2025)

Receptor ID	Maximum Hourly CO concentration (mg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S2	S3			
R1	6.07	0.51	-5.56	-18.52	Small beneficial
R2	4.50	0.60	-3.90	-12.99	Small beneficial
R3	3.89	0.60	-3.29	-10.97	Negligible
R4	3.40	0.64	-2.76	-9.19	Negligible
R5	1.79	0.49	-1.30	-4.34	Negligible
R6	2.58	0.51	-2.07	-6.91	Negligible
R7	3.27	0.52	-2.75	-9.16	Negligible

Receptor ID	Maximum Hourly CO concentration (mg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S2	S3			
R8	2.73	0.51	-2.22	-7.41	Negligible
R9	2.32	0.50	-1.83	-6.09	Negligible
R10	3.28	0.57	-2.72	-9.06	Negligible
R11	3.10	0.58	-2.52	-8.39	Negligible
R12	3.95	0.61	-3.34	-11.13	Small beneficial
R13	3.57	0.51	-3.06	-10.21	Negligible
R14	2.20	0.54	-1.66	-5.55	Negligible
R15	1.97	0.51	-1.45	-4.85	Negligible
R16	1.97	0.52	-1.45	-4.84	Negligible
R17	2.96	0.62	-2.35	-7.82	Negligible
R18	3.14	0.64	-2.50	-8.34	Negligible
R19	2.46	0.50	-1.97	-6.55	Negligible
R20	2.45	0.49	-1.96	-6.54	Negligible
R21	2.45	0.51	-1.94	-6.47	Negligible
R22	2.78	0.50	-2.28	-7.59	Negligible
R23	3.54	0.60	-2.94	-9.81	Negligible
R24	3.56	0.63	-2.93	-9.76	Negligible
P1	1.61	0.48	-1.13	-3.77	Negligible
P2	3.08	0.50	-2.57	-8.58	Negligible
P3	4.65	0.60	-4.05	-13.50	Small beneficial
P4	2.86	0.50	-2.36	-7.86	Negligible
P5	3.79	0.60	-3.19	-10.62	Negligible
P6	1.75	0.51	-1.24	-4.13	Negligible
P7	1.64	0.48	-1.16	-3.87	Negligible
P8	3.55	0.51	-3.04	-10.13	Negligible
P9	4.86	0.60	-4.26	-14.20	Small beneficial
P10	2.89	0.50	-2.38	-7.94	Negligible
P11	3.88	0.60	-3.28	-10.93	Negligible
P12	1.95	0.51	-1.44	-4.79	Negligible

Construction - Ecological receptors

6.6.13 The section below details the results of the comparisons between the construction scenarios as described in **Paragraphs 6.3.34** to **6.3.53** and **Table 6.4.** A summary of these scenarios are provided below:

- Scenario 2 (S2) – Future construction without development (2025);
- Scenario 3 (S3) – Future construction with development (2025);

6.6.14 **Table 6.21** below presents the construction phase annual mean NOx concentrations at ecological receptor locations. Those for other ecological parameters are presented in **Appendix 6.6**.

6.6.15 At all receptor locations (except E15 and E16), the impact at ecological receptors decreases in S3, representing beneficial impacts. Impacts at E15 and E16, which are located within the Junction 38 Wetland SINC, have increased, but by less than 100%.

6.6.16 The results demonstrate that concentrations at E15 and E16 have increased to levels exceeding the critical level, where they did not without the Proposed Development in place in relation to the daily NOx AQT. The criteria used to determine significance of effects at designated ecological Sites do not require consideration of the AQT, because they focus on the increase in the process contribution relative to the AQT rather than the AQT itself (**Paragraph 6.3.61** to **Paragraph 6.3.63).** Consequently, these exceedances of the annual and daily NOx AQT are not considered material to the assessment and are considered to not have a significant effect.

6.6.17 Table 6.34 and Table 6.35 in **Appendix 6.6** presents the changes in concentrations of annual mean NH_3 and SO_2 concentrations respectively, relative to the AQTs, for S2 and S3. Considering only emissions from industrial sources were modelled for SO_2, and noting that many sources of SO_2 will have ceased to operate whilst no new industrial sources will be introduced, it is unsurprising that annual mean SO_2 concentrations decrease.

6.6.18 Considering NH_3 emissions from industrial sources were not modelled, the temporary increase in road traffic has led to ambient NH_3 concentrations increasing slightly in places, but not by more than the PC screening criteria.

6.6.19 Consequently, the Proposed Development is likely to have short- to medium-term, local effects on air quality considered to have 'not significant' and predominantly beneficial effects at designated ecological sites (in relation to critical levels) during the construction phase.

6.6.20 Table 6.36 in **Appendix 6.6** presents the construction phase nutrient nitrogen deposition generated in connection with the Proposed Development, at locations where sufficient information were available from APIS and from the Ecology team to determine the habitat type and its sensitivity to nitrogen deposition. Similarly to the trend shown in the ambient NOx concentrations, at all receptors apart from E15 and E16 there is a reduction in the levels of nutrient nitrogen deposition. As there is an increase above 1% of the minimum critical load relating to nitrogen deposition at E15 and E16, this therefore does not screen out as 'insignificant' in accordance with the Defra and EA permitting guidance. These results have been considered further within **Chapter 8: Biodiversity**.

6.6.21 Table 6.37 in **Appendix 6.6** presents the construction phase acid deposition generated in connection with the Proposed Development. The potential effects of acid deposition on ecosystems are each dependent on concentration of nitrogen, ammonia and sulphur which are deposited. Following conversion from ambient to deposited concentrations, there was a net reduction or no change in deposited nitrogen concentrations in S3 than S2 at all receptor locations except E15 and E16. There was also a net reduction in deposited sulphur at all locations, by an amount exceeding that for deposited nitrogen. This means that there would be a net reduction in the process contribution (from the Proposed Development) when expressed as a percentage of the critical load function, demonstrating an overall net benefit. The process contribution is thus <1% of the critical load and has been screened out from further assessment.

Table 6.21 Comparison of annual mean NOx concentrations in S2 - Future construction without development (2025) and S3 - Future construction with development (2025)

Receptor ID	Background (µg/m³)	Annual mean NO_x (µg/m³)		Critical Level (µg/m³)	PC as % of Critical Level
		S2	S3		
E1	9.90	15.11	14.18	30	-3.08
E2	7.95	11.84	11.23	30	-2.04
E3	6.96	10.40	9.70	30	-2.31
E4	12.81	27.77	26.34	30	-4.77
E5	9.90	17.33	16.14	30	-3.94
E6	10.20	16.01	15.22	30	-2.64
E7	10.20	16.00	15.28	30	-2.38
E8	6.82	11.14	10.51	30	-2.12
E9	6.82	10.40	9.79	30	-2.05
E10	6.30	9.32	8.72	30	-1.99
E11	6.30	8.97	8.39	30	-1.92
E12	11.54	21.48	20.91	30	-1.92
E13	11.54	34.60	34.03	30	-1.91
E14	17.34	40.02	38.83	30	-3.96
E15	24.33	32.79	37.56	30	15.90
E16	24.33	31.89	34.08	30	7.28
E17	24.33	31.61	30.75	30	-2.88
E18	8.27	9.32	8.99	30	-1.10
E19	6.73	7.77	7.43	30	-1.12
E20	9.66	12.12	11.70	30	-1.39
E21	13.19	14.99	14.59	30	-1.33
E22	13.95	15.66	15.38	30	-0.93
E23	10.19	12.12	11.78	30	-1.12
E24	10.19	12.11	11.77	30	-1.13
E25	9.73	11.46	11.10	30	-1.19
E26	12.81	14.14	13.77	30	-1.21
E27	24.33	44.59	43.56	30	-3.43
E28	24.33	50.07	48.81	30	-4.19
E29	17.34	130.63	129.50	30	-3.79

Receptor ID	Background (µg/m³)	Annual mean NO_x (µg/m³)		Critical Level (µg/m³)	PC as % of Critical Level
		S2	S3		
E30	17.34	81.66	80.09	30	-5.24
E31	9.35	31.19	29.82	30	-4.56
E32	9.35	22.44	21.09	30	-4.53
E33	17.34	168.20	167.08	30	-3.74
E34	17.34	123.81	122.98	30	-2.76
E35	17.34	122.66	121.79	30	-2.92
E36	17.34	228.30	227.35	30	-3.16
E37	17.34	103.78	102.94	30	-2.79
E38	17.47	46.29	45.25	30	-3.46
E39	17.47	118.40	117.42	30	-3.27
E40	17.47	38.88	37.79	30	-3.63
E41	14.75	48.53	47.02	30	-5.04
E42	14.75	56.91	55.45	30	-4.88
E43	12.81	33.17	31.82	30	-4.52
E44	9.90	18.29	16.90	30	-4.62
E45	9.90	16.86	15.67	30	-3.95
E46	10.20	15.39	14.69	30	-2.34
E47	9.35	55.74	54.20	30	-5.13
E48	9.35	31.63	30.27	30	-4.51
E49	8.64	38.19	37.10	30	-3.64
E50	8.64	40.17	39.19	30	-3.24
E51	17.34	54.46	53.04	30	-4.76
E52	17.34	69.54	68.09	30	-4.83
E53	17.34	32.05	30.73	30	-4.39
E54	17.47	97.85	96.86	30	-3.31
E55	8.58	12.26	11.40	30	-2.88
E1	19.80	46.33	30.99	200	-7.7
E2	15.90	30.53	24.66	200	-2.9
E3	13.92	36.13	21.19	200	-7.5
E4	25.62	65.67	54.28	200	-5.7
E5	19.80	50.75	34.63	200	-8.1
E6	20.40	41.56	32.19	200	-4.7
E7	20.40	38.93	32.05	200	-3.4
E8	13.64	30.05	22.38	200	-3.8

Receptor ID	Background (µg/m³)	Annual mean NO_x (µg/m³)		Critical Level (µg/m³)	PC as % of Critical Level
		S2	S3		
E9	13.64	28.33	20.94	200	-3.7
E10	12.60	28.95	18.57	200	-5.2
E11	12.60	28.63	17.81	200	-5.4
E12	23.08	49.38	42.84	200	-3.3
E13	23.08	75.10	69.25	200	-2.9
E14	34.68	88.65	80.45	200	-4.1
E15	48.66	74.12	215.44	200	70.7
E16	48.66	73.64	221.53	200	73.9
E17	48.66	75.42	71.12	200	-2.1
E18	16.54	22.72	18.61	200	-2.1
E19	13.46	19.30	15.52	200	-1.9
E20	19.32	27.49	23.98	200	-1.8
E21	26.38	33.69	29.71	200	-2.0
E22	27.90	35.06	31.29	200	-1.9
E23	20.38	29.08	24.22	200	-2.4
E24	20.38	29.10	24.20	200	-2.5
E25	19.46	27.52	22.91	200	-2.3
E26	25.62	31.79	28.16	200	-1.8
E27	48.66	97.14	90.06	200	-3.5
E28	48.66	108.26	100.26	200	-4.0
E29	34.68	269.64	262.22	200	-3.7
E30	34.68	171.90	163.18	200	-4.4
E31	18.70	73.53	61.57	200	-6.0
E32	18.70	55.47	44.43	200	-5.5
E33	34.68	345.00	337.27	200	-3.9
E34	34.68	256.20	248.82	200	-3.7
E35	34.68	253.87	246.29	200	-3.8
E36	34.68	465.13	457.46	200	-3.8
E37	34.68	216.19	208.62	200	-3.8
E38	34.94	101.44	92.42	200	-4.5
E39	34.94	245.14	237.54	200	-3.8
E40	34.94	86.52	77.64	200	-4.4
E41	29.50	103.26	95.55	200	-3.9
E42	29.50	121.57	112.86	200	-4.4

Receptor ID	Background ($\mu g/m^3$)	Annual mean NO_x ($\mu g/m^3$)		Critical Level ($\mu g/m^3$)	PC as % of Critical Level
		S2	S3		
E43	25.62	77.03	65.40	200	-5.8
E44	19.80	47.59	36.15	200	-5.7
E45	19.80	49.50	33.71	200	-7.9
E46	20.40	38.28	30.66	200	-3.8
E47	18.70	122.37	110.39	200	-6.0
E48	18.70	74.51	62.46	200	-6.0
E49	17.28	88.21	75.39	200	-6.4
E50	17.28	91.72	79.23	200	-6.2
E51	34.68	117.56	109.10	200	-4.2
E52	34.68	147.58	139.26	200	-4.2
E53	34.68	72.75	64.49	200	-4.1
E54	34.94	204.42	196.16	200	-4.1
E55	17.16	31.47	23.93	200	-3.8

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6.6.22 The results of the comparison between the interim baseline and future construction and operational scenarios are presented in **Appendix 6.7**.

Potential mitigation

6.6.23 Additional mitigation (beyond embedded measures) is not considered to be required, owing to the relatively small impact which construction vehicle movements and plant will have on air quality.

Residual effects

6.6.24 It is likely that dust from fugitive construction related activities may have short-term, temporary adverse yet **negligible** effects, which can be considered '**not significant'**, following the implementation of embedded mitigation. There may be temporary **minor** adverse effects during adverse weather conditions.

6.6.25 Effects from emissions generated from industrial and road traffic are considered likely to remain short- to medium-term, local, and either **negligible** or **beneficial** (and thus '**not significant**') on air quality at existing human receptor locations and (in comparison to critical levels and for the acid deposition relative to the critical load) designated ecological sites.

6.7 Assessment of potential operational phase effects

Anticipated effects – fugitive dust generated from operational activities

6.7.1 The processing of scrap for use in the EAF is expected to be the main source of fugitive dust once the Site is operational. Once trains arrive at the scrapyard, the process will involve tipping scrap into stockpiles, shredding, screening further stockpiling, ready for onward transport. The shredding and shearing processes are fitted with wet scrubbing and bag filter technologies, which will prevent emissions to air.

6.7.2 The EAF facility itself will also generate dust. Primary dust is generated directly from the EAF and is drawn through the scrap charge to pre-heat it and recover energy and then transferred into the ducting above the plant and into the Fume Extraction Plant (FEP). Fugitive dusts, often called secondary dust, within the EAF building are extracted via a canopy located in the roof of the plant. This extraction is also transferred to the FEP and mixed with the primary waste gas stream. Further dusts are generated from the materials handling system and the ladle furnaces, which are also transferred to the FEP. This FEP contains bag filters that remove dust from the air with a very high efficiency.

6.7.3 Fugitive dust from the Site, including any other processes proposed, will continue to be controlled by the existing Air Quality Management Plan.

6.7.4 The Site is regulated by an Environmental Permit issued by Natural Resources Wales, which will require variation due to the Proposed Development. Further measures to address mitigation are therefore not anticipated to be required and have been screened out from further assessment.

Anticipated effects – vehicle and industrial emissions

6.7.5 The section below details the results of the comparisons between the operational scenarios as described in **Paragraphs 6.3.34** to **6.3.53** and **Table 6.4.** A summary of these scenarios are provided below:

- Scenario 4 (S4) – Future Operational scenario Without Development (2027);
- Scenario 5 (S5) – Future Operational Scenario With Development (2027);

Operational (human receptors)

6.7.6 **Table 6.22**, **Table 6.24** and **Table 6.26** present the predicted annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations at each of the human receptor locations to which the annual mean AQTs should be applied in S4 and S5. They also show the percentage change in pollutant concentrations (with the Proposed Development in place) relative to the AQT, the S5 pollutant concentration as a percentage of the AQT, and the assigned EPUK-IAQM guidance impact descriptor. Road and industrial sources were considered cumulatively. The tables show that for all receptors, long term concentrations of NO_2, PM_{10} and $PM_{2.5}$ are expected to show a reduction between the S4 and S5 scenarios. This trend showing a reduction in emissions is therefore reflected in the NO_2 , PM_{10} and $PM_{2.5}$ concentrations.

6.7.7 Likewise, using the method to assess impacts relating to hourly mean NO_2 and 24-hour mean PM_{10} concentrations as described in **Section 6.3** above, the change in pollutant concentrations between S4 and S5 has is expected to be either beneficial or negligible, as shown in **Table 6.23** and **Table 6.25**. None of these AQOs are breached.

6.7.8 Tables 6.22 to 6.27 in **Appendix 6.5** also present the predicted change in the other determinants (SO_2, CO, Hg, B[a]P, Pb, Cr and Dioxins & Furans) at each of the human receptor locations and assesses the magnitude of impacts as per the EPUK-IAQM guidance. In each instance, the impacts were assessed as having a negligible or beneficial impact (in some instances up to 'substantial' beneficial), except for:

- *Benzo[a]pyrene:* At three receptor locations, a moderate adverse impact was reported. However, at these locations, concentrations increased marginally (1%) and background concentrations already exceed the AQT. At all other locations, concentrations reduced by between 1 and 36%; and
- *Dioxins:* As no AQT or ambient background pollutant concentrations are available for Dioxins and Furans, the percentage change has been reported. There are a roughly equal number of locations where background concentrations will rise as fall.

6.7.9 When considered in the context of the benefit of the Proposed Development relative to the bespoke EB, the change in concentrations of Dioxins and Furans is not considered material.

6.7.10 Consequently, the Proposed Development is likely to have medium- to long-term, local predominantly beneficial or otherwise 'not significant' effects on air quality at existing human receptor locations once operational.

Table 6.22 Operational phase NO_2 dispersion modelling results at human receptors (annual mean) in Scenario 4 (S4) – Future operational scenario without development (2027) and Scenario 5 (S5) – Future operational scenario with development (2027)

Receptor ID	Maximum Concentration (µg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S4	S5			
R1	12.99	12.03	-0.96	-2.40	Negligible
R2	13.13	11.76	-1.37	-3.42	Negligible
R3	18.15	17.34	-0.81	-2.02	Negligible
R4	17.14	16.59	-0.55	-1.39	Negligible
R5	8.64	8.09	-0.55	-1.38	Negligible
R6	16.53	15.89	-0.64	-1.61	Negligible
R7	17.41	16.98	-0.43	-1.07	Negligible
R8	13.82	13.44	-0.38	-0.95	Negligible
R9	20.18	19.78	-0.39	-0.98	Negligible
R10	28.79	28.27	-0.52	-1.30	Negligible
R11	15.44	14.97	-0.47	-1.18	Negligible
R12	15.51	15.04	-0.47	-1.16	Negligible
R13	13.03	12.35	-0.68	-1.71	Negligible
R14	16.97	16.21	-0.77	-1.92	Negligible

Receptor ID	Maximum Concentration (µg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S4	S5			
R15	22.84	22.00	-0.84	-2.10	Negligible
R16	20.66	19.84	-0.82	-2.04	Negligible
R17	18.56	18.04	-0.52	-1.30	Negligible
R18	20.31	19.78	-0.53	-1.32	Negligible
R19	16.52	16.02	-0.50	-1.24	Negligible
R20	22.43	22.04	-0.39	-0.96	Negligible
R21	23.78	23.45	-0.33	-0.84	Negligible
R22	20.12	19.80	-0.32	-0.80	Negligible
R23	16.99	16.45	-0.54	-1.35	Negligible
R24	16.31	15.76	-0.54	-1.36	Negligible

Table 6.23 Comparison of hourly mean NO_2 concentrations in Scenario 4 (S4) – Future operational scenario without development (2027) and Scenario 5 (S5) – Future operational scenario with development (2027)

Receptor ID	Hourly mean NO_2 concentration by scenario (µg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S4	S5			
R1	35.60	26.88	-8.72	-4.36	Negligible
R2	34.67	26.93	-7.74	-3.87	Negligible
R3	46.90	37.69	-9.21	-4.60	Negligible
R4	45.18	37.06	-8.12	-4.06	Negligible
R5	24.04	17.96	-6.08	-3.04	Negligible
R6	42.05	34.30	-7.75	-3.88	Negligible
R7	47.98	36.31	-11.67	-5.83	Negligible
R8	38.13	29.49	-8.63	-4.32	Negligible
R9	48.85	41.84	-7.01	-3.51	Negligible
R10	67.78	60.44	-7.35	-3.67	Negligible
R11	41.82	33.71	-8.11	-4.06	Negligible
R12	41.48	34.43	-7.05	-3.52	Negligible
R13	37.08	27.14	-9.93	-4.97	Negligible
R14	43.61	35.64	-7.97	-3.99	Negligible
R15	55.04	47.33	-7.71	-3.86	Negligible
R16	50.58	43.27	-7.31	-3.66	Negligible
R17	46.23	40.15	-6.09	-3.04	Negligible
R18	49.90	43.79	-6.11	-3.06	Negligible

Receptor ID	Hourly mean NO_2 concentration by scenario (µg/m³)		Actual Change (µg/m³)	% change of AQAL	EPUK-IAQM Impact descriptor
	S4	S5			
R19	42.72	34.28	-8.44	-4.22	Negligible
R20	56.53	46.21	-10.32	-5.16	Negligible
R21	59.31	49.46	-9.85	-4.92	Negligible
R22	51.50	42.26	-9.24	-4.62	Negligible
R23	44.03	36.86	-7.17	-3.58	Negligible
R24	43.96	35.31	-8.65	-4.32	Negligible
P1	28.18	22.63	-5.55	-2.77	Negligible
P2	37.39	28.40	-8.99	-4.50	Negligible
P3	43.57	34.64	-8.93	-4.46	Negligible
P4	44.36	35.28	-9.09	-4.54	Negligible
P5	44.66	35.54	-9.12	-4.56	Negligible
P6	27.95	20.83	-7.12	-3.56	Negligible
P7	24.32	18.79	-5.54	-2.77	Negligible
P8	38.93	30.85	-8.08	-4.04	Negligible
P9	42.55	33.86	-8.69	-4.34	Negligible
P10	44.59	35.64	-8.95	-4.48	Negligible
P11	46.59	37.38	-9.20	-4.60	Negligible
P12	56.38	48.74	-7.65	-3.82	Negligible

Table 6.24 Operational phase PM_{10} dispersion modelling results at human receptors (annual mean) in Scenario 4 (S4) – Future operational scenario without development (2027) and Scenario 5 (S5) – Future operational scenario with development (2027)

Receptor ID	Annual mean PM_{10} concentration (µg/m³)		Actual Change (µg/m³)	% of AQAL	EPUK-IAQM Impact descriptor
	S4	S5			
R1	14.89	13.21	-1.67	-2.42	Negligible
R2	16.62	13.12	-3.50	-4.19	Slight beneficial
R3	17.72	15.17	-2.56	-8.74	Slight beneficial
R4	16.17	14.53	-1.64	-6.39	Negligible
R5	11.48	10.52	-0.97	-4.10	Negligible
R6	14.54	13.64	-0.90	-2.42	Negligible
R7	15.03	14.19	-0.84	-2.25	Negligible
R8	14.32	13.51	-0.81	-2.09	Negligible

Receptor ID	Annual mean PM_{10} concentration (µg/m³)		Actual Change (µg/m³)	% of AQAL	EPUK-IAQM Impact descriptor
	S4	S5			
R9	16.06	15.47	-0.59	-2.02	Negligible
R10	18.49	16.94	-1.55	-1.48	Negligible
R11	16.25	14.17	-2.08	-3.87	Negligible
R12	16.81	14.27	-2.54	-5.19	Slight beneficial
R13	14.81	13.36	-1.45	-6.36	Negligible
R14	15.81	14.63	-1.18	-3.62	Negligible
R15	16.63	15.63	-1.00	-2.95	Negligible
R16	15.81	14.83	-0.98	-2.49	Negligible
R17	16.67	15.10	-1.57	-2.46	Negligible
R18	17.13	15.62	-1.52	-3.92	Negligible
R19	15.34	14.75	-0.59	-3.79	Negligible
R20	16.24	15.80	-0.44	-1.48	Negligible
R21	16.79	16.12	-0.67	-1.10	Negligible
R22	15.77	15.14	-0.63	-1.67	Negligible
R23	16.19	14.58	-1.61	-1.57	Negligible
R24	16.09	14.36	-1.73	-4.02	Negligible

Table 6.25 Operational phase PM_{10} dispersion modelling results at human receptors (daily mean) in Scenario 4 (S4) – Future operational scenario without development (2027) and Scenario 5 (S5) – Future operational scenario with development (2027)

Receptor ID	Daily mean PM_{10} concentration (µg/m³)		Actual Change (µg/m³)	% of AQAL	EPUK-IAQM Impact descriptor
	S4	S5			
R1	31.57	26.44	-5.13	-10.25	Negligible
R2	35.36	26.27	-9.09	-18.18	Slight beneficial
R3	36.71	30.36	-6.35	-12.70	Slight beneficial
R4	32.74	29.15	-3.59	-7.19	Negligible
R5	24.71	21.08	-3.63	-7.25	Negligible
R6	30.37	27.32	-3.05	-6.10	Negligible
R7	31.36	28.41	-2.95	-5.90	Negligible
R8	29.97	27.04	-2.93	-5.87	Negligible
R9	33.10	30.97	-2.13	-4.26	Negligible
R10	37.39	33.96	-3.43	-6.86	Negligible
R11	33.06	28.40	-4.66	-9.31	Negligible
R12	34.13	28.61	-5.52	-11.04	Slight beneficial

Receptor ID	Daily mean PM_{10} concentration (µg/m³)		Actual Change (µg/m³)	% of AQAL	EPUK-IAQM Impact descriptor
	S4	S5			
R13	31.94	26.75	-5.20	-10.39	Negligible
R14	29.87	29.61	-0.26	-0.52	Negligible
R15	33.34	31.44	-1.91	-3.82	Negligible
R16	31.72	29.81	-1.90	-3.81	Negligible
R17	33.93	30.27	-3.66	-7.32	Negligible
R18	34.75	31.28	-3.46	-6.93	Negligible
R19	31.53	29.52	-2.01	-4.02	Negligible
R20	33.14	31.62	-1.52	-3.04	Negligible
R21	34.66	32.26	-2.39	-4.79	Negligible
R22	32.59	30.31	-2.28	-4.56	Negligible
R23	33.01	29.25	-3.76	-7.52	Negligible
R24	32.61	28.81	-3.80	-7.60	Negligible
P1	27.16	24.99	-2.16	-4.33	Negligible
P2	29.99	26.74	-3.24	-6.49	Negligible
P3	33.84	28.90	-4.94	-9.89	Negligible
P4	31.14	28.93	-2.21	-4.42	Negligible
P5	35.50	29.33	-6.17	-12.34	Slight beneficial
P6	23.41	21.63	-1.78	-3.56	Negligible
P7	25.30	22.97	-2.33	-4.65	Negligible
P8	32.41	28.18	-4.24	-8.48	Negligible
P9	33.71	28.57	-5.14	-10.29	Negligible
P10	31.01	28.75	-2.25	-4.51	Negligible
P11	36.55	30.22	-6.33	-12.66	Slight beneficial
P12	33.96	31.99	-1.96	-3.93	Negligible

Table 6.26 Operational phase $PM_{2.5}$ dispersion modelling results at human receptors (annual mean) in Scenario 4 (S4) – Future operational scenario without development (2027) and Scenario 5 (S5) – Future operational scenario with development (2027)

Receptor ID	Annual mean $PM_{2.5}$ concentration (µg/m³)		Actual Change (µg/m³)	% of AQAL	EPUK-IAQM Impact descriptor
	S4	S5			
R1	9.60	7.95	-1.66	-4.75	Slight beneficial
R2	11.37	7.90	-3.47	-8.28	Moderate beneficial
R3	11.91	9.38	-2.53	-17.35	Moderate beneficial
R4	10.71	9.09	-1.62	-12.66	Slight beneficial

Receptor ID	Annual mean $PM_{2.5}$ concentration (µg/m³)		Actual Change (µg/m³)	% of AQAL	EPUK-IAQM Impact descriptor
	S4	S5			
R5	7.40	6.45	-0.95	-8.10	Negligible
R6	8.93	8.07	-0.86	-4.75	Negligible
R7	9.18	8.37	-0.82	-4.28	Negligible
R8	9.26	8.46	-0.80	-4.10	Negligible
R9	9.61	9.03	-0.58	-4.00	Negligible
R10	11.96	10.43	-1.53	-2.88	Slight beneficial
R11	10.94	8.88	-2.06	-7.64	Moderate
R12	11.44	8.93	-2.51	-10.29	Moderate
R13	9.44	8.02	-1.42	-12.55	Slight beneficial
R14	10.52	9.36	-1.16	-7.09	Slight beneficial
R15	10.44	9.47	-0.97	-5.80	Negligible
R16	9.99	9.03	-0.96	-4.85	Negligible
R17	10.94	9.39	-1.55	-4.81	Slight beneficial
R18	11.16	9.67	-1.50	-7.75	Slight beneficial
R19	9.58	9.04	-0.55	-7.48	Negligible
R20	10.14	9.72	-0.42	-2.74	Negligible
R21	10.64	9.98	-0.66	-2.09	Negligible
R22	10.03	9.41	-0.62	-3.30	Negligible
R23	10.70	9.11	-1.59	-3.10	Slight beneficial
R24	10.70	8.99	-1.71	-7.95	Slight beneficial

Operational phase - Ecological receptors

6.7.11 The section below details the results of the comparisons between the operational scenarios as described in **Paragraphs 6.3.34** to **6.3.53** and **Table 6.4.** A summary of these scenarios are provided below:

- Scenario 4 (S4) – Future operational scenario without development (2027); and
- *Scenario* 5 (S5) – Future operational scenario with development (2027);

6.7.12 Table 6.31 and Table 6.32 in **Appendix 6.6** presents the operational phase annual mean and daily mean NOx concentrations at ecological receptor locations.

6.7.13 At all receptor locations (except E15 and E16), the impact at ecological receptors decreases in S5, representing beneficial impacts. Impacts at E15 and E16, which are located within the Junction 38 Wetland SINC, have increased, but by less than 100%. As per the Defra and Environment Agency (2024) guidance, this increase can be considered not significant.

6.7.14 Table 6.33 in **Appendix 6.6** shows that annual mean SO_2 concentrations reduced at all receptor locations.

6.7.15 Table 6.34 in **Appendix 6.6** shows that concentrations of NH_3 in ambient air will not increase as a result of the Proposed Development, as there will be a reduction in road traffic volumes. As such, this has not been assessed further.

6.7.16 Table 6.35 in **Appendix 6.6** shows that the Proposed Development will lead to increased nutrient nitrogen deposition exceeding 1% of the critical load at receptors E15 and E16. These results have been considered further within **Chapter 8 Biodiversity**.

6.7.17 Table 6.36 in **Appendix 6.6** presents the presents the operational phase acid deposition generated in connection with the Proposed Development. The potential effects of acid deposition on ecosystems are each dependent on concentration of nitrogen, ammonia and sulphur which are deposited. Following conversion from ambient to deposited concentrations, there was a net reduction in deposited nitrogen concentrations in S5 than S4 at all receptor locations except E15 and E16. There was also a net reduction in deposited sulphur at all locations, by an amount exceeding that for deposited nitrogen. This means that there would be a net reduction in the process contribution (from the Proposed Development) when expressed as a percentage of the critical load function, demonstrating an overall net benefit. The process contribution is thus <1% of the critical load and has been screened from further assessment.

6.7.18 Consequently, the Proposed Development is likely to have a generally beneficial and always 'not significant' air quality effects at designated ecological sites (in relation to critical levels and when considering the effects of acid deposition) once the Proposed Development is operational.

IB

6.7.19 The results of the comparison between the interim scenarios and future construction and operational scenarios are presented in **Appendix 6.7**.

Potential mitigation

6.7.20 Additional mitigation is considered not to be required.

Residual effects

6.7.21 Effects from emissions generated from industrial and road traffic are considered likely to remain permanent, local (and thus '**not significant**') on air quality at existing human receptor locations and (in comparison to critical levels) designated ecological sites. In general, the significance has been considered **slight beneficial**, with some generally minor adverse or negligible impacts but with impacts relating to key pollutants such as NO_2, PM_{10}, $PM_{2.5}$, SO_2 and CO being beneficial.

6.8 Further survey and monitoring requirements

6.8.1 Measures proposed to mitigate the effects of fugitive dust and emissions generated by construction related activity on amenity and human health may benefit from being monitored to ensure they are being implemented effectively. It is considered that these measures can effectively be implemented using the Construction Environmental Management Plan.

6.9 Opportunities for enhancement

6.9.1 The temporary package boilers are likely to be replaced with a permanent boiler plant. The permanent plant will be designed in a way which mitigates significant air quality impact.

6.9.2 The Air Quality Management Plan against which the Site is regulated by an Environmental Permit will be updated to ensure BAT is installed and fugitive dust and emissions are controlled.

6.10 Cumulative effects

6.10.1 Cumulative effects are the combined effects of several development projects (in conjunction with the Proposed Development) which may, on an individual basis be insignificant but, cumulatively, have a significant effect.

6.10.2 In relation to the dust assessments, the closest other committed developments are the P Fields Site, National Grid Margam Substation extension and cable connection construction and the Sandvik Osprey Metal Processing Facility. Based on the nature and scale of the Proposed Development and the three other committed developments, they would all be subject to planning conditions requiring them to adopt mitigation measures to limit emissions of dust and emissions. Consequently, cumulative effects connected to dust generating activities are not anticipated to be significant.

6.10.3 The assessment of vehicle and industrial emissions at human receptors is considered to be inherently cumulative, because the assessment of significance has considered both the change in pollutant concentrations and the total concentrations, including contributions from other committed developments developments. An in-combination assessment of effects at ecological sites, comparing S4b to S5 has also been presented in **Appendix 6**. Considering the Proposed Development will predominantly have a beneficial effect on air quality (with negative effects not expected near roads used by cumulative traffic) or industrial sources, an in-combination assessment against the EB is not considered necessary.

6.10.4 In relation to the assessment of vehicle emissions on human health, the traffic data provided considered the other committed developments considered by the Transport and Access team to be relevant to the assessment. Industrial sources within 10 km of the Site have also been screened and professional judgement applied. Therefore, the SAF has been included within the industrial source and road traffic emission assessments, as well as the Sandvik Osprey site included within the industrial emissions assessment. These have been accounted for in S2 to S5, S2a and S4a.

6.10.5 The vehicle study area was determined for the Transport and Access assessment (see **Chapter 12 Transport and Access** for full details). As per the methodology outlined in the informal transport and access EIA scoping consultation note provided in **ES Appendix 4.1**, the transport assessment sought to discount the P Fields Site on the basis that it would not result in intensification on the highway network, so traffic data were not provided on a link-by-link basis. It is anticipated to contribute circa 26 two-way car trips and 150 heavy goods vehicle trips to the local road network per day whilst the Site is redeveloped over 20 weeks. This will approximate 57 heavy goods vehicle trips and 10 car trips when expressed as an AADT. If assessed in its own right, this would screen out the requirement for further air quality assessment against screening criteria found within Table 6.1 of the EPUK-IAQM guidance, which indicate when an air quality assessment may be required.

6.10.6 The assessment of impacts is inherently cumulative. This means that the impact of the Proposed Development itself (percentage change relative to the AQT) will not change.

6.10.7 Considering the total predicted concentrations of NO_2, PM_{10}, $PM_{2.5}$, NOx and NH_3 are generally well below the AQTs in S3, the addition of the P Fields site is unlikely to change the assessment conclusions, when compared against the bespoke IB or bespoke EB.

6.10.8 Based on the description submitted regarding the planning application for the other committed industrial developments located near the Site, only one is anticipated to have resulted in significant emissions to air (the Coed Darcy Site, where 10 generators were installed as part of the short-term operating reserve). This is not located near any of the assessed receptors and has therefore been discounted from further assessment. There are therefore no other known stationary combustion plant or industrial sources with the potential to generate emissions which could adversely affect air quality in-combination with the Proposed Development.

6.11 Summary of effects

6.11.1 **Table 6.27** summarises the potential impacts and effects on receptors, additional mitigation proposed, and concludes the significance residual effects reported in this ES chapter.

6.11.2 This chapter of the ES reviewed existing air quality within the study area and assessed the potential effect of the Proposed Development on air quality at existing sensitive human and ecological receptors. The primary pollutants of interest for this assessment were NOx, NO_2, SO_2, Cr, Pb, Hg, NH_3, CO, dioxins & furans, PM_{10} and $PM_{2.5}$. The effects of dust deposition during the construction phase were also considered, as were the effects of the Sandvik Osprey metal processing facility and the SAF facility, cumulative developments in proximity of the Site.

6.11.3 Air quality at the Site and surrounding environs is generally good, with the exception of the 24-hour mean PM_{10} AQO at monitoring site PS2 during 2023, where 48 days exceeded the 50µg/m^3 AQO, 13 more days than is permissible during each calendar year. However, air quality, including PM_{10} concentrations, in the vicinity of the Site is likely to improve over time and background concentrations of other pollutants were well below their respective AQTs.

6.11.4 Fugitive dust from demolition and construction related activities was assessed as having a maximum dust risk of medium, for earthworks; due to potential impacts on ecologically sensitive receptors at the Margam Moors SSSI. Embedded mitigation measures will be implemented in the CEMP as part of the proposed Development. With these measures in place, effects on receptors are likely to be negligible, with possible short-term minor adverse effects during adverse weather conditions.

6.11.5 The assessment of emissions associated with construction vehicle movements and industrial sources, when compared to the established baseline, has been assessed as being not significant, always beneficial at human receptors and generally beneficial at ecological receptors.

6.11.6 The assessment of effects when the Proposed Development is fully operational, including vehicle movements and industrial sources, when compared to the established baseline, has been assessed as being not significant, being always beneficial at human receptors for most pollutants including NO_2, PM_{10}, $PM_{2.5}$, CO and SO_2, and beneficial at ecological receptors aside from E15 and E16. The increase in acid deposition and ambient pollutant concentrations at E15 and E16 remained insignificant.

Table 6.27 Summary of residual significant effects

Environmental factor	Receptor	Impact	Potential effect	Additional mitigation proposed	Residual effect
Construction phase					
Dust risk	Dust soiling, human health and ecological (Margam Moors) receptors	Dust emissions from onsite activities including demolition, earthworks, construction and trackout	Negligible (short-term Minor averse)	No additional mitigation proposed	Negligible/minor (not significant)
Vehicle and industrial emissions	Human health and ecological receptors	Human health: changes to annual mean NO_2, PM_{10}, $PM_{2.5}$, and CO concentrations Ecological: changes to NH_3 and SO_2 concentrations	Negligible or beneficial	No additional mitigation proposed	Negligible/beneficial (not significant)
Operational phase					
Vehicle and industrial emissions	Human health and ecological receptors	NO_2, SO_2, CO, Hg, B[a]P, Pb, Cr and Dioxins & Furans, PM_{10} and $PM_{2.5}$ Ecological: changes to NH_3 and SO_2 concentrations	Slight beneficial	No additional mitigation proposed	Slight beneficial (not significant)

6.12 References

CERC (2024), ADMS -Roads, Comprehensive software for modelling road traffic pollution, Available from CERC > Environmental software > ADMS-Roads model, Accessed on 12th June 2024

Defra and Environment Agency (2024), Air emissions risk assessment for your environmental permit, Published 1st February 2016 last updated 21st May 2024, Available from Air emissions risk assessment for your environmental permit - GOV.UK (www.gov.uk), Accessed on 12th June 2024

Defra, (2024a) Background Mapping Data for local authorities, background maps, Available from Background Mapping data for local authorities - Defra, UK, Accessed on 12th June 2024

Defra (2024b), Emission Factor Toolkit version 12.0.1, Available from Emissions Factors Toolkit | LAQM (defra.gov.uk), Accessed on 12th June 2024

Defra (2022), Local Air Quality Management Technical Guidance (TG22), August 2022, Available from LAQM-TG22-August-22-v1.0.pdf (defra.gov.uk), Accessed on 12th June 2024

DMRB (2019), Sustainability & Environment Appraisal LA105 Air quality (formerly HA 207/07, IAM 170/12, IAN 174/13, IAN 175/13, part of IAN 185/15), Revision 0, Available from 10191621-07df-44a3-892e-c1d5c7a28d90 (standardsforhighways.co.uk), Accessed on 12th June 2024

Environment Agency (2014), AQTAG06 Technical guidance on detailed modelling approach for an appropriate assessment for emissions to air, updated version (March 2014), Available from 1 (ukwin.org.uk), Accessed on 12th June 2024

EPUK and IAQM (2020), A guide to the assessment of air quality impacts on designated nature conservation sites, Version 1.1, May 2020, Available from air-quality-impacts-on-nature-sites-2020.pdf (iaqm.co.uk), Accessed on 12th June 2024

EPUK and IAQM (2017), Land-Use Planning & Development Control: Planning for Air Quality, January 2017, Available from air-quality-planning-guidance.pdf (iaqm.co.uk), Accessed on 12th June 2024

H.M. Government (2024),Environment (Air Quality and Soundscapes) (Wales) Act 2024, Acts of Senedd Cymru, 2024 asc 2

H.M. Government (2010), The Air Quality Standards (Wales) Regulations 2010, Wales Statutory Instruments No., 1433

H.M. Government (2002), The Air Quality (Amendment) (Wales) Regulations 2002, Wales Statutory Instruments No., 3182

H.M. Government (2000), The Air Quality (Wales) Regulations 2000, Wales Statutory Instruments, No., 1940

H.M. Government (1998) The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018 transpose EU Regulation 2016/1628 (replacing emissions limits in 97/68/EC) into British law.

H.M. Government (1997) Directive 97/68/EC of the European Parliament and of the Council on the approximation of the laws of the Member States relating to measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery. European Commission.

H.M Government (1995), Environment Act 1995, UK Public General Acts

H.M. Government (1990), Environment Protection Act 1990, UK Public General Acts

IAQM (2024), Guidance on the assessment of dust from demolition and construction, January 2024 Version 2.2 Available from Construction-Dust-Guidance-Jan-2024.pdf (iaqm.co.uk), Accessed on 12th June 2024

Neath Port Talbot Council (2023), Neath Port Talbot Council 2023 Air Quality Progress Report, October 2023 Sent via email from Neath Port Talbot Council to Temple on 20th March 2024

Neath Port Talbot Council (2022), Approval of Full Planning Permission Sandvick Osprey, P2021/1255, Date Registered 18th February 2022

Neath Port Talbot Council (2016a), Local Development Plan (2011-2026) Adopted January 2016, available from ldp_written_statement_jan16.pdf (npt.gov.uk) Accessed on 12th June 2024

Neath Port Talbot Council (2016b), Local Development Plan (2011-2026), Pollution Supplementary Planning Guidance (October 2016), Available from spg_pollution_oct16.pdf (npt.gov.uk), Accessed on 12th June 2024

Newport City Council (2016), Newport City Council, 2015 Updating and Screening Assessment for Newport City Council, February 2016, Available from Air Quality_Update and Screening Assessment 2015 (newport.gov.uk), Accessed on 12th June 2024

Welsh Assembly Government (2024), Planning Policy Wales, Edition 12, February 2024, available from Planning Policy Wales - Edition 12 (gov.wales) Accessed on 12th June 2024

Welsh Assembly Government (2021), Future Wales The National Plan 2040, Published 24th February 2021, available from Update to Future Wales - The National Plan 2040 (gov.wales) Accessed on 12th June 2024

Welsh Assembly Government (2009), Planning Policy Wales Technical Advice Note, 5: Nature Conservation and Planning, September 2009, Available from tan5-nature-conservation.pdf (gov.wales), Accessed on 12th June 2024

Welsh Government (2020) The Clean Air Plan for Wales, Health Air, Healthy Wales, Available from 40794 The Clean Air Plan for Wales (gov.wales), Accessed on 12th June 2024.